May /August 2020 Operational Case Study

2019 CIMA Professional Qualification

Full post exam support materials

Below is the full post-exam supporting material for the operational case study exam.

Pre-seen material

May /August 2020 operational case study pre-seen can be found here

Examiners report

The May/August 2020 examiners report can be found here

Exam variants

- Variant 1 can be accessed here
- Variant 2 can be accessed here
- Variant 3 can be accessed here
- Variant 4 can be accessed here
- Variant 5 can be accessed here
- Variant 6 can be accessed here

Suggested solutions

- Suggested solutions for variant 1 can be accessed here
- Suggested solutions for variant 2 can be accessed here
- Suggested solutions for variant 3 can be accessed here
- Suggested solutions for variant 4 can be accessed here
- Suggested solutions for variant 5 can be accessed here
- Suggested solutions for variant 6 can be accessed here

Marking Guidance

- Marking guidance for variant 1 can be accessed here
- Marking guidance for variant 2 can be accessed here
- Marking guidance for variant 3 can be accessed here
- Marking guidance for variant 4 can be accessed here
- Marking guidance for variant 5 can be accessed here
- Marking guidance for variant 6 can be accessed here

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May and August 2020 Operational Case Study Examination

Pre-seen material

ChargeIT

Contents:	Page

1. Job and role outline

You are a Finance Officer for ChargeIT. Your main role is to support Sophie Jacobs, the Finance Manager. Your tasks include preparation of the annual budget, producing the monthly management accounts and providing information to management as required. You also assist with the preparation of the financial statements and deal with any queries regarding financial reporting.

2. Company information

Company background

The company, ChargeIT, develops, designs and manufactures cordless domestic electric products. The company operates from a single site in Eastland, in Northern Europe. Eastland has the E$ as its home currency.

The company was founded in 2001 by Gavin Mansell and is owner-managed by Gavin and his wife Anthea, who each hold 50% of the company's equity. The company started when Gavin, who worked for a competitor vacuum cleaner manufacturer, decided to set up his own company to exploit his expertise in product design. Manufacturing was originally outsourced to a company in South-East Asia but in 2016, the decision was taken to bring the manufacturing operation to Eastland.

The company's development was initially slow, but it has since grown rapidly despite a contraction in the overall market for vacuum cleaners. As a result of investment in research and development, it has established a market lead in battery technology which it continually exploits in the development of new and innovative products. In the financial year to 31 December 2019 the company reported annual sales revenue of E$96.7 million (an increase of 32.4% on the previous year) and profit before tax of E$12.0 million (an increase of 59.4%).

This rapid growth however has presented a number of challenges in terms of managing the business, its staff and putting in place an appropriate infrastructure.

The products

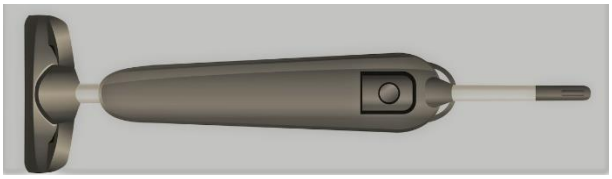
The product range consists of cordless floorcare and garden products including vacuum cleaners, lawnmowers and hedge trimmers. These products are sold in Eastland to consumers through its own website and directly to major retailers. Sales are also made in the USA and Europe. At present, the majority of the company's sales revenue (around 75%) is from sales in Eastland.

All the products sold are cordless and exploit ChargeIT's lead in battery technology. The company has a reputation for producing quality products and being a reliable supplier.

The product range is split into two main segments: floorcare products and garden products.

Floorcare products:

- Upright vacuum cleaners
- Stick vacuum cleaners
- Hand-held vacuum cleaners
- Robotic vacuum cleaners



Garden products:

- Lawnmowers
- Grass trimmers
- Hedge trimmers
- Robotic lawn mowers

Company strategy

The company aims to continue to develop its product range, whilst meeting environmental standards and providing the best quality products and service. It also aims to develop new markets for its products.

To achieve these aims, it continues to invest in research and development. It focuses on the philosophy of bringing battery technology to a wider market sector. It uses technology to make people's lives easier and designs products which are as easy to use as possible. A key long-term strategy is to promote the benefits of cordless appliances and by exploiting the company's battery technology, to be a lead player in the sector as customer preferences change from corded to cordless.

With these aims in mind, the company has invested heavily in new manufacturing equipment. It has however identified a need for future investment in its central systems and processes to support this ongoing product development.

The people

The company currently employs 250 staff of which 120 operate in Production and Research and Development and 75 operate in Logistics. The remainder are administrative staff operating in the Marketing and Sales, Finance, IT and Human Resources (HR) areas of the business. Staff numbers have grown rapidly, in response to the growth in sales revenue which has presented significant challenges in human resource management.

The directors

The company directors are as follows:

Gavin Mansell	-	Managing Director
Anthea Mansell	-	Sales and Marketing Director
Gemma Jorgensson	-	Research and Development Director
Ben Da Silva	-	Finance Director
Jack Martinez	-	Production Director

The directors have a wide range of previous experience mainly in the electrical and retail industries. They are relatively young and highly enthusiastic. Gavin and Anthea, as both owners and directors of the business, are keen to ensure profitable business development. They keep a close watch on company operations and are the main decision makers within the business.

Directors' profiles

Gavin Mansell, Managing Director, is responsible for the company's strategy. He worked for a competitor company before founding ChargeIT in 2001. Gavin's main love is product design and he takes a very close interest in the product development side of the business. Gavin is proud of the success of the company but is concerned to ensure that an appropriate infrastructure is in place to support future expansion.

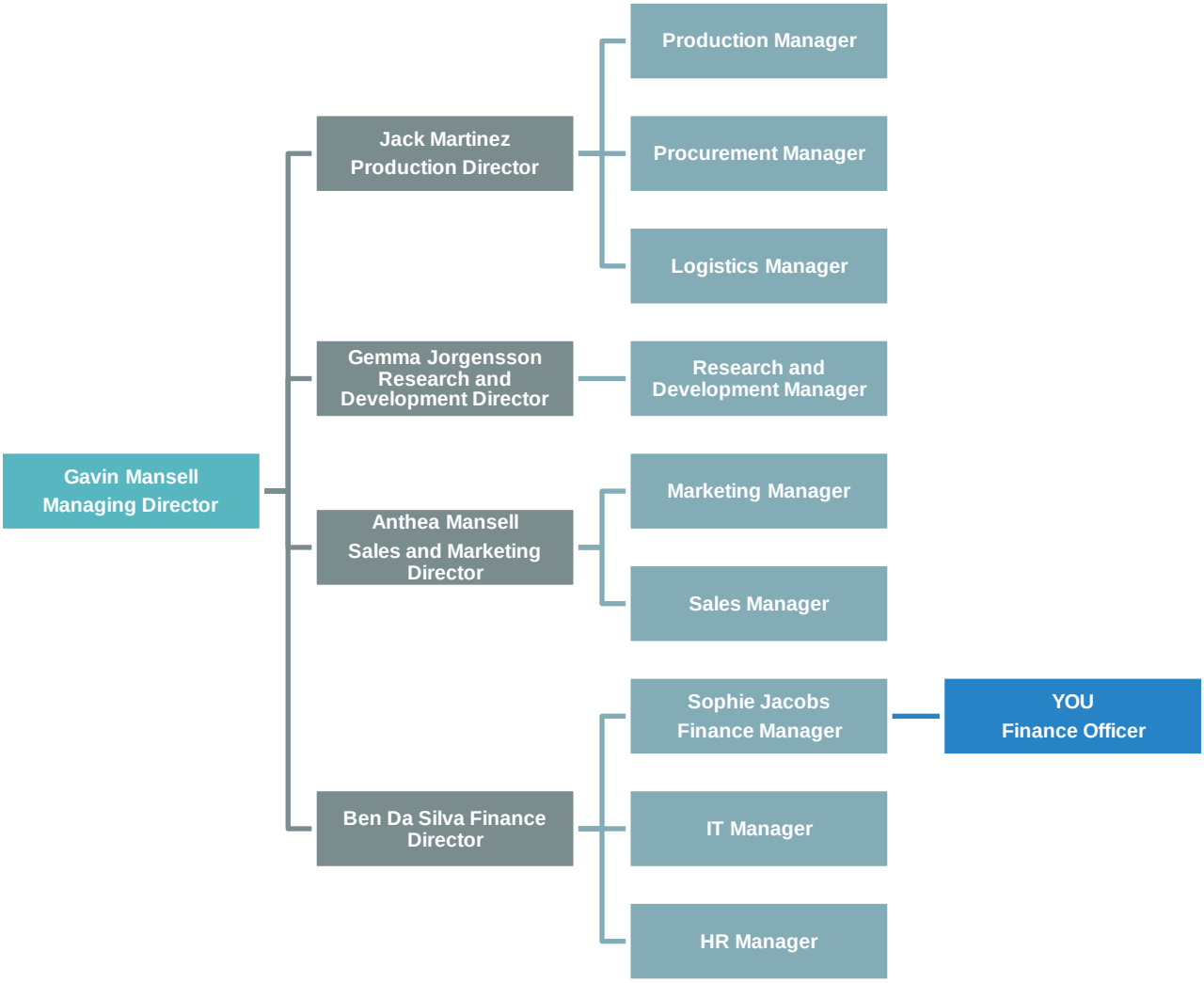
Anthea Mansell is the Sales and Marketing Director. Anthea graduated from Eastland University with a BA in Management Studies. She worked as a marketing executive for a retailing company before joining her husband to form ChargeIT. Her experience in the retailing side of the industry is invaluable for the company.

Gemma Jorgensson is the Research and Development Director. Gemma graduated from Eastland University with an MA in Product Design. Gemma works closely with Gavin Mansell in new product design and development. Gemma is keen to expand the company's product range further and is constantly looking at potential new product opportunities.

Ben Da Silva, Finance Director, is responsible for Finance, IT and Human Resources (HR). Ben is a qualified accountant and was appointed as Finance Director last year. He has quickly earned a reputation for keeping a tight rein on the company's finances. He is a bit of a 'techie' and is interested in exploring the use of digital technology to make processes more efficient.

Jack Martinez, Production Director, is responsible for Production, Procurement and Logistics. Jack is an engineer by profession and has been with the company since 2007, intially as part of the Product Development team. He was appointed as Production Director in 2016. Jack would like to improve the production facilities but needs to convince Ben that investment in new production technologies would yield sufficent returns.

Extract from ChargeIT's organisation chart

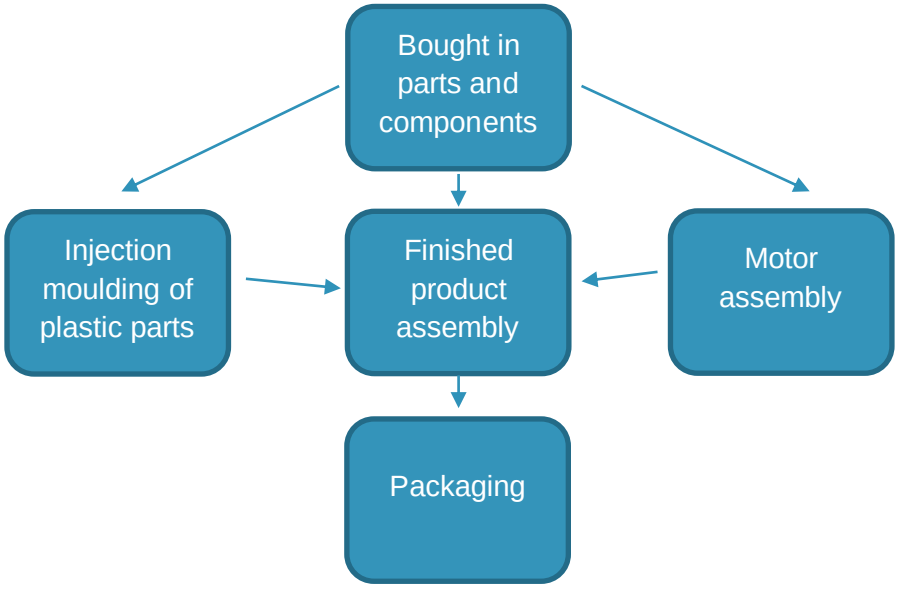


3. Company operations

Manufacturing

The company's products are all manufactured at its factory in Eastland. Many of the parts and components, including the batteries, are bought in from external suppliers and then assembled at the Eastland factory to create the finished product.

There are four main operations carried out in the factory: injection moulding of plastic parts; motor assembly; finished product assembly and packaging.



At each stage of the manufacturing process quality inspections are carried out to ensure the products meet the high-quality standard set by the company.

Extract from the ChargeIT website

How our upright vacuums are manufactured

Injection moulding of plastic parts

The plastic parts are shaped in a two-part steel mould, that is lowered into the chamber of an injection moulding machine. Tiny plastic pellets are poured into a heating vat and melted. The melted plastic is injected, under high heat and pressure, into the chamber of the injection moulding machine, penetrating every part of the mould. The two halves of the mould are opened and the plastic part falls into a bin. The plastic hardens on contact with the air as the mould opens. Many identical plastic parts of the same type are made during the injection moulding process. When the desired number have been made, the mould is removed from the injection moulding machine, another one is inserted, and the process is repeated for another type of part.

Motor assembly

The motors for the products are built on an assembly-line. Workers at assembly stations attach sub-assemblies or individual parts to the motor as it moves along the assembly line.

Finished product assembly

Assembling an upright vacuum starts with the base, which is made of moulded plastic. To this is fitted a steel beater bar with brushes. A rubber drive belt is placed in around the beater bar and pulled over a belt guide and motor pulley on the underside of the base.

At the rear of the base, an axle is inserted that passes from one side of the base to the other. A release handle is fitted onto one end of the axle that allows the vacuum's operator to raise or lower the handle during operation. Wheels are added to both ends of the axle.

The fan is bolted onto the base, and the motor assembly is attached to the top side of the base. Plastic fittings that support the bag and handle are attached to the rear of the base. An opening at the back of the base holds a rubberized length of flexible hose that transfers dust from the fan to the bag.

The final touches are added, including attaching the bag and outer markings giving operating instructions and information such as the serial number and the power of the motor.

Packaging

The completed machine is taken to the packing department where it is wrapped in a plastic bag and put in a carton. A box of plastic attachments, including nozzles and a hose for upholstery cleaning, is also put in the carton with an information booklet, assembly instructions, and a warranty card. The cartons, which have been pre-printed with marketing information, are then closed, sealed, and stored for shipping and distribution.

Procurement

Raw materials and components are purchased from a range of suppliers with whom ChargeIT has built close relationships over the years. Supplier selection is based on a mixture of price, quality and reliability. ChargeIT works closely with its suppliers to ensure that quality standards are met and that suppliers maintain at least the same environmental standards applied by ChargeIT.

The batteries used in the products are purchased from a specialist battery manufacturer which licences the battery technology from ChargeIT.

Logistics

The company's logistics system records the movement of all goods from the receipt of raw materials, part and components at ChargeIT's warehouses to the distribution of the packaged products to customers. The raw materials, components and finished products are held in warehouses which are situated adjacent to the Eastland factory.

ChargeIT's products are distributed to online customers and major retailers in Eastland by road using its own haulage trucks. It also works with a number of shipping partners to deliver products to distributors in other countries.

The warehouses employ a total of 75 staff who are assigned to four teams which carry out the following activities:

- Receiving: receiving of raw materials, bought-in components and finished goods
- Picking: picking of raw material and bought-in components for production and finished goods for customers' orders
- Packing: packing orders ready for despatch to customers
- Despatch: loading delivery vehicles heading to online customers, retailers and shipping partners.

Sales and marketing

In Eastland, the company's products are sold to consumers through its own website and directly to major retailers who sell the products both online and through physical stores. The company's website contains detailed information about the company's background, strategy and current product ranges. It offers a secure platform for the processing of financial transactions.

In the USA and Europe, ChargeIT use carefully selected distributors. The main responsibility of the distributors is the fulfilment of online orders, however in some countries they also distribute ChargeIT products to retailers.

At present, sales made in Eastland represent around 75% of the company's sales revenue. Profit margins vary depending on the sales channel used to sell the product.

Sales of floorcare products are evenly spread throughout the year however garden product sales are seasonal with the majority of the sales volumes being in the spring and summer quarters.

Marketing is carried out by the company's Marketing Department which employs a range of marketing methods. The company's website is considered an important marketing tool as it represents its main sales channel. The website has been continually developed to ensure visitors are engaging with the content. Web pages are informative, clear and easily navigated.

The website employs data analytics to enable the company to source sales data but also other metrics such as: number of visits; number of downloads; average time on page and 'bounce rate', which measures the percentage of visitors entering the website and leaving without visiting another page. These website data analytics are considered an important source of information to help determine customer preferences and the sales potential of the company's products.

Research and development

Research and development are a major focus for the company as it strives to develop new products and exploit new technologies.

Research and development are carried out by a separate department. The department's primary purpose is to drive forward the development of an idea through to the proof of concept stage, ready for the business to take forward into production. This is achieved through researching and exploring existing methods and applications or by identifying where new technologies could be used. Once the concept is proved, it can then be implemented through the fast turnaround of building and then testing of prototype models.

A major focus for the department is the development of battery technology for which the company has a strong competitive advantage. The company exploits this competitive advantage in its new products and through the development of new product ranges which rely on battery technology.

The Research and Development department is also responsible for the design and functionality of the electronics used in all of ChargeIT's products. This also includes supporting other areas of the business with electronics knowledge and understanding.

Finance and IT

The financial information system produces monthly management accounts and annual statutory accounts. This information system also generates daily and weekly sales revenue and gross margin information. The company operates a standard absorption costing system and applies a factory-wide overhead absorption rate based on direct labour hours.

Budgets are produced by the Finance Department on an annual basis using a top-down incremental budgeting approach. Standard costs are reviewed as part of the budgeting process and other information to formulate the budgets is obtained from the directors and senior managers. The final budgets are approved by the Board. Individual functional managers do not have budget responsibility. Monthly reporting on actual performance compared to budget is to the Senior Management Team. The Finance Department is relatively small and much of the staff time is spent on day to day transaction processing. The Finance Department's role within the company has changed very little since the company was formed in 2001.

Human resources

Human resources are the responsibility of the HR Manager. The company has expanded rapidly which has created a number of issues in managing human resources. It has been recognised that there is a need to build new processes for human resource management to ensure the well-being of both existing and new staff.

4. Industry analysis

Vacuum cleaners

The vacuum cleaner manufacturing industry in Eastland was dominated in 2019 by three major players who account for more than 40% of market share. ChargeIT ranks 4th in terms of market share.

Sales volumes of vacuum cleaners in Eastland contracted slightly in 2019 to just over 6 million units (E$648 million sales revenue). Upright and cylinder vacuum cleaners still represent the main categories, but sales volumes have continually fallen since 2015. In contrast, sales of cordless hand-held vacuum cleaners continued in an upward trend, rising by 5.7% in 2019. This increase was mainly due to exceptionally high levels of innovation and investment that has significantly improved battery performance. Convenience is key with the cordless/low weight factor of hand-held vacuum cleaners appealing to consumers looking to transform a chore into a quick and easy task. Unit prices of hand-held cleaners are gradually decreasing, making this category more accessible to a wider range of households. Robotic vacuum cleaners, whilst still one of the smallest categories, showed strong growth with sale volumes rising by 17.5% in 2019.

Online retailing of vacuum cleaners is booming as physical stores are increasingly being used for consumers looking to see, touch and sometimes try the product before making a purchase online. The major online retailers are increasingly demanding special deals from manufacturers to purchase bulk products at a low price, while manufacturers are still being asked by the online retailers to pay to advertise on their websites. Online retailers also provide strong guarantees on labelled product ranges and provide consumers with the option to return unsatisfactory products free of charge.

Lawnmowers and gardening power tools

Sales of gardening power tools in Eastland increased in 2019 by 3.9% to E$324.4 million whilst sales of lawnmowers contracted by 1.1% to E$356.9 million. Robotic lawnmowers however showed strong growth from E$51.5 million to E$58.9 million.

Sales of both power tools and lawnmowers are expected to continue to grow over the next five years. The main growth area will be in robotic lawnmowers with sales expected to reach over E$90 million by 2024. Awareness of this product category is low in Eastland compared to other countries in continental Europe and the potential for growth is high.

Robotic lawnmowers have improved significantly in recent years due to the advances in robotics. With most models, it is still necessary to lay a boundary wire for the robot to locate the boundary of the area to be trimmed. The lawn mower tackles the task utilising a "random" mowing system (basically, the robot moves around the lawn until it detects the boundary wire limiting the lawn area, then changes direction until it detects the wire again). Modern versions however now include advanced features such as self-docking and rain sensors which means the robot will return automatically to the charging station if rain is detected.

5. Extract from ChargeIT's 2019 Financial Statements

Statement of Profit or Loss for the year ended 31 December	2019 E$000	2018 E$000
Revenue	**96,674**	**73,009**
Cost of sales	**(47,499)**	**(33,364)**
Gross profit	**49,175**	**39,645**
Operating expenses	**(37,176)**	**(32,115)**
Operating profit	**11,999**	**7,530**
Finance income	**42**	**26**
Profit before tax	**12,041**	**7,556**
Taxation	**(1,828)**	**(826)**
Profit for the year	**10,213**	**6,730**

Statement of Financial Position as at 31 December	2019 E$000	2018 E$000
Non-current assets		
Property, plant and equipment	**11,429**	**11,296**
	11,429	**11,296**
Current assets		
Inventories	**9,528**	**8,043**
Trade and other receivables	**5,974**	**5,388**
Cash and cash equivalents	**12,703**	**2,779**
	28,205	**16,210**
Total Assets	**39,634**	**27,506**
Equity and Liabilities		
Share capital	**8**	**8**
Revaluation surplus	**560**	**560**
Retained earnings	**27,843**	**17,630**
Total equity	**28,411**	**18,198**
Non-current liabilities		
Warranties	**2,800**	**2,682**
	2,800	**2,682**
Current liabilities		
Trade and other payables	**7,322**	**6,115**
Tax payable	**1,101**	**511**
	8,423	**6,626**
Total Equity and Liabilities	**39,634**	**27,506**

Extract from ChargeIT's Statement of Accounting Policies

f) Property, plant and equipment

The company uses the revaluation basis for its property. Plant and equipment are held at depreciated historic cost. Depreciation is provided on all property, plant and equipment at rates calculated so as to write off the cost or revalued amount, less residual value, of each asset on a straight-line basis over its useful economic life. Depreciation is charged on a pro-rata basis in the year of purchase and disposal.

h) Significant judgements and estimates

Warranties - the company is required to estimate the cost of potential repair of goods under warranty. The estimate is based on the expected level of returns.

Statement of Cash Flows for the year ended 31 December	**2019 E$000**	**2018 E$000**
Cash flows from operating activities		
Profit / (loss) before tax	**12,041**	**7,556**
Depreciation	**2,179**	**1,654**
Loss on disposal of property, plant and equipment	**23**	**0**
Finance income	**(42)**	**(26)**
Increase in inventory	**(1,485)**	**(1,320)**
Increase in trade and other receivables	**(586)**	**(1,015)**
Increase / (decrease) in trade and other payables	**1,207**	**(5,258)**
Increase / (decrease) in warranty provision	**118**	**(880)**
Cash generated from operations	**13,455**	**711**
Tax paid	**(1,238)**	**(1,645)**
Net cash generated from/(used in) operating activities	**12,217**	**(934)**
Cash flows from investing activities		
Interest received	**42**	**26**
Purchase of property, plant and equipment	**(2,585)**	**(1,317)**
Proceeds on disposal of property, plant and equipment	**250**	**0**
Net cash used in investing activities	**(2,293)**	**(1,291)**
Cash flows from financing activities		
Dividend paid	**0**	**(1,688)**
Net cash from/(used in) financing activities	**0**	**(1,688)**
Net increase/(decrease) in cash and cash equivalents	**9,924**	**(3,913)**
Cash and cash equivalents at beginning of the year	**2,779**	**6,692**
Cash and cash equivalents at the end of the year	**12,703**	**2,779**

6. Budget information

Budget for the year to 31 December 2020

Total company budgeted revenue and gross profit:

	Floorcare E$000	Garden E$000	Spare parts and accessories E$000	Total E$000
Total sales revenue	53,608	47,507	10,111	111,226
Cost of sales	28,176	21,923	4,044	54,143
Gross profit	25,432	25,584	6,067	57,083
Gross profit margin	47.4%	53.9%	60.0%	51.3%

Note: The figures above show the total from all sales channels. Different gross profit margins apply to each channel.

Detailed budget for floorcare products:

	Upright vacuum cleaners	Stick vacuum cleaners	Hand-held vacuum cleaners	Robotic vacuum cleaners	Total
Quantity (units)	207,000	34,500	86,250	9,200	
Per unit	**E$**	**E$**	**E$**	**E$**	
Average selling price	165.00	135.00	115.00	530.00	
Standard cost	89.75	70.25	57.25	243.00	
Gross profit	75.25	64.75	57.75	287.00	
	E$000	**E$000**	**E$000**	**E$000**	**E$000**
Total sales	34,155	4,658	9,919	4,876	53,608
Total cost of sales	18,578	2,424	4,938	2,236	28,176
Total gross profit	15,577	2,234	4,981	2,640	25,432
Gross profit margin	45.6%	48.0%	50.2%	54.1%	47.4%

Budgeted average standard costs for floorcare products:

	Upright vacuum cleaners	Stick vacuum cleaners	Hand-held vacuum cleaners	Robotic vacuum cleaners
	E$	**E$**	**E$**	**E$**
Direct material cost	65.00	50.00	40.00	180.00
Direct labour cost	8.25	6.75	5.75	21.00
Variable production overheads	2.48	2.03	1.73	6.30
Fixed production overheads	14.02	11.47	9.77	35.70
Total standard costs	89.75	70.25	57.25	243.00

Detailed budget for garden products:

	Lawnmowers	Grass trimmers	Hedge trimmers	Robotic lawnmowers	Total
Quantity (units)	97,750	57,500	51,750	6,900	
Per unit	**E$**	**E$**	**E$**	**E$**	
Average selling price	325.00	85.00	135.00	560.00	
Standard cost	148.75	37.75	65.25	266.00	
Gross profit	176.25	47.25	69.75	294.00	
	E$000	**E$000**	**E$000**	**E$000**	**E$000**
Total sales	31,769	4,888	6,986	3,864	47,507
Total cost of sales	14,540	2,171	3,377	1,835	21,923
Total gross profit	17,229	2,717	3,609	2,029	25,584
Gross profit margin	54.2%	55.6%	51.7%	52.5%	53.9%

Budgeted average standard costs for garden products:

	Lawnmowers	Grass trimmers	Hedge trimmers	Robotic lawnmowers
	E$	**E$**	**E$**	**E$**
Direct material cost	100.00	25.00	45.00	200.00
Direct labour cost	16.25	4.25	6.75	22.00
Variable production overheads	4.88	1.28	2.03	6.60
Fixed production overheads	27.62	7.22	11.47	37.40
Total standard costs	148.75	37.75	65.25	266.00

ChargeIT key performance indicators				
	Budget 2020	**Actual 2019**	**Actual 2018**	**Actual 2017**
Sales revenue (E$000)	111,226	96,674	73,009	52,582
Sales growth	+15.1%	+32.4%	+38.8%	+26.2%
Gross profit (E$000)	57,083	49,175	39,645	30,831
Gross profit margin	51.3%	50.9%	54.3%	58.6%
Operating profit (E$000)	13,200	11,999	7,530	10,642
Operating profit margin	11.9%	12.4%	10.3%	20.2%
Number of new products launched	4	2	4	3

7. The tax regime in Eastland

Corporate profits:

- The corporate tax rate applicable to taxable profits is 20%.
- The value added tax (VAT) rate is 20%. The sales revenue threshold for VAT registration is E$150,000.
- Unless otherwise stated below, accounting rules on recognition and measurement are followed for tax purposes.
- The following expenses are not allowable for tax purposes:
    - accounting depreciation;
    - amortisation;
    - entertaining expenditure;
    - donations to political parties; and
    - taxes paid to other public bodies.
- Tax depreciation allowances are available on items of plant and machinery (including vehicles used for business purposes) at a rate of 25% per year on a reducing balance basis.
- Tax losses can be carried forward to offset against future taxable profits from the same business.

Technology Monthly

April 2020 No. 77 E$4.70

Battery power – lithium-ion is here to stay

Georgio Lossatti - Business Correspondent

It has long been argued that if we want to convince skeptical consumers about electric cars and running the grid on renewable power, then we need a better battery. And yet it seems that the battery of the future will almost certainly be the battery of the past.

Lithium-ion technology has existed for decades. The basic battery works by sending charged lithium atoms, or ions, through a liquid electrolyte substance, moving back and forth between a positive cathode and a negative anode.

Over the years, changes made to the materials used in the cathode has increased the amount of energy the batteries can hold. As a result, what started out inside consumer electronics, such as mobile phones, can now be found in electric cars and connected to the power grid.

The humble lithium-ion battery has built up such a commanding lead that competing technologies may struggle to catch up. That lead is only likely to increase further as a number of planned new lithium-ion factories come online in the next five years. The need to produce a return from this capital investment will create a powerful incentive for the industry to keep tweaking lithium-ion technology rather than developing something new.

The recent development of a silicon-based powder which could boost the energy storage of a lithium-ion battery by 20% or more, has further enhanced the staying power of the lithium-ion battery. Silicon can hold more lithium than the carbon in graphite, the most common anode material, which means batteries using silicon can store more energy.

All things considered it looks like lithium-ion technology is here to stay, at least for a few more years yet.

Technology Monthly

May 2020 No. 78 E$4.70

March of the Robots!!

Georgio Lossatti – Business Correspondent

When the first robotic vacuum cleaner was developed most people didn't even think it was a robot. Our mental image of how robots were going to vacuum was a humanoid pushing a manual upright vacuum.

The first form of robotic vacuum cleaner was however ideally suited for moving around tables and chairs because of its small size. The two-wheeled, disc-shaped autonomous vacuum could detect the presence of obstacles and sense steep drops, using sensors. Most models had a pair of brushes rotating in opposite directions and a horizontally mounted side-spinning brush that swept against walls, followed by a vacuum that directed airflow through a narrow slit.

Early models were also relatively static in their approach to sweeping. They relied on a set of algorithms like spiral cleaning, room crossing, wall-following, and random-walk angle-changing, triggered by collisions with walls and furniture. As a result, they covered some areas more frequently than others and took several times longer to clean rooms than a human would.

Newer models have a forward-looking, obstacle-detecting infrared sensor and a self-charging, bin-emptying home base that they seek out at the end of each cleaning session via embedded infrared beacons.

The advent of modern AI techniques has accelerated the pace of robotics innovation, particularly in computer vision.

A new imaging sensor uses odometry to infer distance travelled from wheel turns, and internal sensors identify particularly dirty spots on floors.

So, does this innovation mean that we will soon see a single home robot capable of doing it all — the sort that has dominated science fiction for decades? Apparently not!!

Developing autonomous assistants to help with domestic tasks is more complicated than it seems. While household chores are relatively easy for humans to achieve, they are surprisingly difficult for an autonomous system to understand and carry out reliably. Robots, of course, have no 'innate' knowledge. While we might like to tell an assistive robot to just 'do the laundry', the robot needs much more information, from how to move each of its joints to where it should look as it performs each operation, and how to use its cameras and sensors.

It looks like our current form of robotic vacuum cleaners and lawnmowers are about as good as it is going to get for now.

Operational Case Study Exam

Maximum Time Allowed: 3 Hours

Welcome, Candidate Name

If this is not your name, please let your administrator know.

Click **Next** to start the test.

This examination is structured as follows:

Section (task)	Time for section (minutes)	Number of answer screens	Number of sub-tasks	% time to spend on each sub-task
1	45	1	2	(a) 48% (b) 52%
2	45	1	3	(a) 24% (b) 44% (c) 32%
3	45	1	2	(a) 52% (b) 48%
4	45	1	3	(a) 40% (b) 24% (c) 36%

Each section (task) has a number of sub-tasks. An indication of how much of the time available for the section that you should allocate to planning and writing your answer is shown against each sub-task in the text of the question (and summarized in the table above).

This information will be available for you to access during the examination by clicking on the Pre-seen button.

Reference Material Pre-seen

Today is 1st June 2020. It has just been announced that the company is to launch a new range of e-bikes. All the bikes will be 'power assist', allowing normal cycling with the ability to get an extra power boost from the ChargeIT battery. The bikes will be available in three different styles: the Urban bike; the Sport bike; and the Mountain bike. You receive the following email from Sophie Jacobs, Finance Manager.

From: Sophie Jacobs, Finance Manager
To: Finance Officer
Subject: Activity based costing and break-even charts

You will have seen the announcement regarding the new range of e-bikes. The e-bikes will utilise our existing battery technology, which is superior to that of our competitors and will give us a lead in this market. We are planning to start production of the e-bikes in September 2020 and commence sales in October 2020. It is planned to initially only sell the e-bikes through our website.

A decision has been taken to assemble the motors for the bikes at the Eastland factory using the same motor assembly line that we use for our other products. The assembly of the e-bike motors will however be done in smaller batch sizes than our existing products. We will buy-in all the other parts, including the lightweight aluminium frames, and will therefore not require the injecting moulding process for the e-bikes. We will then assemble the finished products at the Eastland factory. We will however require capital investment in a new assembly line to assemble the finished e-bikes. The proposed new assembly line will be used solely for the e-bikes and utilise robotics which will reduce the number of labour hours required.

The Senior Management Team (SMT) is looking at the pricing of the new product range which has raised a lot of debate about our current costing system. As you know, we currently use a factory-wide overhead absorption rate and there is some concern that this is inappropriate for costing the new e-bikes due to the different processes required.

I would like you to provide me with a report, which I can present at the next senior management team meeting, explaining:

- The reasons why changing to an activity based costing system would potentially result in a different share of production overhead costs for the existing products and the new e-bikes, compared to the current absorption costing system.

(sub-task (a) = 48%)

The SMT has also asked for details of the break-even position for the new product range. I have prepared a multi-product break-even chart which I have attached to this email.

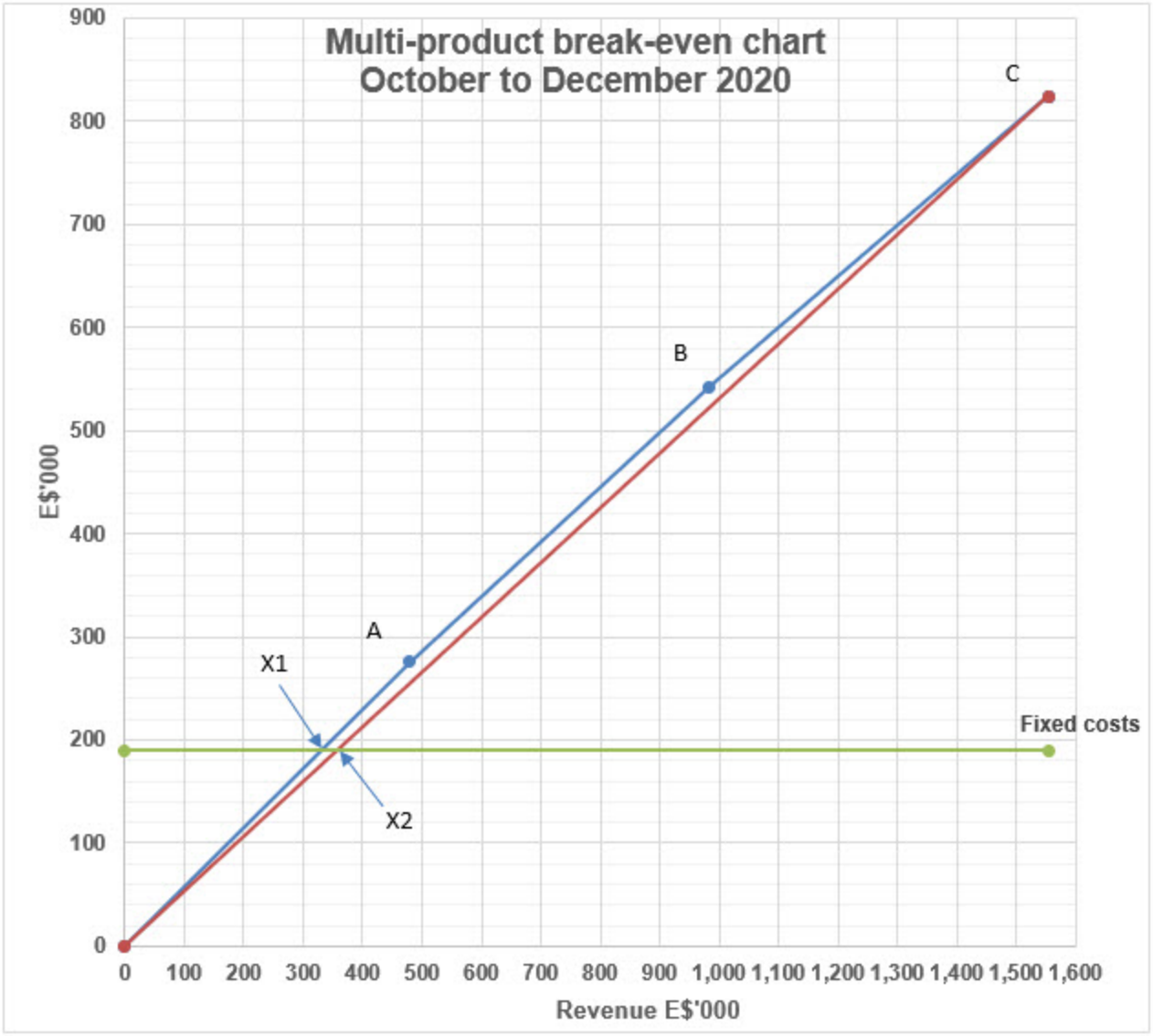
- Please include in your report an explanation of the multi-product break-even chart and the benefits and limitations of the break-even analysis for the new range of e-bikes.

(sub-task (b) = 52%)

Many thanks

Sophie Jacobs
Finance Manager
ChargeIT

The attachment to this email can be found by clicking on the Reference Materials button above.



Notes:

1. Fixed costs represent the depreciation cost from the new assembly line and marketing costs relating to the launch of the new range.
2. Data used for the break-even chart is given in the table below:

	E-bike model			
	Urban	Sport	Mountain	Total
	E$	E$	E$	E$
Sales revenue	480,000	504,000	570,000	1,554,000
Contribution	276,000	266,616	281,580	824,196
Contribution to sales ratio	57.5%	52.9%	49.4%	53.0%

Reference Material Pre-seen

Write the report for Sophie Jacobs, Finance Manager, in the box below:

Paragraph

Reference Material Pre-seen

A few weeks later, you receive the following email from Sophie Jacobs, Finance Manager

From: Sophie Jacobs, Finance Manager
To: Finance Officer
Subject: Time series analysis and avoiding a cash deficit

The SMT is concerned about the uncertainty surrounding the estimated sales volume for the new range of e-bikes and have asked for further research to be carried out on the e-bike market. As this is a new market for us, Anthea Mansell, the Sales and Marketing Director has requested our help with this.

Prices have been set at E$1,000 for the Urban bike, E$1,200 for the Sport bike and E$1,900 for the Mountain bike. These price points are at the lower end of the market making the bikes accessible to the majority of consumers.

I carried out an internet search and have found a graph showing sales of e-bikes in Eastland for the years 2014-2019 which I have attached to this email.

I would like you to prepare briefing notes, which I can discuss at the next SMT meeting. It would be helpful if the briefing notes include an explanation of:

- The graph and how the trend line shown on the graph has been calculated.

(sub-task (a) = 24%)

- How time series analysis would be applied to the data in the graph to determine quarterly sales volumes for the new range of e-bikes and any limitations of using time series analysis for this purpose.

(sub-task (b) = 44%)

The new range of e-bikes is also going to have a significant impact on our cash flow. The SMT would like to avoid a cash deficit arising if possible. We have a substantial cash balance which will be used to fund the capital investment costs of the new assembly line. We will however also incur marketing costs for the product launch and the new product range will result in an increase in our working capital.

Please also include in your briefing notes:

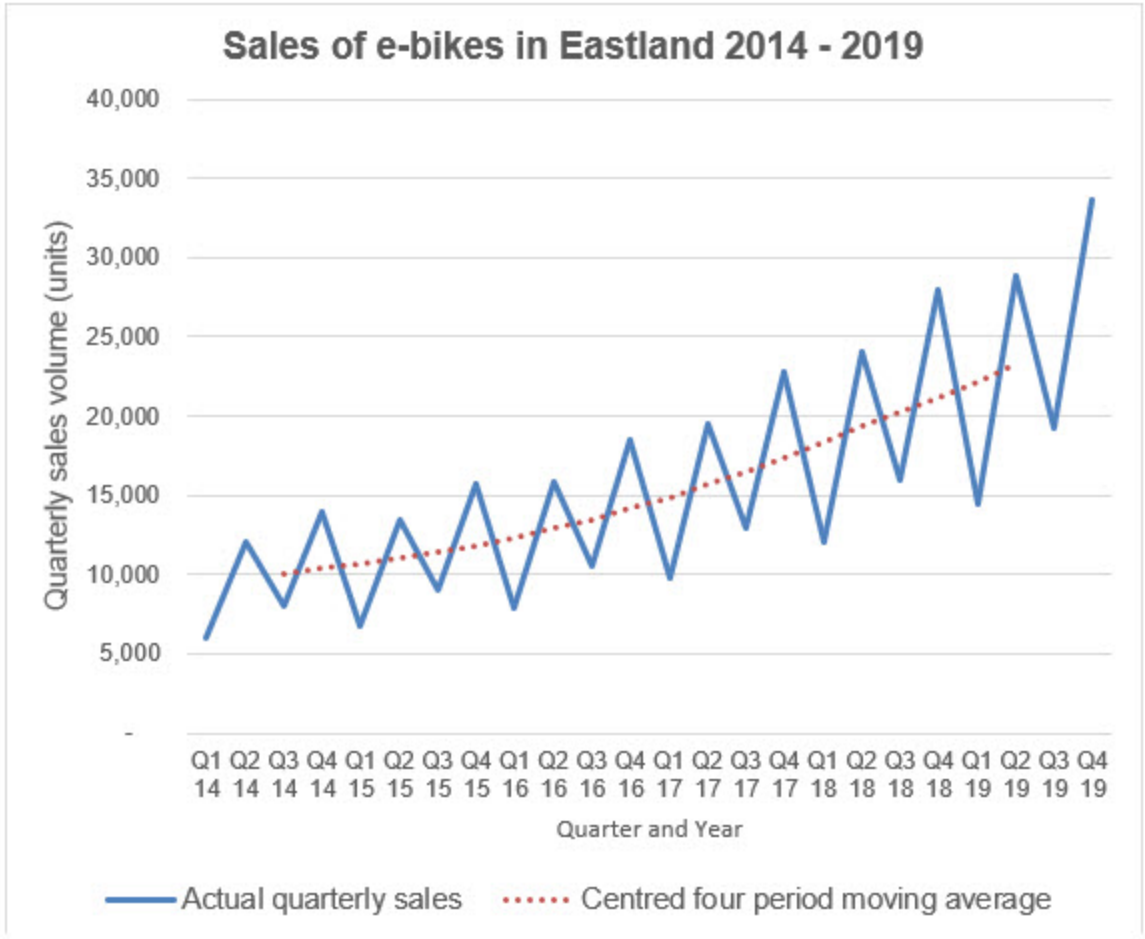
- An explanation of the potential actions we could take to avoid a cash deficit arising and any other factors that would need to be considered before deciding whether to take the potential action.

(sub-task (c) = 32%)

Many thanks

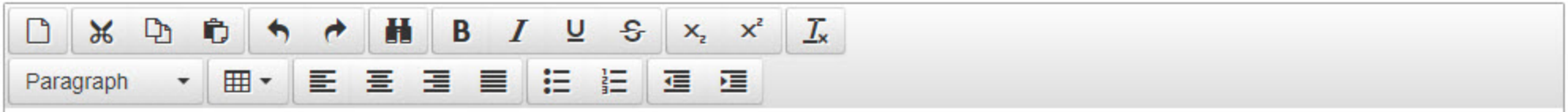
Sophie Jacobs
Finance Manager
ChargeIT

The attachment to this email can be found by clicking on the Reference Materials button above.


Sales of e-bikes in Eastland 2014 - 2019
Quarterly sales volume (units)
40,000
35,000
30,000
25,000
20,000
15,000
10,000
5,000
-
Q1 14 Q2 14 Q3 14 Q4 14 Q1 15 Q2 15 Q3 15 Q4 15 Q1 16 Q2 16 Q3 16 Q4 16 Q1 17 Q2 17 Q3 17 Q4 17 Q1 18 Q2 18 Q3 18 Q4 18 Q1 19 Q2 19 Q3 19 Q4 19
Quarter and Year
Actual quarterly sales
Centred four period moving average

Reference Material Pre-seen

Write the briefing notes for Sophie Jacobs, Finance Manager, in the box below:



A few days later, you are called into the office of Ben Da Silva, Finance Director

Ben says:

"The SMT has decided to lease the equipment required for the new assembly line rather than buying it as we originally planned. As this is the first time, we have leased capital equipment, they have requested details of how the lease will be treated in our financial statements. I have given details of the lease in Table 1 of a schedule which I will send to you shortly.

Please prepare a report that I can present at the next SMT meeting giving an explanation of:

- *The relevant requirements of IFRS 16 Leases* and how the lease will be initially recorded in our accounting records. Please also explain how the lease will be treated in our financial statements for the year ended 31 December 2020 and subsequent years.

(sub-task (a) = 52%)

The production of the e-bikes will result in a shortage of labour in the motor assembly line. The shortage of labour means that we will only have the capacity to assemble two of the four motor models in-house. As a result, we have decided to buy-in some fully assembled motors. I have also included in the schedule in Table 2, details of the estimated costs of in-house assembly of our motors and the price offered by one of our suppliers for a fully assembled motor.

Please also include in your report an explanation of:

- How the figures shown in the attached schedule would be used to decide on which of the models we should buy-in and which we should assemble in-house. Please also explain any other factors we should consider before making a final decision."

(sub-task (b) = 48%)

You tell Ben that you will send him the report as soon as possible.

Ben's schedule can be found by clicking on the Reference Materials button above.

Table 1 – Details of lease arrangement

Lease payments per annum in advance	E$258,000
Present value of lease payments at 1 September 2020*	E$1,342,000
Other costs:	
Lease arrangement fee	E$4,000
Lease commencement date	1 September 2020
First lease payment	1 September 2020
Lease period	8 years
Useful life	10 years
Owner at end of lease period	Lessor

* The present value excludes the lease payment made in advance on 1 September 2020

Table 2 - Make or buy decision for motors

	Motor model number			
	RS100	**RS200**	**RS300**	**RS400**
Per unit	**E$**	**E$**	**E$**	**E$**
Variable production costs	23.60	28.20	32.50	36.00
Fixed production costs	4.08	5.10	5.71	6.12
Total production costs	27.68	33.30	38.21	42.12
Buy-in price	26.00	28.00	35.00	39.00
Labour hours per unit	0.20	0.25	0.28	0.30

Reference Material Pre-seen

Write the report for Ben Da Silva, Finance Director, in the box below:

Paragraph

Reference Material Pre-seen

In early January 2021, you receive the following email from Sophie Jacobs, Finance Manager

From: Sophie Jacobs, Finance Manager
To: Finance Officer
Subject: Variance analysis and KPIs

I have just been looking at the sales variance report for the new range of e-bikes for the first quarter (attached). As you know our e-bikes are all sold through our website. Overall the sales performance is concerning and there are some areas which require further investigation. I have discussed this with Anthea Mansell, the Sales and Marketing Director and she has given me the following information:

a. The 'Urban' bike was featured in a well-known cycling magazine and given an excellent review.
b. To boost sales of the 'Mountain' bike, we decided to run a special promotion in November and December offering a 20% discount on the retail price.
c. A leading retailer of e-bikes with stores throughout the country, ran a major marketing promotion throughout November offering a 20% price discount and maintenance deals on their full range of e-bikes.
d. There was a quality issue encountered with one of the parts used only in the 'Sport' bike. This has since been resolved but resulted in a lack of available inventory of the 'Sport' bike.

Please prepare a draft report that I can present at the next management meeting including an explanation of:

- How each of the variances have been calculated, the reasons why they may have arisen and what they tell us about market conditions.

(sub-task (a) = 40%)

- The potential benefits in this case, of separating the variances into planning and operational variances.

(sub-task (b) = 24%)

We get really good data analytics from our website which we review on an informal basis. I would like to utilise this data on a more formal basis to develop key performance indicators (KPIs) which would enable us to assess the current and potential sales performance of our products.

- Please also suggest three KPIs, based on the data analytics from our website, explaining how they would be calculated and why they would be appropriate.

(sub-task (c) = 36%)

Many thanks

Sophie Jacobs
Finance Manager
ChargeIT

The attachment to this email can be found by clicking on the Reference Materials button above.

Sales variance analysis for the quarter October - December 2020

Model	Budgeted sales (units)	Actual sales (units)
Urban	480	560
Sport	420	380
Mountain	300	320
Total	**1,200**	**1,260**

	Budgeted selling price per unit	Budgeted profit per unit
	E$	E$
Urban	1,000	520
Sport	1,200	564
Mountain	1,900	836

	Sales price variance	Sales mix profit variance	Sales quantity profit variance
	E$	E$	E$
Urban	0	29,120 F	12,480 F
Sport	0	34,404 A	11,844 F
Mountain	80,000 A	4,180 F	12,540 F
Total	**80,000 A**	**1,104 A**	**36,864 F**

Note: the sales mix and quantity variances have been calculated using the individual units' method.

Reference Material Pre-seen

Write the draft report for Sophie Jacobs, Finance Manager, in the box below:

Paragraph

Thank you for completing the Operational Case Study Exam.

Before you leave, don't forget to collect your printed confirmation of attendance.

Please click the End Exam (E) button before leaving the testing room quietly.

Operational Case Study Exam

Maximum Time Allowed: 3 Hours

Welcome, Candidate Name

If this is not your name, please let your administrator know.

Click **Next** to start the test.

This examination is structured as follows:

Section (task)	Time for section (minutes)	Number of answer screens	Number of sub-tasks	% time to spend on each sub-task
1	45	1	2	(a) 48% (b) 52%
2	45	1	3	(a) 28% (b) 32% (c) 40%
3	45	1	2	(a) 52% (b) 48%
4	45	1	2	(a) 68% (b) 32%

Each section (task) has a number of sub-tasks. An indication of how much of the time available for the section that you should allocate to planning and writing your answer is shown against each sub-task in the text of the question (and summarized in the table above).

This information will be available for you to access during the examination by clicking on the Pre-seen button.

Reference Material Pre-seen

Today is 1 June 2020. It has just been announced that the company is to launch a new model of robotic lawn mower that can be operated using a mobile phone app. The lawnmower can be operated manually but it is expected that the majority of customers will also purchase the app. Production and sales of the lawn mowers are expected to commence in July 2020. The development of the mobile phone app has recently been completed using freelance specialist software developers. Our own IT staff will in future be responsible for ongoing maintenance of the app. You receive the following email from Sophie Jacobs, Finance Manager.

From: Sophie Jacobs, Finance Manager
To: Finance Officer
Subject: Minimum pricing and costing of the new product

You will have heard about our plan to launch a new model of robotic lawnmower which can be operated using a mobile phone app. The Senior Management Team (SMT) has decided to charge a low price for the new product, in the first few months after the product is launched, in order to make an impact in this market and quickly gain market share. I have already put together an estimate of the costs of the new product and the app (attached) based on information that I obtained from Jack Martinez, Production Director. The cost per unit of E$600 is based on estimated sales volumes of 2,500 units each year. The estimate uses a full cost approach, but I have now been asked to determine the minimum price that we could charge for the product. I would like your help with this. Please send me a report which:

- Explains, with clear justification, why each of the costs in the attached schedule and accompanying notes would be relevant or irrelevant to the minimum pricing decision. Also, please explain whether a relevant cost approach would be appropriate in this situation.

(sub-task (a) = 48%)

As this is the first time we have developed a digital product, the Senior Management Team (SMT) is keen to understand how the costs differ from those of a physical product. Please include in the report an explanation of:

- How the costs of the mobile phone app differ, in terms of the type of costs and the timing of their occurrence, compared to the lawn mower. Please also explain the potential issues with determining the unit cost of the mobile phone app for planning and decision-making purposes.

(sub-task (b) = 52%)

Many thanks

Sophie Jacobs
Finance Manager
ChargeIT

The attachment to this email can be found by clicking on the Reference Materials button above.

Cost of the new robotic lawn mower model with digital app July – December 2020

	Notes	E$
Direct material	1	552,500
Direct labour	2	75,000
Production overheads	3	150,000
Ongoing maintenance cost of the app	4	50,000
Amortisation cost of the app	5	25,000
Share of non-production overhead costs	6	647,500
Total cost		**1,500,000**
Cost per unit		**600**

Notes:

1. We would need to buy additional components and raw materials that are only used by the robotic lawnmower costing E$252,500. Other components and raw materials are required which are in continual use elsewhere in the business. These are held in inventory at a cost of E$300,000. The cost of replacing this inventory would be E$330,000.

2. The cost for direct labour represents 6,250 hours at the normal hourly rate of E$12 per hour. Direct labour is paid for a fixed number of hours at the normal hourly rate. As direct labour is in short supply, it has been decided that overtime will be worked specifically for this model to ensure we can meet demand. We would need to schedule 20% of the required production as overtime, for which a premium of 50% above the normal hourly rate will be paid. The remaining (80%) of the required production could be scheduled within the fixed paid hours.

3. Production overheads have been charged to the project using our current factory-wide overhead absorption rate based on labour hours. 85% of production overheads are fixed and 15% are variable.

4. The maintenance costs represent the ongoing costs of the app. These consist of variable costs relating to fees payable to service providers. It also includes a share of the IT department costs.

5. The development of the app cost E$250,000. The development costs will be amortised over 5 years at a rate of E$10 per unit.

6. The share of non-production overhead costs is based on a percentage of estimated sales revenue.

Reference Material Pre-seen

Write the report for Sophie Jacobs, Finance Manager, in the box below:

Paragraph

A week later, you are called into the office of Sophie Jacobs, Finance Manager

Sophie says:

"We are in the process of preparing the budgets for the new lawnmowers. As a result of the uncertainty surrounding price, volumes and production costs, Ben has requested that we prepare a detailed analysis to present to the SMT.

I have therefore prepared a spreadsheet giving a what-if analysis, which I will hand over to you shortly. I would be grateful if you would prepare a briefing paper explaining:

- The figures in the spreadsheet and what they tell us about the impact on profit of potential changes to variables.

(sub-task (a) = 28%)

- The benefits and limitations of what-if analysis.

(sub-task (b) = 32%)

In view of the uncertainty, I would also like to consider whether it may be worthwhile using a rolling budget approach for all our budgets, rather than our current approach where we budget annually.

Please include in the briefing paper an explanation of:

- The potential advantages and disadvantages of adopting a rolling budget approach compared to our current budgeting approach." (40%)

(sub-task (c) = 40%)

Box end
You tell Sophie that you will send her the briefing paper as soon as possible.

Sophie's spreadsheet can be found by clicking on the Reference Materials button above.

What-if analysis spreadsheet for new model robotic lawnmower July – December 2020

			Profit at different sales volumes			
Selling price per unit	**Variable costs per unit**	**Fixed costs**	**2,000 units**	**2,250 units**	**2,500 units**	**2,750 units**
E$	**E$**	**E$**	**E$**	**E$**	**E$**	**E$**
840	240	850,000	350,000	500,000	650,000	800,000
	260		310,000	455,000	600,000	745,000
	280		270,000	410,000	550,000	690,000
740	240	850,000	150,000	275,000	400,000	525,000
	260		110,000	230,000	350,000	470,000
	280		70,000	185,000	300,000	415,000
640	240	850,000	(50,000)	50,000	150,000	250,000
	260		(90,000)	5,000	100,000	195,000
	280		(130,000)	(40,000)	50,000	140,000

Reference Material Pre-seen

Write the briefing paper for Sophie Jacobs, Finance Manager, in the box below:

Paragraph

Word Count : 0

A few days later, you receive the following email from Sophie Jacobs, Finance Manager

From: Sophie Jacobs, Finance Manager
To: Finance Officer
Subject: Decision criteria and inventory valuation of existing model of robotic lawnmowers

The SMT has not yet made a final decision on the pricing of the new model of robotic lawnmower. Anthea Mansell, the Sales and Marketing Director, has now advised us that the introduction of the new model will impact on sales volumes of the existing model. She thinks that the extent of the impact will depend on the selling price chosen. The SMT is concerned about the uncertainty surrounding the selling price decision. Ben Da Silva, Finance Director, has been asked to present a report at the next Board meeting and has asked for our help with this.

I have attached a schedule including a payoff table (Table 1) showing the contribution which will be earned from the new model net of any lost contribution from the existing model. I have also prepared a regret matrix (Table 2).

Please prepare a report, that I can review before I send it to Ben, which explains:

- The figures shown in the payoff table and how the maximax, maximin, and minimax regret decision criteria would be used to select the selling price. Please also state the selling price that would be chosen under each criterion.

(sub-task (a) = 52%)

The SMT is also considering whether to reduce the inventory held of the existing model. There are a number of potential options to do this as follows:

1. sell the inventory to a brand clearance outlet; or
2. run a price promotion on the existing model in our retailer's stores and online; or
3. rework the inventory of the existing model to convert it into the new model.

I have prepared a few notes on these options which are included in Table 3 of the attached schedule.

Please also include the following in the report:

- An explanation of the specific requirements under *IAS 2 Inventories* and how they would apply to each of the three options including details of the costs to include or exclude. Please also explain whether each of the options would require a write-down and the impact of a write-down on profits and cash flows.

(sub-task (b) = 48%)

Many thanks

Sophie Jacobs
Finance Manager
ChargeIT

The attachment to this email can be found by clicking on the Reference Materials button above.

Table 1: Net contribution from sale of new robotic lawnmower July - December 2020

	Selling price of new model		
	E$	E$	E$
	640	740	840
Impact on existing model			
Low	1,082,501	1,062,800	952,534
Medium	911,001	971,334	929,667
High	796,668	857,001	872,501

Table 2 – Regret matrix

	Selling price of new model		
	E$	E$	E$
	640	740	840
Impact on existing model			
Low	0	19,701	129,967
Medium	60,333	0	41,667
High	75,833	15,500	0

Table 3: Inventory clearance options

Options	Notes
Clearance outlet	We should be able to negotiate a selling price just above our cost price, but we would incur the costs of delivering the inventory to the outlet's distribution hub. There would also be an opportunity cost as potentially this lower selling price will impact on future sales of this model and on sales of the new model.
Price promotion on the existing model in store	We may need to offer a significant discount on our regular prices, but prices achieved would be higher than the amount the clearance outlet would pay. I am very concerned however about significant damage to sales of our new model as customers prepared to pay the higher price for the new model might opt instead for the reduced price existing model.
Rework	The inventory could be reworked to convert the products into the new model. There would be some additional costs to dismantle the products and some additional conversion costs. There would also be a small amount of wastage from each unit.

Reference Material Pre-seen

Write the report for Sophie Jacobs, Finance Manager, in the box below:

Paragraph

Reference Material Pre-seen

In early October 2020, you receive the following email from Sophie Jacobs, Finance Manager

From: Sophie Jacobs, Finance Manager
To: Finance Officer
Subject: Variance analysis report and sourcing a new supplier

I have attached an extract from the variance analysis report for the new robotic lawn mower model for the quarter July-September 2020 (Table 1). The sales performance has been excellent with sales volumes exceeding budget by 20%. There have however been a number of production issues arising during the period. I have discussed the report with Jack Martinez, the Production Director, and he has given me some useful information.

a. There were some quality issues with one of the components, RB25, which resulted in delays in production and a number of units having to be reworked by replacing component RB25. The problem with component RB25 was not identified until early September 2020 and as a result some products were returned for repair under warranty.
b. We placed an urgent order for component RB25 with another supplier however due to the urgency, the price charged by the supplier was very high.
c. It was evident that the estimate of labour time required for the new product was too low.
d. Due to the high demand and in order to ensure that sufficient inventory was available in the retail stores we had to work overtime, specifically on this product, during the period.
e. The power company which supplies the electricity for our machinery has unexpectedly changed their tariffs with the result that our power costs reduced during the period.

Please prepare a draft report giving a commentary on the figures including:

- An explanation of each of the variances and the reasons why they may have arisen, clearly explaining the linkages between the variances.

(sub-task (a) = 68%)

In view of the problems we have experienced with component RB25, we have decided to source a new supplier. Ethan Becker, Procurement Manager, has provided us with details of three prospective suppliers (Table 2) and has asked for our help in producing a financial evaluation. Please include in your draft report:

- A comparison of the potential suppliers in terms of their financial stability, liquidity and the credit terms they may offer ChargeIT.

(sub-task (b) = 32%)

Many thanks

Sophie Jacobs
Finance Manager
ChargeIT

The attachment to this email can be found by clicking on the Reference Materials button above.

Table 1 - Extract from the variance analysis report for new robotic lawnmowers July – September 2020

	E$
Component RB25 price variance	3,800 A
Component RB25 usage variance	7,200 A
Direct labour rate variance	12,600 A
Direct labour efficiency variance	5,400 A
Variable production overhead efficiency variance	1,620 A
Variable production overhead expenditure variance	1,680 F
Fixed production overhead volume variance	12,750 F

Table 2 - Details of potential suppliers

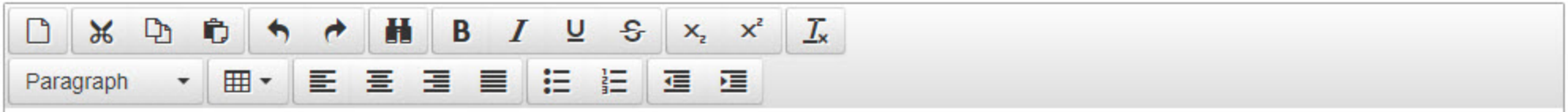
	Supplier A	Supplier B	Supplier C
Sales revenue	E$10 million	E$35 million	E$70 million
Inventory days	62 days	45 days	74 days
Receivable days	56 days	44 days	65 days
Payable days	50 days	62 days	45 days
Working capital cycle	68 days	27 days	94 days

Notes:

1. Supplier A is a small company which is known for the high quality of its products.
2. Supplier B is owned by a large company.
3. Supplier C has been longer established than the other two companies and has a number of contracts with large companies.

Reference Material Pre-seen

Write the draft report for Sophie Jacobs, Finance Manager, in the box below:



Thank you for completing the Operational Case Study Exam.

Before you leave, don't forget to collect your printed confirmation of attendance.

Please click the End Exam (E) button before leaving the testing room quietly.

Operational Case Study Exam

Maximum Time Allowed: 3 Hours

Welcome, Candidate Name

If this is not your name, please let your administrator know.

Click **Next** to start the test.

This examination is structured as follows:

Section number	Time for section (minutes)	Number of tasks	Number of sub-task/s	% time to spend on each sub-task
1	45	1	2	(a) 52% (b) 48%
2	45	1	2	(a) 48% (b) 52%
3	45	1	2	(a) 52% (b) 48%
4	45	1	3	(a) 32% (b) 36% (c) 32%

Each section (task) has a number of sub-tasks. An indication of how much of the time available for the section that you should allocate to planning and writing your answer is shown against each sub-task in the text of the question (and summarised in the table above).

This information will be available for you to access during the examination by clicking on the Pre-seen button.

Reference Material Pre-seen

Today is 1 June 2020. Sales demand has increased significantly following a review of the company's products in a well-known magazine. The magazine provided a detailed review of each of our product ranges and highly recommended the products. It also presented an innovation award to the company. The unexpected increase in sales demand is expected to create some issues including production capacity constraints and pressure on warehouse space.

From: Sophie Jacobs, Finance Manager
To: Finance Officer
Subject: Linear programming and cost drivers

I have just come out of a Senior Management Team (SMT) meeting during which we discussed the increase in demand for our products. Jack Martinez, Production Director, informed us that there are sufficient moulding machine hours to produce the original budgeted output of 168,475 Floorcare products and 106,950 Garden products but that this is the maximum capacity of the machines. He also said that there is likely to be a shortage of labour hours depending on the sales demand. He has asked for our help in determining a production plan. We have contractual arrangements with our major retailers which means there is a minimum production requirement for each of our ranges.

I have produced a linear programming graph depicting the position for July – December 2020 (attached). I would like you to prepare a draft report which I will present at the next SMT meeting.

Please include the following in your report:

- An explanation of the graph and how the optimum production plan can be determined using the graph. Please also include a discussion on why it may not be appropriate to proceed with this production plan and how the graph might be improved to enable an appropriate production plan to be determined.

(sub-task (a) = 52%)

The SMT would also like us to determine the impact of the increase in sales volume on profit. I have already done some work on manufacturing costs but would like your assistance with reviewing our finished goods warehouse costs.

I have attached details of the activities carried out by three of the teams within the warehouse, Receiving, Picking and Packing and would like you to do the following:

- Identify the cost drivers for the activities and explain how these could be used to determine the costs of operating the warehouse. Please also explain how the cost drivers could be used to control the cost of the activities.

(sub-task (b) = 48%)

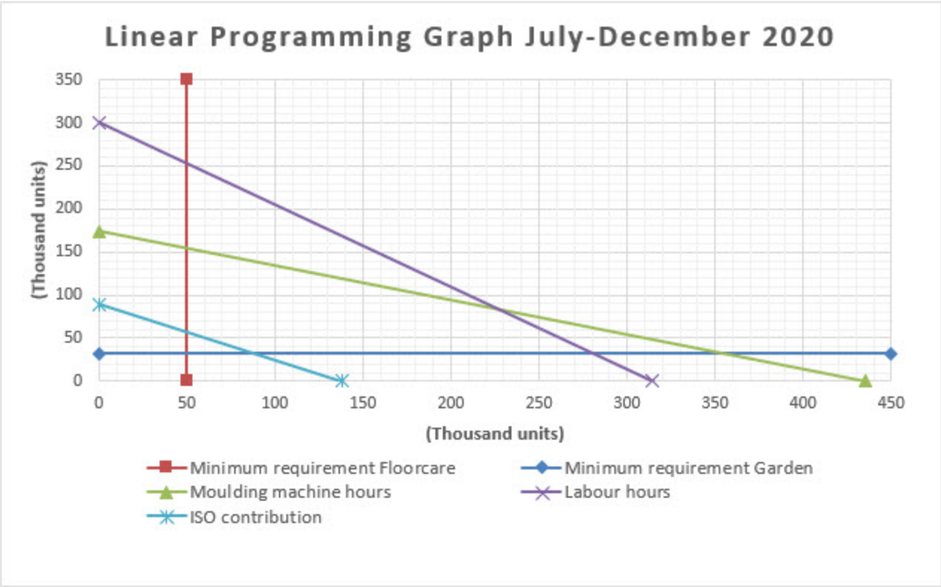
Many thanks

Sophie Jacobs
Finance Manager
ChargeIT

The attachment to this email can be found by clicking on the Reference Material button above.

Linear Graph | WareHouse Activities

Linear programming graph



July - December 2020	Floorcare	Garden
Original budgeted sales volume (units)	168,475	106,950

Close

Linear Graph | WareHouse Activities

Warehouse activities for finished products

Team	Description of activities performed	Costs
Receiving	Finished products are received from the factory in batches of individual products. They are taken by forklift truck to the assigned storage bay where they are stored. Each product has at least one storage bay, but some have many. If there is more than one bay needed for a particular product, we try to keep these as close together as possible.	Wages of receiving staff Depreciation of forklift trucks
Picking	Orders are picked from storage bays manually by staff and taken to the packing hub.	Wages of picking staff
Packing	Online orders and orders from retailers are packed into suitable boxes in the packing hub. Our staff select a box from our range of boxes, pack the product inside the box and add packing materials to protect the item and fill the box. Orders for multiple items are bound together with plastic sheeting and binding strips.	Wages of packing staff Packing boxes Packing materials

Reference Material Pre-seen

Write the draft report for Sophie Jacobs, Finance Manager, in the box below:

Paragraph

Reference Material Pre-seen

A few days later, you receive the following email from Sophie Jacobs, Finance Manager.

From: Sophie Jacobs, Finance Manager
To: Finance Officer
Subject: Decision criteria and flexible budgeting

The SMT are keen that we should meet the increased demand for our products and are considering outsourcing some of the production of our plastic parts. We have identified a preferred supplier, but the supplier's terms require that we guarantee in advance the quantity that we will purchase from them.

We have sufficient capacity to produce our original budgeted volume in-house however the SMT would like guidance on the level of additional plastic parts to order from the supplier. There is still uncertainty over the sales demand, but we need to decide as soon as possible whether to place a low, medium or high order with the supplier. Any excess plastic parts will need to be recycled, at an additional cost, due to both their brittle nature and the lack of available storage space.

I have attached a payoff table (Table 1), which shows the incremental contribution we would earn above the original budget from each of the nine possible combinations of order level and increased sales demand. I have also produced a regret matrix (Table 2).

Please prepare notes that I can take to the SMT meeting which provide:

- An explanation of the figures shown in the payoff table and how the maximax, maximin, and minimax regret decision criteria would be applied to select the order level. Please also state the order level that would be chosen under each criterion.

(sub-task (a) = 48%)

The SMT has also requested that we prepare revised budgets for the second half of the year. In view of the uncertainty surrounding sales demand, I think it may be helpful to use flexible budgets. I have attached a copy of the existing budget (Table 3) and would be grateful if you would include the following in your notes:

- An explanation of how we would prepare a flexible budget and the benefits of using flexible budgets for planning purposes.

(sub-task (b) = 52%)

Many thanks

Sophie Jacobs
Finance Manager
ChargeIT

The attachment to this email can be found by clicking on the Reference Material button above.

Table 1: Incremental contribution in E$000 for period July – December 2020

	Order for additional plastic parts		
	Low 10% of budget	**Medium 15% of budget**	**High 20% of budget**
Sales demand			
10% above budget	2,973	2,766	2,559
15% above budget	2,973	4,459	4,252
20% above budget	2,973	4,459	5,945

Table 2: Regret matrix E$000

	Order for additional plastic parts		
	Low 10% of budget	**Medium 15% of budget**	**High 20% of budget**
Sales demand			
10% above budget	0	207	414
15% above budget	1,486	0	207
20% above budget	2,972	1,486	0

Table 3: Budget for the period July to December 2020

	Floorcare products	**Garden products**
Quantity (units)	168,475	106,950
	E$000	**E$000**
Sales revenue	26,804	23,753
Direct materials	(10,143)	(7,461)
Direct labour	(1,315)	(1,167)
Production overheads	(2,629)	(2,334)
Gross profit	12,717	12,791
Non-production overheads*	(10,575)	(9,372)
Operating profit	**2,142**	**3,419**

* Non-production overheads have been apportioned based on sales revenue.

Reference Material Pre-seen

Write the notes for Sophie Jacobs, Finance Manager, in the box below:

Paragraph

Reference Material Pre-seen

A few days later, you are called into the office of Ben Da Silva, Finance Director

Ben says:

"The company has now decided to purchase a new injection moulding machine to deal with the higher demand. I have prepared a list of the costs which will be incurred for the machine and would like you to confirm how the machine and the associated costs will be treated in the financial statements. I will give you the list shortly.

There has also been some concern expressed by the sales managers about the revised budgets and targets which we prepared. They are unhappy about their lack of involvement in producing the revised sales figures. As you know, we currently do not involve the sales managers in the budget setting process although we do expect them to achieve the budget set.

I am attending a meeting of the SMT next week and these developments are on the agenda. In Sophie's absence on holiday, I would be grateful if you would produce a briefing paper including:

- An explanation of the criteria for capitalisation of costs under *IAS16 Property, Plant and Equipment* and whether the moulding machine meets these criteria. Please also explain the treatment, as either capital or revenue expenditure, for each of the individual costs in Ben's list, based on the requirements of *IAS16*.

(sub-task (a) = 52%)

- An explanation of a responsibility accounting system and whether or not it would be beneficial in future to allow the sales managers to participate in setting budgets and targets for sales volumes and revenue.

(sub-task (b) = 48%)

Many thanks."

You tell Ben that you will send him the briefing paper as soon as possible.

Ben's list of costs can be found by clicking on the Reference Material button above.

Table 1: Costs relating to new injection moulding machine

Cost item	Notes	E$
Machine purchase cost including VAT	(1)	60,000
Building work required to adjust the factory layout	(2)	7,000
Installation cost	(3)	4,000
Training costs	(4)	2,000
Maintenance and service contract cost	(5)	3,000

Notes:

(1) The purchase price of the machine includes the cost of delivery to the factory.
(2) The building work will be carried out by a building contractor prior to the machine being installed.
(3) The installation will be carried out by the company supplying the machine.
(4) The training will be carried out by the company supplying the machine.
(5) The maintenance and service contract cost is for the first year. The contract can be renewed at the end of the first year.

Reference Material Pre-seen

Write the briefing paper for Ben Da Silva, Finance Director, in the box below:

Paragraph

Reference Material Pre-seen

In early October 2020, you receive the following email from Sophie Jacobs, Finance Manager

From: Sophie Jacobs, Finance Manager
To: Finance Officer
Subject: Quarterly performance report and short-term investment opportunities

Ben Da Silva, Finance Director, will be attending a SMT meeting next week and would like us to prepare a briefing paper covering a couple of items which are on the agenda.

Firstly, I have attached a sales variance analysis for our floorcare range for last quarter (Table 1). The variance analysis is for sales through all channels. I have also attached some KPIs for all our product ranges. The KPIs are based on the data analytics from our website.

I have discussed the sales variance analysis and KPIs with Anthea Mansell, the Sales and Marketing Director, and she has given me some useful information.

1. The magazine article recommending our products included a voucher offering a 10% discount on our floorcare range. The voucher could only be redeemed online and was valid until 31 August.
2. A major competitor released a new model of hand-held vacuum cleaner which has better battery life and cleaning power than our hand-held models.
3. During the period we released a new model of robotic vacuum cleaner which can be operated using a mobile phone app.
4. There were problems with some of the plastic parts that we bought-in from an external supplier with the result that there were inventory shortages in July across the whole range. The shortages affected online sales only as we ensured that orders from our major retailers were met in full.

Please include in the briefing paper:

- An explanation of how each of the sales variances have been calculated and the reasons why they have arisen.

(sub-task (a) = 32%)

- An explanation of the reasons why the targets have not been achieved or have been exceeded. Please also explain why the KPIs provide useful information about the online sales performance of our products and the operation of our website.

(sub-task (b) = 36%)

Secondly, the increase in sales demand has resulted in a short-term cash surplus and the SMT would like to consider short-term investment opportunities for the surplus cash. Please also include in the briefing paper:

- An explanation of the factors that we need to consider when choosing short-term investments and two suggestions of suitable short-term investments for the surplus cash.

(sub-task (c) = 32%)

Many thanks

Sophie Jacobs
Finance Manager
ChargeIT

The attachment to this email can be found by clicking on the Reference Material button above.

Table 1: Sales variance analysis for the Floorcare range: July - September 2020

Product type	Budgeted sales (units)	Actual sales (units)	% above budget
Upright vacuum cleaners	51,750	59,200	14.4%
Stick vacuum cleaners	8,625	10,400	20.6%
Hand-held vacuum cleaners	21,563	22,800	5.7%
Robotic vacuum cleaners	2,300	2,900	26.1%
Total	**84,238**	**95,300**	**13.1%**
	Sales price variance	**Sales mix profit variance**	**Sales quantity profit variance**
	E$	**E$**	**E$**
Upright vacuum cleaners	414,400 A	49,234 F	511,379 F
Stick vacuum cleaners	72,800 A	41,594 F	73,337 F
Hand-held vacuum cleaners	296,400 A	92,089 A	163,526 F
Robotic vacuum cleaners	58,000 F	85,517 F	86,683 F
Total	**725,600 A**	**84,256 F**	**834,925 F**

Note: the sales mix and quantity variances have been calculated using the individual units method based on the average profit for each product type.

Table 2: Key performance indicators for the quarter July - September 2020

KPI	Target	Actual
New customer orders v returning customer orders	70%/30%	82%/18%
Conversion rate *	5%	6.2%
Shopping cart abandonment rate **	65%	54%

* Conversion rate is calculated as the total number of customers buying products divided by the total number of visitors to the site

** Shopping cart abandonment rate refers to how many shoppers are adding products to their shopping cart but then not checking out. It is calculated as number of shoppers abandoning the shopping cart divided by number of shoppers adding products to the shopping cart.

Reference Material Pre-seen

Write the briefing paper for Sophie Jacobs, Finance Manager, in the box below:

Paragraph

Thank you for completing the Operational Case Study Exam.

Before you leave, don't forget to collect your printed confirmation of attendance.

Please click the End Exam (E) button before leaving the testing room quietly.

Operational Case Study Exam

Maximum Time Allowed: 3 Hours

Welcome, Candidate Name

If this is not your name, please let your administrator know.

Click **Next** to start the test.

This examination is structured as follows:

Section number	Time for section (minutes)	Number of tasks	Number of sub-task/s	% time to spend on each sub-task
1	45	1	2	(a) 52% (b) 48%
2	45	1	3	(a) 44% (b) 36% (c) 20%
3	45	1	3	(a) 36% (b) 24% (c) 40%
4	45	1	3	(a) 40% (b) 20% (c) 40%

Each section (task) has a number of sub-tasks. An indication of how much of the time available for the section that you should allocate to planning and writing your answer is shown against each sub-task in the text of the question (and summarised in the table above).

This information will be available for you to access during the examination by clicking on the Pre-seen button.

Reference Material Pre-seen

Today is 1 June 2020. At last week's Senior Management Team (SMT) meeting the performance of the business was discussed. Since March 2020 the rate of sales growth has started to decline as a result of market pressure from competitors. In addition, production costs have grown leading to a fall in gross profit. At the meeting it was decided to consider a new promotional campaign to promote ChargeIT's entire range of products and to undertake a review of company operations in a bid to establish better cost control.

Ben Da Silva, Finance Director, calls you into his office where he says:

'I have been tasked with managing the operational review of the business agreed at last week's SMT meeting. I believe that it is vital that we seek to improve our cost-competitiveness and have been doing some reading about this. In particular, I was reading an article yesterday about CGMA's cost transformation model which has six areas for consideration (which I've included on a schedule which I'll give you shortly). I think as a starting point for the operational review it would be useful to send a briefing paper to all members of the SMT about this.

I would like you to prepare a first draft of the briefing paper to include an explanation of:

- The six areas of the CGMA cost transformation model and how these apply to our business.

(sub-task (a) = 52%)

At last week's meeting, it was also agreed to consider investing in a new promotional campaign within Eastland to help boost sales. Anthea Mansell, Sales and Marketing Director, has been looking into this and is considering three different campaigns, each with a different cost and a different focus. Given the current state of the economic environment in Eastland, Anthea is unsure how the market will react to each campaign. She thinks that there is a 20% chance of it being very good, a 40% change of it being good and a 40% chance of it being poor. Before she went on leave, Sophie Jacobs, Finance Manager prepared a schedule showing Anthea's estimates and expected values, standard deviations and coefficient of variations for each campaign.

I would like you to include in the draft briefing paper an explanation of:

- What the expected values, standard deviations and coefficient of variations on Sophie's schedule mean and how different attitudes to risk will affect the decision about which promotional campaign to choose. Please also explain any limitations of basing our decision about which campaign to choose solely on the information in the schedule.'

(sub-task (b) = 48%)

Ben then hands you a schedule which can be found by clicking on the Reference Material button above.

CGMA'S COST TRANSFORMATION MODEL: THE SIX AREAS

1. Engendering a cost-conscious culture
2. Managing the risk inherent in driving cost-competitiveness
3. Understanding cost drivers and cost accounting systems and processes
4. Connecting products with profitability
5. Generating maximum value through new products
6. Incorporating sustainability to optimise profits

IMPACT OF EACH PROMOTIONAL CAMPAIGN

Note: The estimated additional profit in the tables below is after campaign costs.

Campaign 1:

Estimated additional profit in E$	Probability	Expected value E$
1,200,000	0.2	240,000
500,000	0.4	200,000
150,000	0.4	60,000
Expected value		**500,000**

Standard deviation = E$383,406 and co-efficient of variation = 0.77

Campaign 2:

Estimated additional profit in E$	Probability	Expected value E$
1,600,000	0.2	320,000
550,000	0.4	220,000
(50,000)	0.4	(20,000)
Expected value		**520,000**

Standard deviation = E$602,993 and co-efficient of variation = 1.16

Campaign 3:

Estimated additional profit in E$	Probability	Expected value E$
1,900,000	0.2	380,000
400,000	0.4	160,000
(350,000)	0.4	(140,000)
Expected value		**400,000**

Standard deviation = E$821,583 and co-efficient of variation = 2.05

Reference Material Pre-seen

Write the briefing paper requested by Ben Da Silva in the box below.

Paragraph

Reference Material Pre-seen

A few days later Sophie Jacobs, Finance Manager sends you the following email:

From: Sophie Jacobs, Finance Manager
To: Finance Officer
Subject: Review of sales channels and budgeting for the distribution centre

As part of the operational review, I have been doing some work analysing our sales variances for the first five months of the year in greater depth than we normally do. One area of sales that has been slightly disappointing within Eastland is garden products. This is despite the following unbudgeted promotion that happened in the period:

- From 1 April 2020 until 31 May 2020, there was a promotional offer of a 30% discount across our entire range of garden products if purchased through our on-line sales channel.

We did lose a large garden products retailer in Eastland in February 2020 but did gain two new smaller garden products retailers in March and April 2020. I am in the process of calculating sales variances for each garden product by sales channel (on-line and through retailers) and have so far calculated the variances for our best-selling lawn mower model (see attached). I would like you to draft the commentary that will accompany this in a briefing paper which Ben would like to send to the senior management team (SMT).

In addition to looking at the variances in more depth, Ben has been looking at our distribution costs. He feels that there is potentially slack in some of the budgets, especially for the finished goods warehouse and would like to consider the use of activity-based budgeting (ABB). He has asked for the briefing paper that he is going to send to the SMT to include sections on how this would be applied and the benefits of the approach. I've included some information on the attached schedule about the finished goods warehouse.

So, to summarise, please draft content for a briefing paper to the SMT which explains:

- What the sales price variances, sales mix profit variances, sales quantity profit variance and total variance shown on the attached schedule mean and the possible reasons for their occurrence.

(sub-task (a) = 44%)

- How a revised budget for the employee costs in the Finished Goods Distribution Warehouse could be established using an activity-based budgeting approach. Please illustrate your explanation with reference to both of the activities of receiving finished goods inventory and placing of loaded pallets onto delivery trucks identified in the attachment.

(sub-task (b) = 36%)

- The benefits of using an activity-based budgeting approach for establishing the warehouse employee cost.

(sub-task (c) = 20%)

Sophie Jacobs,
Finance Manager,
ChargeIT

The attachment to the email can be found by clicking on the Reference Material button above.

SALES VARIANCES FOR LAWN MOWER MODEL 128B BY EASTLAND SALES CHANNEL: JANUARY TO MAY 2020

Variance	On-line E$	Retailers E$	Total E$
Sales price	96,200 A	139,840 F	43,640 F
Sales mix profit	94,147 F	26,092 F	120,239 F
Sales quantity profit			246,754 A
Total			**82,875 A**

Note:

1. The sales mix and quantity variances are calculated using the weighted average method. The weighted average budgeted gross profit per lawn mower across the two sales channels is E$167.86. The budgeted gross profit for each sales channel is as follows:

	On-line E$	Retailers E$
Budgeted gross profit	251.25	144.75*

*This is the average for all retailers in Eastland

FINISHED GOODS WAREHOUSE INFORMATION

- There are 34 employees that work in the finished goods warehouse and two of the activities they undertake are:
  - Receiving finished goods from the production facility. Finished goods are delivered to the warehouse on pallets (each pallet is the same size). A pallet will only have a single model on it even if this means that there is spare space on the pallet. These pallets are taken to the appropriate storage area in the warehouse by forklifts.
  - Placing pallets from the dispatch area of the warehouse which have already been loaded with customer orders onto delivery trucks ready for dispatch to our Eastland retailers and to our non-Eastland distributors. Each of our trucks has the same capacity for pallets (which are all the same size) and on average delivery trucks are sent out for delivery at 85% of this capacity.
- There is a single Warehouse Manager in the Finished Goods Warehouse who makes all decisions about employee recruitment in the warehouse. This Warehouse Manager is not held accountable for the costs of operating the warehouse.

Reference Material Pre-seen

Write the draft briefing paper requested by Sophie Jacobs in the box below.

Paragraph

Reference Material Pre-seen

A month later Sophie Jacobs, Finance Manager calls you into her office and says:

'The directors are really happy that there are early signs that the promotional campaign we launched last month is generating additional sales. However, the operational review has shown up a few areas of the business which are not operating as efficiently as they might, including distribution of finished goods. Ben Da Silva, Finance Director, believes that part of the problem is that we've always used an incremental approach to budgeting and has suggested that we consider 'beyond budgeting'.

I would like you to prepare a briefing paper for the directors which explains:

- The principles of a 'beyond budgeting' approach, how we might apply these principles and the benefits of doing this for our business.

(sub-task (a) = 36%)

The directors are particularly concerned that the distribution function isn't as efficient as it could be. They want to increase the level of accountability of the Warehouse Manager and would like to introduce key performance indicators (KPIs) to help assess his performance.

Please include in the briefing paper to the directors:

- Suggestions of two KPIs that we could introduce to monitor the performance of the Finished Goods Warehouse Manager. For each KPI explain how it would be calculated and why it would be appropriate.

(sub-task (b) = 24%)

In order to make the distribution function more efficient Gavin has suggested installing robotic processing automated (RPA) systems and equipment within the finished goods warehouse to take over the picking and packing of orders. This will require considerable investment and installation is planned for approximately six months' time.

Before any of this happens though, a decision needs to be made about some of our old small capacity forklift trucks. Option A is to keep operating these forklift trucks for the next six months and Option B is to sell these forklift trucks now and lease larger and more efficient forklift trucks for the six-month period. The details of both options are included in a schedule which I will give to you shortly.

Please also include in the briefing paper to the directors an explanation of:

- How we would make a decision from a financial perspective about whether to choose Option A or Option B, giving reasons why each cost would or would not be included in this decision process. Please also explain any non-financial factors that we should consider before making a final decision.'

(sub-task (c) = 40%)

Sophie then hands you a schedule which can be found by clicking on the Reference Material button above.

FORKLIFT TRUCK DECISION

Option A
Keep using the forklift trucks for six months. This will result in a charge of E$5,000 for depreciation and will cost E$8,000 in fuel and repair costs during the period. At the end of six months the forklift trucks are expected to be sold for E$24,000 before selling costs of E$800.

Option B
Sell the forklift trucks now for E$30,000 before selling costs of E$1,000. Lease more efficient forklift trucks at a cost of E$15,000 for the period. These will cost E$4,000 for fuel for the period and will not incur repair costs. Due to the improved vehicle efficiency there will be estimated labour cost savings of E$4,500 for the period.

Reference Material Pre-seen

Write the briefing paper requested by Sophie Jacobs in the box below.

Paragraph

Reference Material Pre-seen

It is now December 2020. In September 2020 the directors decided to go ahead with installing robot process automation (RPA) in the finished goods warehouse. They have been sourcing the equipment and software systems and a plan is in place to install the new equipment and software on 1 January 2021.

From: Sophie Jacobs, Head of Finance
To: Finance Officer
Subject: Distribution Centre

Plans to install RPA equipment and software in the finished goods warehouse are progressing well. As part of the upgrade the directors have decided to lease some of the robotic equipment required, to recondition some packing equipment and to purchase the rest of the equipment and software. I expect we'll have questions about how the lease and the reconditioned equipment will affect our financial statements at the next senior management team meeting and therefore I'd like to prepare a briefing paper to explain this. I've included the details of both the leased asset and the reconditioned asset on the attached schedule.

As a result of the investment that we are making, in upgrading the finished goods warehouse, our cash balance is going to be decreased significantly. As part of dealing with this, the SMT is considering taking a more aggressive approach to the management of working capital. In particular, the relatively high levels of raw materials, bought-in components and finished goods inventory is being questioned. Our current policy in respect of finished goods is to produce for inventory to ensure that there is a certain quantity of each model in inventory to satisfy sales orders as they come in. For bought-in components and raw materials inventory we hold a buffer of each item and take full advantage of bulk discounts where available.

I would like you to prepare content for a briefing paper for the SMT which explains:

- How the asset that has been leased will be initially recorded and then subsequently measured in our financial statements for the year ended 31 December 2021 and future years.

(sub-task (a) = 40%)

- How the expenditure incurred in reconditioning the packing equipment will affect our financial statements for the year ended 31 December 2021.

(sub-task (b) = 20%)

- How we might apply a more aggressive approach to the management of our inventories of raw materials, components and finished goods. Please also explain the possible implications for ChargeIT of your suggested actions.

(sub-task (c) = 40%)

Sophie Jacobs
Finance Manager
ChargeIT

The attachment to the email can be found by clicking on the Reference Material button above.

SCHEDULE PREPARED BY SOPHIE JACOBS

Asset to be leased:

- The lease will start on 1 January 2021, when the first payment of E$25,000 will be made.
- The asset being leased has a useful economic life of 15 years.
- The initial lease term is 10 years with payments of E$25,000 on 1 January each year. The lease cannot be cancelled during this period.
- After ten years, ChargeIT has the option to extend for a further five years, with lease payments of E$15,000 payable on 1 January each year. It is expected that this option will be taken.
- The interest rate implicit in the lease is 10%.

Asset to be reconditioned:

Asset	Carrying amount at 31 December 2020 E$	Plan of action
Packing equipment	61,000	This packing equipment is to be reconditioned in early January 2021 at a cost of E$34,000. This reconditioning will increase the speed it operates at and hence increase its capacity. It will also increase its useful economic life by two years so that its remaining useful life will be five years from 1 January 2021.

Reference Material Pre-seen

Write the briefing paper requested by Sophie Jacobs in the box below

Thank you for completing the Operational Case Study Exam.

Before you leave, don't forget to collect your printed confirmation of attendance.

Please click the End Exam (E) button before leaving the testing room quietly.

Operational Case Study Exam

Maximum Time Allowed: 3 Hours

Welcome, Candidate Name

If this is not your name, please let your administrator know.

Click **Next** to start the test.

This examination is structured as follows:

Section number	Time for section (minutes)	Number of tasks	Number of sub-task/s	% time to spend on each sub-task
1	45	1	3	(a) 28% (b) 40% (c) 32%
2	45	1	2	(a) 52% (b) 48%
3	45	1	4	(a) 24% (b) 20% (c) 24% (d) 32%
4	45	1	2	(a) 48% (b) 52%

Each section (task) has a number of sub-tasks. An indication of how much of the time available for the section that you should allocate to planning and writing your answer is shown against each sub-task in the text of the question (and summarised in the table above).

This information will be available for you to access during the examination by clicking on the Pre-seen button.

Reference Material Pre-seen

Today is 1 June 2020. The directors have recently decided to start selling the floorcare and garden product ranges in Asia through a single agent in the territory. You receive the following email from Anthea Mansell, Sales and Marketing Director:

From: Anthea Mansell, Sales and Marketing Director
To: Finance Officer
Subject: The Asian territory

As you know Ben Da Silva, Finance Director and Sophie Jacobs, Finance Manager are both away at a conference and in their absence, Ben told me that you would be able to help me. I am currently negotiating with two potential agents for the Asian market: Bryants and Hoppers. Whichever agent is chosen, it will be responsible for all aspects of managing customer relationships and distribution across the whole Asian territory. Both agents would like us to sign up for an initial contract period of one year, but are offering different terms:

Bryants will charge us a commission based on sales revenue. Two options are available: Option 1 is at a constant commission rate irrespective of sales revenue and Option 2 is at a commission rate that changes as sales revenue changes.
Hoppers will charge us a constant commission rate based on sales value and will also undertake a targeted promotional campaign on our behalf for a fee of E$2,000,000.

I am unsure how the market in Asia will react to our products: it could either be very good, good or poor. I anticipate that the additional targeted promotional campaign undertaken by Hoppers will increase sales volumes compared to what we anticipate if we use Bryants. I also anticipate that this targeted promotional campaign will increase the chances of the market reaction being very good. Before she went away, Sophie drew up a decision tree based on my estimates, showing the different options (see attached schedule).

In addition, I am conscious that whichever agent is chosen it will be responsible for all of the sales and distribution activities in Asia. I am keen that as part of a service level agreement (SLA) with the agent we include the need for it to report key performance indicators (KPIs) to us on a monthly basis. I would like your suggestions on what these might include.

Please prepare a briefing paper for me in which you:

- Explain the decision tree and how we should use it to make our decision about which agent to use.

(sub-task (a) = 28%)

- Explain the limitations of using this decision tree to make our decision. Please also explain any non-financial factors that need to be considered.

(sub-task (b) = 40%)

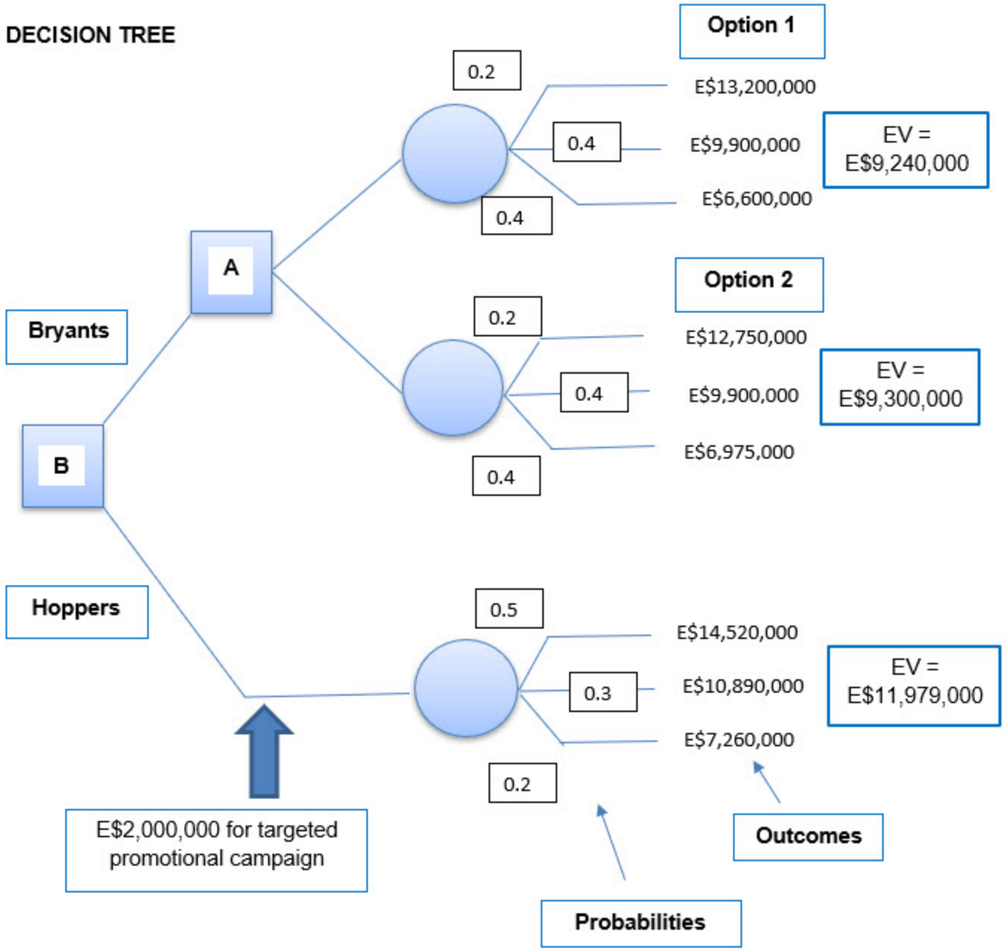
- Suggest and justify three KPIs which would be appropriate to assess the performance of the agent for the Asian market.

(sub-task (c) = 32%)

Anthea Mansell
Sales and Marketing Director
ChargeIT

The attachment can be found by clicking on the Reference Material button above.

DECISION TREE



Notes:

- It is anticipated that the market reaction in Asia will be either very good, good or poor.
- The outcomes are Anthea's estimates of the additional cash flows generated by selling in Asia (net of commission costs but not the additional promotional campaign spend). Anthea anticipates that the additional targeted promotional campaign undertaken by Hoppers will increase volumes sold by 10% for each market reaction compared to the volumes estimated for Bryants.
- The probabilities are Anthea's estimates of the chances of the market reaction being very good, good or poor. She anticipates that the targeted promotional campaign undertaken by Hoppers will increase the probability of a very good reaction.

Reference Material Pre-seen

Write the briefing paper requested by Anthea Mansell in the box below.

Reference Material Pre-seen

It is now two months later and sales in the Asian market are better than expected. Sophie Jacobs asks you to come to her office and says:

"Gavin Mansell, Managing Director is a little concerned that our fixed production overhead costs seem to be growing each month and wants more emphasis to be placed on controlling these costs. I sent him July's fixed production overhead variances earlier and he has now asked for an explanation of these variances and whether they are useful measures to help us manage fixed production overhead costs. I'll give you a schedule of these variances shortly.

Because sales to Asia have been higher than we anticipated, at the start of July we expanded our motor assembly line by purchasing and hiring additional equipment and taking on new trainees. There wasn't any time in July to carry out formal training for these new trainees, who have had to learn on the job by watching our experienced motor assembly employees. We also hired additional off-site warehouse space to store bought-in component inventory. In addition, most of our production employees did more overtime than usual to meet demand.

In a bid to improve cost control, Ben Da Silva, Finance Director has suggested that implementing activity-based costing (ABC) should be considered. Ben has asked me to send Gavin some information on how this approach differs to our current costing approach. He would like this to focus on how ABC would apply to the injection moulding part of our production process: I'll give you some information about the process shortly.

I would like you to draft a briefing paper that I can send to Gavin which explains:

- The three fixed production overhead variances and possible reasons why each has occurred. Please also explain the usefulness of these fixed production variances for managing fixed production overhead cost.

(sub-task (a) = 52%)

- How an ABC approach would affect the way that production overheads are allocated and absorbed compared to our current absorption costing system, with specific reference to the injection moulding part of our production process. Please also explain whether implementing an ABC system would be beneficial for cost control."

(sub-task (b) = 48%)

Sophie then hands you a schedule which can be found by clicking on the Reference Material button above.

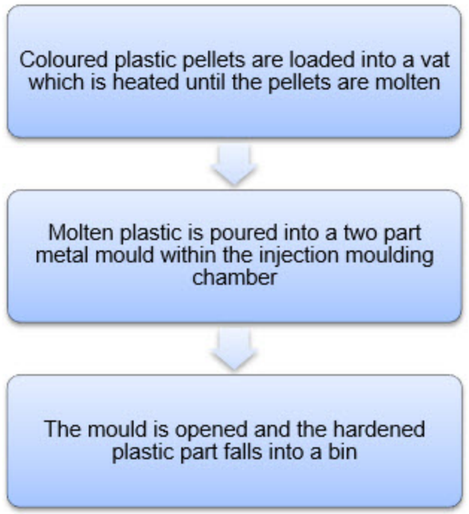
FIXED PRODUCTION OVERHEAD VARIANCES FOR JULY 2020

Variance	E$	
Fixed production overhead expenditure	25,034	Adverse
Fixed production overhead efficiency	19,374	Adverse
Fixed production overhead capacity	35,279	Favourable

Notes:

- Fixed production overheads are absorbed on the basis of a factory-wide fixed production overhead rate per direct labour hour.
- Direct labour hours are measured on the basis of productive hours rather than paid hours.

INJECTION MOULDING PRODUCTION PROCESS



Further notes on the injection moulding process

- Each time there is a plastic colour change the melting vat and the injection moulding machinery have to be cleaned.
- Currently, batches of plastic parts are scheduled by part rather than by colour. When a sufficient amount of a particular part has been made, the injection moulding machinery is reset with a different mould.

Reference Material Pre-seen

Write the draft briefing paper to Gavin Mansell as requested by Sophie Jacobs in the box below.

Paragraph

Reference Material Pre-seen

It is now two months later. It was decided over a month ago, as a result of the increasing sales in Asia and our other non-Eastland territories, to significantly expand production capacity within the factory. This involves installing a larger and more efficient finished goods assembly line within a previously unused part of the factory. New staff are also being recruited. You receive the following email from Sophie Jacobs, Finance Manager:

From: Sophie Jacobs, Finance Manager
To: Finance Officer
Subject: Production expansion

There was an SMT meeting last week where the progress of the production expansion was discussed as well as the production cost variances for the month of September. The expansion is progressing well. A new finished goods assembly line is in the process of being installed in a previously unused part of the factory and Jack Martinez, Production Director is making plans to sell the old assembly line equipment (see the attached schedule for details). The new finished goods assembly line attracts 100% first-year tax depreciation allowances. There wasn't time at the meeting to explain how any of this will be accounted for or the impact of the 100% first-year tax allowance on the amount of tax that we will pay and so I agreed to prepare a briefing paper on this.

Regarding the variances, the main point of discussion was around poor direct labour efficiency. Apparently, as a result of a few staff leaving and the increasing production levels, new direct production employees were taken on in September. Many of these had an assembly line experience, although as it turns out this experience did not transfer well to our assembly line. As a result of the discussion at the meeting last week, these employees have undertaken training so hopefully, the same issues won't arise this month. Ben Da Silva, Finance Director suggested at the meeting that a feedforward rather than a feedback approach to budgetary control might be more appropriate for the business and asked me to include an explanation of this in the briefing paper.

Please prepare a draft of the briefing paper that I need to send to the SMT which explains how:

- The expenditure on the new finished goods assembly line (as shown in Table 1 of the attachment) will be recorded in our statements of financial position and profit or loss for the year ended 31 December 2020.

(sub-task (a) = 24%)

- The 100% first-year tax depreciation allowance will impact the amount of tax we pay this year and in future years.

(sub-task (b) = 20%)

- The old assembly line identified in Table 2 of the attachment should be reflected in the financial statements for the year ended 31 December 2020.

(sub-task (c) = 24%)

- A feedforward control approach differs from a feedback control approach and the benefits to our business of using a feedforward control approach.

(sub-task (d) = 32%)

Sophie Jacobs
Finance Manager
ChargeIT

The attachment can be found by clicking on the Reference Material button above.

SCHEDULE OF INFORMATION ABOUT EXPANSION

Table 1: New equipment

The following expenditure will be incurred for the new finished goods assembly line:

	E$
Purchase price	1,000,000
Installation	125,000
Training of staff	5,000

- The new finished goods assembly line is expected to have a useful economic life of 15 years and will be operational from 1 November 2020.
- First year tax allowances of 100% are available for this type of asset.

Table 2: Changes to existing equipment

Existing Equipment	Plan of what will happen to the equipment
Finished goods assembly line	The old assembly line will be used until 31 October 2020 when its accounting carrying amount will be E$35,000. It will be dismantled during November at a cost of E$4,500. On 1 December 2020 it will be advertised for sale at a price of E$50,000 and it is anticipated that a buyer will be found in early 2021.

Reference Material Pre-seen

Write the draft briefing paper requested by Sophie Jacobs in the box below.

Paragraph

Pre-seen

It is a month later and Sophie Jacobs, Finance Manager telephones you and says:

"I need your help with a couple of things. Firstly, we have started to think about the budget for the year ended 31 December 2021. We've already got a good forecast of expected sales for the year and it should be reasonably easy to establish direct production costs. However, overheads will include some discretionary expenditure where we will have a choice over the amount that we spend. One example of this is maintenance costs associated with the maintenance of our production machinery (including the new assembly line recently installed and some new injection moulding equipment which has just been installed). Ben Da Silva, Finance Director, has suggested that we use a zero-based budgeting (ZBB) approach and would like to be able to send a briefing paper to the SMT to explain this: I would like you to draft this.

Secondly, as a result of the increase in production over the past few months, there has been an increasing incidence of stock-outs involving some of our bought-in components. This has disrupted production flow and led to emergency orders where we have incurred higher than usual delivery costs. Some of the stock outs have been the result of suppliers not delivering on time and missing lead time targets and others because of poor production planning where orders with suppliers were not placed on time. This poor production planning has also resulted in excessive inventory of certain components which have ultimately been damaged in storage. Jack Martinez, Production Director, has suggested that we consider the use of the Economic Order Quantity (EOQ) model to help us manage our bought-in component inventory.

So, to sum up, I would like you to prepare a briefing paper for the SMT in which you explain:

- How ZBB could be used to allocate funds to discretionary support activities. Please use a budget for production machinery maintenance to illustrate your explanation.

(sub-task (a) = 48%)

- The purpose of the EOQ model and the nature of the ordering and holding costs associated with bought-in component inventory. Please also explain the suitability of using the EOQ model for the purposes of bought-in component inventory management."

(sub-task (b) = 52%)

Reference Material Pre-seen

Write the briefing paper requested by Sophie Jacobs in the box below.

Paragraph

Thank you for completing the Operational Case Study Exam.

Before you leave, don't forget to collect your printed confirmation of attendance.

Please click the End Exam (E) button before leaving the testing room quietly.

Operational Case Study Exam

Maximum Time Allowed: 3 Hours

Welcome, Candidate Name

If this is not your name, please let your administrator know.

Click **Next** to start the test.

This examination is structured as follows:

Section (task)	Time for section (minutes)	Number of answer screens	Number of sub-tasks	% time to spend on each sub-task
1	45	1	3	(a) 40% (b) 28% (c) 32%
2	45	1	2	(a) 44% (b) 56%
3	45	1	3	(a) 36% (b) 36% (c) 28%
4	45	1	3	(a) 28% (b) 16% (c) 56%

Each section (task) has a number of sub-tasks. An indication of how much of the time available for the section that you should allocate to planning and writing your answer is shown against each sub-task in the text of the question (and summarized in the table above).

This information will be available for you to access during the examination by clicking on the Pre-seen button.

Reference Material Pre-seen

Today is 1 June 2020. The directors are keen to increase sales volumes in Eastland for the floorcare range and are planning to achieve this in two ways: to secure new retailers and to develop a new range of vacuum cleaners with improved cleaning capabilities and longer battery running times. You receive the following email from Sophie Jacobs, Finance Manager:

From: Sophie Jacobs, Finance Manager

To: Finance Officer

Subject: Increasing sales volumes

The directors have asked for some information and I would like your assistance with this.

Currently we have three major retailers in Eastland which sell our products through both their own websites and in their physical retail stores. Before deciding on which additional major retailers to target, Gavin Mansell, Managing Director, is interested to understand more about the trend in consumer purchases of cordless vacuum cleaners. He would also like to know if there has been a change in balance between consumers purchasing on-line or in retail stores.

Ben Da Silva, Finance Director has obtained historic data of purchases of cordless vacuum cleaners in Eastland and I have used this to create time series information (see attached). Ben is keen that we establish a sales volume forecast based on this time series information and revise the floorcare budget.

As well as targeting other major retailers some of the directors have suggested that we should start selling to smaller retailers (such as independent houseware and electrical retailers). Ben is concerned about the impact of this on receivables management and has asked me to send the directors information that explains this impact and how we might manage any additional risk.

Please prepare content for a briefing paper for the directors which explains:

- What the time series information attached tells us about purchases of cordless vacuum cleaners by the end consumer and the type of retailer we should be targeting.

(sub-task (a) = 40%)

- How we could use the time series information to prepare our sales forecast and how this sales forecast will affect our budgetary planning.

(sub-task (b) = 28%)

- The impact on the management of receivables of taking on new retailers and how we could mitigate any additional risks that arise.

(sub-task (c) = 32%)

Sophie Jacobs
Finance Manager
ChargeIT

The attachment to this email can be found by clicking on the Reference Materials button above.

TIME SERIES INFORMATION

These results are based on industry data for quarterly consumer purchases of cordless vacuum cleaners in Eastland for the last five years (January 2015 to December 2019 inclusive).

Trend

	Purchases made through websites	Purchases from physical stores	Total purchases in Eastland
Regression line	Y = 80,000 + 6,400Q	Y = 150,000 – 1,200Q	Y = 230,000 + 5,200Q

Seasonality

	Total purchases in Eastland
January to March	+ 150
April to June	- 300
July to September	- 350
October to December	+ 500

Key:

Q = the quarter number (where Q = 1 is the first quarter of 2015).

Reference Material Pre-seen

Write the content for the briefing paper requested by Sophie Jacobs in the box below.

Paragraph

Reference Material Pre-seen

It is two months later. Sales have increased as a result of new retailers in Eastland and retail opportunities in Asia and as a result of the expansion, new integrated and digitalised IT systems for production, purchasing and sales have been installed. In addition, the new range of vacuum cleaners has now been developed, although the Senior Management Team (SMT) is still not sure how successful this range will be. The range uses advanced technology which enhances cleaning power and new battery technology which increases the run time between charges. The new range is called SuperClean.

Sophie Jacobs, Finance Manager, telephones you and says:

"There is a SMT meeting tomorrow and I have been asked to prepare a briefing paper on a couple of issues for the meeting.

Firstly, we will be starting production of our new range of SuperClean vacuum cleaners soon. Our existing battery supplier is unable to supply us with the type of battery required for this range and so we need to make a decision about which alternative supplier to use. There are two suppliers that can supply us with the correct type of battery, each with different pricing structures. Both suppliers would require us to commit to a 12-month supply agreement. I've prepared a schedule which shows a graph of the total cost of batteries per month for this range for both suppliers and a table of probability information - I need you to explain this.

Secondly, Gavin Mansell, Managing Director asked me the other day whether the new production, purchasing and sales IT systems that have recently been installed could be utilised to improve our costing information through the use of a digital costing system. He has asked for a briefing paper on this for the SMT meeting.

Please prepare content for a briefing paper to the SMT that explains:

- What the graph on my schedule shows us about each supplier's price structure, and, using an expected value approach based on demand, explain whether we should accept Supplier A or Supplier B. Please also explain the limitations of using expected value for making this decision.

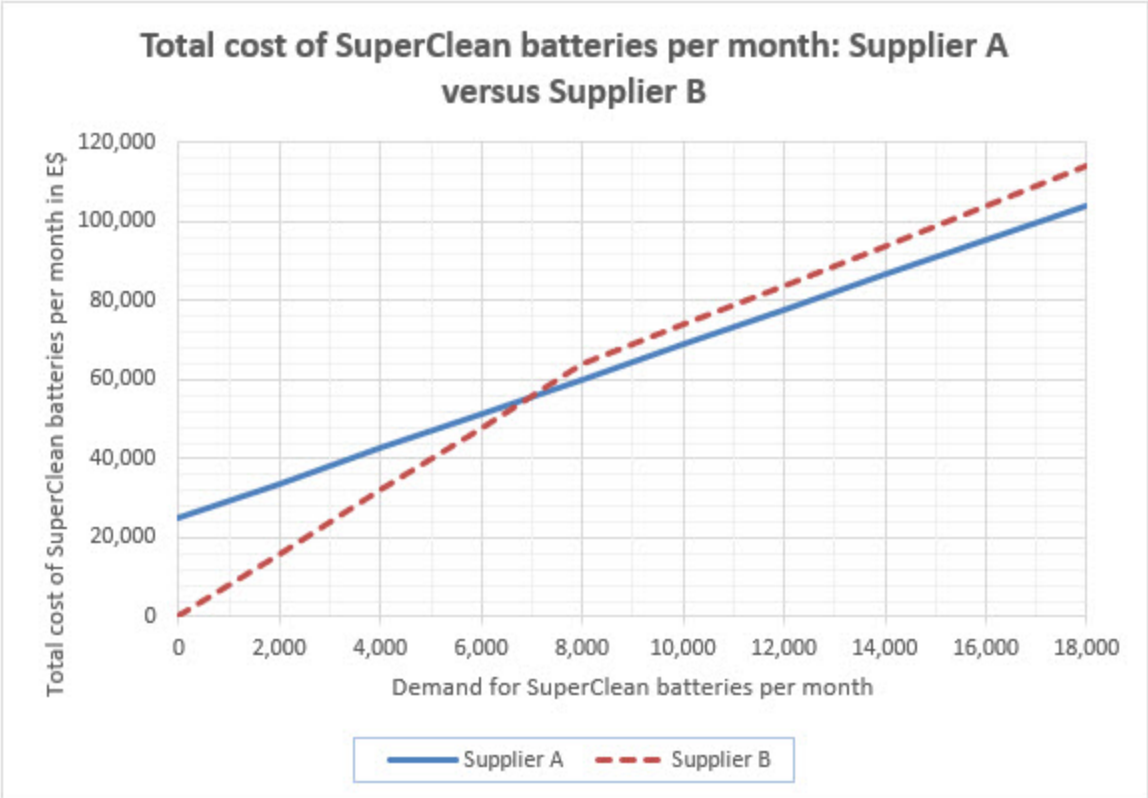
(sub-task (a) = 44%)

- How a digital costing system would change the way we gather information for use in costing our products. Please also explain the benefits for our business of using a digital costing system."

(sub-task (b) = 56%)

The schedule prepared by Sophie Jacobs can be found by clicking on the Reference Materials button above.

COMPARISON OF SUPPLIER A AND SUPPLIER B



Demand probabilities:

Monthly demand for specialist batteries	Probability	Probability multiplied by demand per month
2,000	0.01	20
4,000	0.06	240
6,000	0.08	480
8,000	0.10	800
10,000	0.20	2,000
12,000	0.18	2,160
14,000	0.14	1,960
16,000	0.14	2,240
18,000	0.05	900
20,000	0.04	800
Total	**1.00**	**11,600**

Reference Material Pre-seen

Write the briefing paper to the SMT as requested by Sophie Jacobs in the box below.

Paragraph

Reference Material Pre-seen

It is January 2021. The SuperClean range of vacuum cleaners was launched in September 2020. You receive the following email from Sophie Jacobs, Finance Manager.

From: Sophie Jacobs, Finance Manager
To: Finance Officer

Subject: Performance report and inventory valuation

At the end of November, we started to see poor online reviews being posted on various consumer websites about our SuperClean range as well as a significant increase in customer complaints. As a result, Jack Martinez, Production Director and his team did some investigation and found that since the beginning of November we have been using defective components from a new supplier. The fault can be rectified and has resulted in a recall of all SuperClean models affected. A new supplier for the components was quickly found and since the beginning of December all SuperClean vacuum cleaners produced have included these new components.

The directors are having their monthly meeting tomorrow to review the performance of the business during December. I need your assistance to complete the performance report for the month in respect of some of the variances related to the SuperClean range and the performance of the Customer Services Department during the month. The relevant variances and key performance indicators (KPIs) are attached.

Please prepare content that I can include in the reports that I need to send to the directors which explains:

- What each of the variances on the attached schedule means and the reasons for their occurrence.

(sub-task (a) = 36%)

- What the KPIs on the attached schedule indicate about the activity level of the Customer Services Department during December and how the department performed.

(sub-task (b) = 36%)

I've also had a query from Gavin Mansell, Managing Director, about how to value some finished goods inventory held at the year-end. These are:

1. 200 units of a SuperClean model which were made in November and contain the defective components. These will be rectified in January at a cost of E$5.50 per unit and then sold at full retail price.
2. 150 units of a hand-held vacuum cleaner model, which we no longer produce that have damaged casings. These are currently valued at a total cost of E$8,700. A customer has agreed to buy these for a total of E$8,800. It will cost us E$300 to transport these units to the customer.

Please also prepare content which explains:

- How the finished goods inventory identified by Gavin Mansell will be valued in our financial statements for the year ended 31 December 2020.

(sub-task (c) = 28%)

Sophie Jacobs, Finance Manager, ChargeIT

The attachment to the email can be found by clicking on the Reference Materials Button above.

VARIANCES FOR THE SUPERCLEAN VACUUM CLEANER RANGE IN DECEMBER 2020

Sales variances for SuperClean	E$	
Sales price	68,000	Adverse
Sales volume profit	56,945	Adverse

Direct labour variances for SuperClean production	E$	
Direct labour rate	5,496	Adverse
Direct labour idle time	1,280	Adverse
Direct labour efficiency	13,440	Adverse

Notes on variances:

1. The sales price variance is based on the weighted average price across the SuperClean range of vacuum cleaners and across all sales channels. Similarly, the sales volume profit variance is measured at the weighted average standard profit per unit of E$81.35.
2. During December a separate production area was created to deal with the rectifications required to the recalled models. A number of our main production line employees were transferred to this area and temporary agency staff were engaged to fulfil their normal roles on the main production line.
3. The direct labour cost variances do not include labour costs for rectifying the recalled models.

KPIs for the Customer Services Department

KPI	December	November
Hours of overtime paid	104 hours	Nil
Number of agency staff temporarily hired	3 people	Nil
Number of telephone calls received in the month	750	200
Average customer waiting time before calls answered	28 seconds	30 seconds
Percentage of queries successfully dealt with on the call	85%	80%
Number of email queries received in the month	440	120
Average time taken from receipt of email to successfully resolving the email query	9.2 hours	2.5 hours
Customer service satisfaction rating on TrustUs.com	4.3 out of 5	4.2 out of 5

Notes on KPIs:

1. The Customer Services Department has three full time employees who deal exclusively with all telephone and email queries regarding product information, product sales and after sales care.
2. TrustUs.com is an independent consumer ratings website.
3. In November the activities of the Customer Services Department were at the expected level and KPIs were in line with targets.

Reference Material Pre-seen

Write the report content requested by Sophie Jacobs in the box below.

Paragraph

Reference Material Pre-seen

It is now March 2021. There has been a fire in one of the small raw materials warehouses on the production site which destroyed the warehouse. A few days after the fire, Sophie Jacobs, Finance Manager, calls you into her office and says:

"Thank goodness nobody was hurt in the fire. We will have to demolish what is left of the warehouse and build a new warehouse in a new area on our site. Gavin Mansell, Managing Director, believes that the metal roof can be salvaged and sold for its scrap value of around E$15,000, although it will cost us E$5,000 to get this ready for sale. The warehouse was revalued at 31 December 2020, in line with our revaluation policy to a value of E$270,000, with an associated revaluation surplus of E$65,000. Gavin has already been in negotiations with a building contractor about the new warehouse. The contractor has quoted E$17,000 to clear the site and a further E$200,000 to build a new warehouse. There will also be a fee of E$2,000 for building inspectors who will need to sign off the warehouse as meeting Eastland's building regulations for commercial property. Gavin has asked me to let him know how all of this will be accounted for and whether any adjustments are required to our financial statements for the year ended 31 December 2020 given that these have not yet been signed by the directors.

The fire has left us with a potential short-term shortage of two specific types of raw material: grey plastic pellets and bought-in component FF. Both of these raw materials are needed in the production of two of our SuperClean models (P56 and R18) and we have a number of orders for both of these models which need to be despatched within the next two weeks. Some of these orders we have committed to (where we've already agreed to supply the customer), others are uncommitted (we haven't yet agreed to supply the customer). We have 600 kilograms of grey plastic pellets and 1,800 units of component FF available for production. Our normal suppliers for these raw materials can replenish our inventory in two weeks' time but not before. However, we can source additional grey plastic pellets from a different supplier at a significant premium to our normal price. I've drawn up a linear programming graph, which I'll give to you shortly.

Please prepare a briefing note for the directors which explains:

- How to account for the damage to the warehouse in our accounting records and whether this will be reflected in the financial statements for the year ended 31 December 2020 or 2021.

(sub-task (a) = 28%)

- How the expenditure related to the new warehouse should be initially recorded.

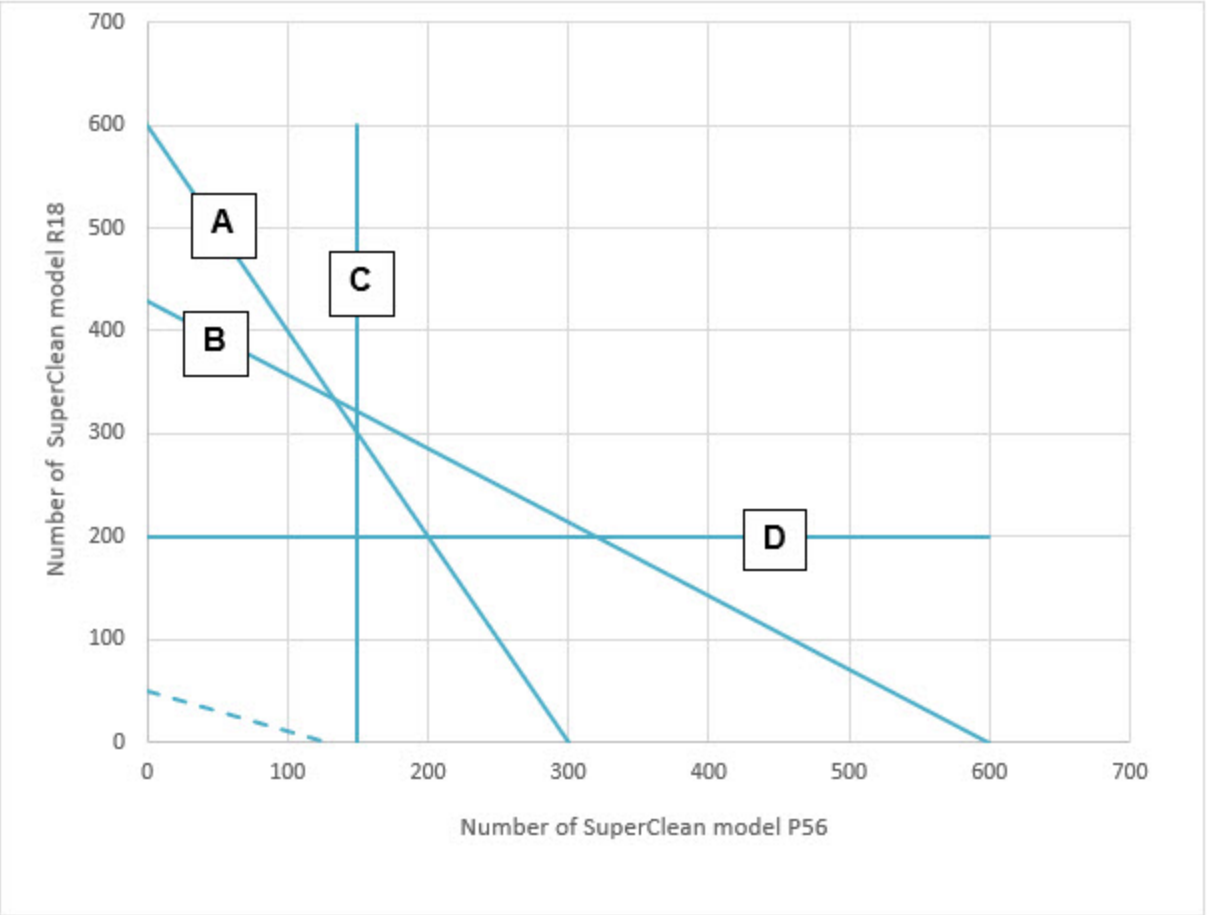
(sub-task (b) = 16%)

- Where the feasible region is on the linear programming graph and what the optimal production plan for the next two weeks is. Please also explain how we could use the graph to determine the maximum quantity we should order and the maximum price we should pay for additional grey plastic pellets from the alternative supplier."

(sub-task (c) = 56%)

The linear programming graph can be found by clicking on the Reference Materials button above.

LINEAR PROGRAMMING GRAPH



Key to the graph:

- Lines A and B represent the constraints for grey plastic pellets and component FF respectively.
- Line C represents the committed orders for SuperClean model P56 and line D represents the committed orders for SuperClean model R18.
- The dotted line is the iso-contribution line.

Reference Material Pre-seen

Write the briefing note requested by Sophie Jacobs in the box below.

Paragraph

Thank you for completing the Operational Case Study Exam.

Before you leave, don't forget to collect your printed confirmation of attendance.

Please click the End Exam (E) button before leaving the testing room quietly.

OPERATIONAL CASE STUDY MAY–AUGUST 2020
EXAM ANSWERS

Variant 1

These answers have been provided by CIMA for information purposes only. The answers created are indicative of a response that could be given by a good candidate. They are not to be considered exhaustive, and other appropriate relevant responses would receive credit.

CIMA will not accept challenges to these answers on the basis of academic judgement.

SECTION 1

Activity based costing

An activity based costing (ABC) system will normally result in a different share of production overheads being charged to the products where three main factors apply: the majority of production overhead costs are not volume related; production overhead costs are a significant proportion of total production costs and the product range is diverse.

Our current absorption costing system assumes that overhead costs relate to volume and shares the costs using direct labour hours. Additionally, we use a factory-wide absorption rate which means that costs are not identified for individual production departments or processes. Instead the total overhead costs for the factory are divided by the total labour hours to arrive at an absorption rate per labour hour.

We are told that the new assembly line will use robotics which will result in a reduction in the amount of direct labour required. Under the current system the e-bikes would be charged relatively lower production overheads since the current system is based on labour hours, however this may not adequately reflect the resources being consumed by the product.

Using an ABC system, the individual processes would be treated as separate activities and the cost would be accumulated in cost pools. The cost driver of each cost pool, that is the factor that causes the cost to be incurred, would be determined and the costs would be charged to products in relation to the specific demands of the product on each activity.

There are significant differences in how the e-bikes will be produced compared to our existing products. Our existing products require the injection moulding process to produce the plastic parts, but this process will not be required for the e-bikes. In addition, the e-bikes will be assembled in the new assembly line therefore it would seem appropriate that the costs of this assembly line are charged solely to the e-bikes and similarly that the costs of the existing production line are not charged to the e-bikes. It is important therefore to separate the costs of the different processes into cost pools and charge each of the products only with the costs of the processes that they use.

We could improve the charging of overheads to each product by using departmental absorption rates where we treat each process as a separate department. However, there are other reasons why an ABC system would result in a different share of production overhead costs.

In any manufacturing process, there will be costs which do not relate to volume but rather will be batch related. For example, machine set-up costs will depend on the number of times that the machines are set-up. If we assume that the machines are set-up each time a batch is produced, then a product which is produced in smaller batch sizes will require relatively more machine set-ups than a product produced in larger batches. In this case, we are told that the assembly of the e-bike motors will be done in smaller batch sizes than the other products therefore the e-bikes should be charged a relatively higher proportion of production overheads relating to set-up costs.

Multi-product break even chart

Explanation of the chart

The horizontal line is the fixed cost line which does not change at different activity levels within the relevant range.

The straight line 0C represents the weighted average contribution line at different sales levels assuming that the expected sales mix remains constant. Point X2 is the break-even point on the weighted average contribution line. Based on the average contribution to sales ratio we can see that in order to break even we would need to achieve sales revenue of approximately E$350,000.

The other line which connects points 0, A, B and C represents the relationship between contribution and sales on the assumption that we sell the products in order of the contribution to sales ratio. For example, the line from Point 0 to Point A represents the contribution from the sale of the Urban bike which has the highest contribution to sales ratio. Point X1 is the break-even point on this line. As you can see the break-even point is lower (and therefore reached sooner) on this line than on the weighted average contribution line.

Benefits and limitations of break-even analysis for the new range of e-bikes

The chart is useful because it gives us an idea of the sales level required to cover our fixed costs. By knowing the break-even position, it helps to understand the margin of safety that we have from the forecast or budgeted figures. The margin of safety is the amount by which revenue can fall from the expected revenue before a loss is made. The margin of safety is usually measured as a percentage. The chart shows us that the expected revenue is approximately E$1.55 million and therefore we have a margin of safety of approximately E$1.2 million before we would make a loss. Whilst this is a new market for us and the estimates may be over optimistic, this represents a significant margin of safety.

However, there are some factors which limit the usefulness of this break-even analysis. It is likely that we will not be able to sell the products in the order of their respective contribution to sales ratios. Therefore, plotting the line 0, A, B and C is unlikely to reflect the true situation. Equally, it is unlikely that we will sell our products at a constant sales mix. The true break-even is probably going to lie somewhere between the two lines. The weighted average contribution line assumes that the products will be sold in a certain mix however there is a risk that the weighted average contribution to sales ratio will be lower and therefore the break-even point will be higher if we sell in a different mix. For example, if we sell a higher proportion of the mountain bike which has the lowest contribution to sales ratio then the weighted average contribution to sales ratio will be lower.

The figures used are estimates only and assume a linear relationship over the whole range of production. The analysis also assumes that we can define costs as fixed or variable. In reality all costs are variable in the long term and in the short term many costs that we think of as variable are fixed, for example, labour costs. Additionally, the fixed costs included in the chart represent only the specific fixed costs associated with the new product range. We would however expect our products to also contribute to the general fixed costs. If the new product range was allocated a share of general fixed overhead costs, the break-even point would increase and the margin of safety would fall.

SECTION 2

Forecasting sales volume of the new range of e-bikes

Explanation of the graph and the calculation of a moving average

A time series is a series of figures recorded over a period of time. In the graph we have quarterly sales volume of e-bikes in Eastland over the past 6 years. We can clearly see from the graph that the sales of e-bikes are seasonal with the peak season being in Quarter 4, which includes sales for the Christmas period and Quarter 2 which represents sales of bikes for the lead in to the spring/summer period. The graph also shows the trend line for the sales volumes using a four-period centred moving average and we can clearly see that sales of e-bikes are on an upward trend.

A moving average is in fact a series of averages, calculated from time series historical data. The first moving average value in the series is the average of the values for time period 1 to time period n. (So, as in this case, n = 4, the first moving average in the series is the average of the historical values for time period 1 to time period 4.) The second moving average value in the series is the average of the values for time period 2 to time period (n + 1). (So, the second moving average in the series is the average of the historical values for time period 2 to time period 5.) The third moving average value in the series is the average of the values for time period 3 to time period (n + 2). (So, the third moving average in the series is the average of the historical values for time period 3 to time period 6.)

The moving average value is associated with the mid-point of the time periods used to calculate the average. In this case the mid-point for the first moving average is between periods 2 and 3, therefore, we need to calculate a centred moving average using this mid-point and the second mid-point between periods 3 and 4. This will give us the centred moving average at period 3. This process will be repeated for all the available data.

Application of time series to the data to forecast sales volumes

'Time series analysis' is a term used to describe techniques for analysing the time series to determine whether there is any underlying historical trend and if there is, to use this analysis to forecast the trend into the future. We can also identify whether there are any seasonal variations around the trend and if there are, we can measure the seasonal variations and apply these to a trend line forecast in order to forecast season by season.

The trend line for the sales volume can be identified through inspection (where the trend line is drawn by eye), using least squares regression analysis or using moving averages. In this case we have identified the trend line using moving averages.

Once we have established the trend line, we then need to establish any cyclical variations which are medium- or long-term influences usually associated with the economy. In order to do this, we would need data going back a few more years than the 6 years we have available.

We also need to calculate any seasonal variations. The data we have is for quarterly sales volumes and we could use this to calculate the quarterly seasonal variations. Seasonal variations can be estimated by comparing the actual time series with the trend line calculated from the time series. For each 'season' the seasonal variation is the

difference between the trend line value and the actual historical value for the same period.

Using the trend line, we can forecast the sales in units for the industry for the following year by extrapolating onwards from the end of 2019. The forecast will use the regression equation y = a + bx where y is the forecast sales volume, a is the sales in the first period, b is the constant amount that sales increase or decrease by each quarter and x is the period number. Quarter 1 of 2020 would be period 25. The seasonal variations would either be added or subtracted from the trend line forecast.

We would then have to decide what percentage market share we would expect to capture and apply this percentage to our figures for the total market.

Limitations of time series analysis

There are a number of limitations to this type of analysis. Firstly, there will be a number of variables that will determine sales volumes, for example, lifestyle changes or trends. The market for e-bikes is growing at a significantly high rate and we would need to consider whether the past growth rate is a good indicator of the future growth rate. It may be that our assumptions are too simplistic as the graph depicts sales of all types of e-bikes whereas our new product range is aimed at a specific market segment hence the low-price points. It would be helpful if we could obtain further data giving sales volume at different price levels. We may want to determine the monthly sales volume for the new e-bikes and the graph only gives us data for quarterly periods. We would therefore need to obtain further data giving sales volumes by month.

Actions to avoid a cash deficit

It is important to plan ahead to avoid a cash deficit where possible. There are a number of actions that we could take to avoid a cash deficit arising including:

- We could sell any short-term investments that we may hold, although we would need to consider any penalties that may be imposed as a result of early withdrawal / sale.
- We could consider partly financing the new capital expenditure using long term debt or leasing rather than using all our cash.
- We could also consider whether to make a dividend payment to the shareholders, Gavin and Anthea. We didn't actually pay a dividend in 2019. Alternatively, if we do intend to pay a dividend, we could change the timing of the dividend payment.
- We could consider postponing revenue expenditure such as advertising expenditure or any non-essential capital expenditure. We should be careful however as, whilst advertising expenditure tends to be classified as discretionary expenditure, a reduction or delay in the expenditure may result in reduced future sales revenue. A reduction in planned marketing costs for the new product launch could have a major impact on our ability to achieve the planned sales volumes.
- It may be possible to bring forward any planned disposal of non-current assets. If the asset is not required, we could sell the asset sooner or perhaps arrange with the purchaser to pay a deposit.

- We should also review our working capital management. Inventory levels should be kept as low as possible whilst avoiding stock-outs. We could also consider the use of just-in-time purchasing and production. Careful management of trade payables may also provide a source of short-term finance. Delaying payments to our suppliers would help us to extend the working capital cycle. However, care is needed with this policy as we may lose settlement discounts and harm our supplier relationships. Suppliers may reduce the service they give us, restrict supplies, increase prices to us in future or even stop our supplies altogether. We need to ensure that we have an effective collection policy for our trade receivables and that we carry out adequate checks before offering credit to customers. We may also want to consider the possibility of factoring or discounting certain invoices to speed up our cash cycle.

SECTION 3

Leasing – IFRS 16

Lease liability

Under IFRS 16: Leases, the lease liability is initially measured at the present value of the lease payments that have not yet been paid, including the fixed payments over the lease term and any other amounts expected to be payable such as, amounts payable under residual value guarantees; the cost of options to purchase the asset and any termination penalties. The discount rate used to calculate the present value should be the rate implicit in the lease or if this is not available, the entity's incremental borrowing rate. In this case, therefore, it will initially be measured at the present value of the lease liability of E$1,342,000.

At 31 December 2020, the lease liability will be shown in the statement of financial position. The value of the liability will be the initial amount of E$1,342,000 plus 4 months interest for September to December 2020. The value of the liability will be split into a current liability, the amount of the liability that is related to the next 12 months, and a non-current liability.

In subsequent years, the carrying amount of the lease liability is increased by the interest charge. Interest is also recorded in the statement of profit or loss. The carrying amount of the lease liability is reduced by the lease payment each year of E$258,000.

The right-of-use asset

Under IFRS 16: Leases, the right-of-use asset is initially recognised at cost. The initial cost of the right-of-use asset comprises: the amount of the initial measurement of the lease liability; lease payments made at or before the commencement date; any initial direct costs and the estimated costs of removing or dismantling the asset.

The right-of-use asset will therefore be initially recorded at the present value of the lease payments of E$1,342,000 plus the lease payment made in advance of E$258,000 plus the lease arrangement fee of E$4,000.

In the 31 December 2020 financial statements, the value of the right of use asset will be measured at its initial cost less accumulated depreciation and impairment losses. In this case, as ownership does not transfer to the lessee (ChargeIT), depreciation will be charged to the statement of profit or loss over the shorter of the useful life and the lease term which is the lease term of 8 years. The depreciation charge for the first year will be for 4 months from September to December 2020 and will therefore be:

((E$1,342,000 + 258,000 + 4,000) / 8) /12 * 4
In subsequent years the depreciation charge will be:
(E$1,342,000 + 258,000 + 4,000) / 8
which will be deducted from the carrying value of the asset.

Make or buy decision

The decision

A make or buy (or outsourcing) decision is a decision made by management on whether to make our products internally or buy them from the market. From a financial perspective, the relevant costs of the decision are the incremental costs resulting from making or buying the products. The incremental costs of buying in the products will be the purchase price from the supplier. The incremental costs of making the products will normally be the variable costs of production on the assumption that our fixed costs will remain unchanged whether the products are manufactured internally or purchased externally.

Determining products to make or buy

At first glance, it would seem that we should buy all of the fully assembled motors from the supplier since the prices offered are all below our total production costs per unit. However, on the assumption that our fixed production overheads will remain the same whether we make or buy, we should compare the price offered to our variable production cost per unit.

We need to compare the purchase cost of buying to the variable cost of making. On this basis, all of the prices offered by the supplier are higher than our variable costs per unit, with the exception of the RS200 where the buying in price is lower. We should therefore buy-in the RS200 model. We could then prioritise the remaining models based on the difference between the purchase price and the variable cost per unit and manufacture in-house the products with the largest difference in order to minimise the excess costs of buying-in. However, this fails to recognise that labour hours are a scarce resource. We should therefore look at the additional cost per labour hour and manufacture in-house the products with the largest difference per labour hour. This would enable us to minimise the excess cost per unit of the scarce resource and therefore make the best use of our scarce resource.

Other factors

Before making a final decision however, there are other factors that we should consider:

- Why is the supplier able to offer us such a low price? Does this reflect inefficiencies in our processes or is it because the supplier has spare capacity and is using a relevant cost approach to the pricing. If the latter, would the supplier be able to offer such a low price in the longer term?
- Would the supplier be able to supply the products to the quality standards that we require? This is extremely important to us as our reputation relies on the quality of the products.
- How reliable is the supplier? Would the supplier be able to produce the products on time?
- Does the supplier share the same ethos as us in terms of corporate and social responsibility and environmental management? As part of our corporate and social responsibility, we require any supplier to adhere to our supplier's code of conduct. To be linked with a company which fails to meet high standards in these areas would be detrimental to our business.
- How financially stable is the supplier? If the supplier failed, this would result in lost sales whilst we find a new supplier.

- Where is the supplier based? Using an overseas supplier would potentially expose us to currency fluctuations depending on the currency used in the purchase agreement.

SECTION 4

Sales variance report for e-bikes October–December 2020

Sales price variance

The sales price variance is calculated as actual selling price less the budgeted selling price multiplied by the actual sales volume. The only sales price variance is for the Mountain bike where we decided to discount the price in an attempt to boost sales volumes. It is clear that the strategy to discount the price was not effective since the additional profit from the increased sales volume was not sufficient to offset the loss in sales revenue from the discounted prices. This may be partly due to the marketing campaign run by the leading retailer which was across its full range of e-bikes and therefore would probably have included a style of bike similar to our Mountain bike. This may also suggest that the market is fairly price insensitive and may be loyal to certain established brands or retailers.

Sales mix profit variance

The sales mix profit variance is calculated as the difference between actual sales at the budgeted mix and actual sales at the actual mix, multiplied by the standard profit per unit. The mix variance is slightly adverse overall.

There are two main factors that have contributed to the change in mix; the discounting of the Mountain bike which has resulted in a higher proportion of these being sold, and the lack of availability of inventory of the Sport bike which has resulted in a significantly lower proportion of these being sold. It is unlikely that the marketing campaign run by the leading retailer has had any impact on our sales mix since its campaign was across its whole product range. It is also possible that the budgeted mix was inaccurate and that we do not have a clear understanding of customer preferences. This is a completely new market for us, and our knowledge of the market will be limited.

Sales quantity variance

The sales quantity variance is calculated as the difference between the actual sales volume at budgeted mix and the budgeted sales volume, multiplied by the standard profit per unit. The total sales quantity variance is favourable since overall we sold 60 more units than budget. This has occurred as a result of the favourable review in the cycle magazine for the Urban bike and the discounting on the Mountain bike. It will have been adversely affected by the lack of availability of inventory of the Sport model and potentially by the marketing campaign run by the leading retailer. It is possible however that the campaign by the leading retailer may have had a positive effect on sales volumes since it will have increased consumer awareness of e-bikes in general.

Planning and operational variances

Standards are normally based on the anticipated environment. If the environment is significantly different from the expected environment, actual performance should be compared with a standard that takes account of these changed conditions. This would provide a more meaningful measure of managerial performance. This is particularly important if performance is linked to pay and rewards.

It could be argued that the impact of the discounts on the Mountain range should be shown separately as a planning variance. The standard selling price should have been based on the average discounted price and not the normal selling price. It is not clear who has control of the pricing of the products but if the pricing decision was not within the control of the operational managers then the price variance should be shown separately as a planning variance.

Planning variances may not be controllable but do provide some useful information for managers on the accuracy of their planning and could help to improve the accuracy of future plans. As this is a new market it is difficult to set the budget without a detailed knowledge of customer preferences. It may be that the sales volumes and mix used in the budget were inaccurate and therefore at least some of the variance should be treated as a planning variance as it is outside the control of the operational managers.

Operational variances are considered to be controllable and hence they provide a better measure of the operating efficiency. If we are trying to assess the performance of the sales or marketing managers, it would be better to separate out the planning variances from the operational variances.

Key performance indicators

Sales volume growth: this can be calculated by comparing this month's sales volume with last month's or in later periods with the same period of the previous year. As this is a growing market it is important to measure this and compare it to the market growth rate as a whole. If our growth rate is lower than the market growth rate, then our market share will also be falling. Any fall in sales volume growth would trigger the need for an investigation to establish the reasons for the reduction.

Conversion rate: the conversion rate, measured as a percentage, is the rate at which our website customers are converting (or buying). This is calculated by dividing the total number of visitors (to the site, page, category, or selection of pages) by the total number of conversions. The number of customers visiting the website pages for e-bikes indicates the level of interest in the product, but it is essential that we are able to convert these potential customers into buyers. A low conversion rate could indicate the need to make changes to our website to provide more product details to customers. A falling conversion rate could indicate that our prices are uncompetitive and that potential customers are purchasing from our competitors.

Shopping cart abandonment rate: the shopping cart abandonment rate will tell us how many users are adding products to their shopping cart but not checking out. It can be calculated as number of shoppers abandoning the shopping cart divided by number of shoppers adding products to the shopping cart. The lower this number, the better. If the cart abandonment rate is high, this may indicate that there is too much 'friction' in the checkout process or that potential buyers are not convinced about whether to go ahead with the purchase. It would suggest that either we need to make changes to the checkout process or provide further product details or marketing to convince customers to make the purchase.

OPERATIONAL CASE STUDY MAY–AUGUST 2020
EXAM ANSWERS

Variant 2

These answers have been provided by CIMA for information purposes only. The answers created are indicative of a response that could be given by a good candidate. They are not to be considered exhaustive, and other appropriate relevant responses would receive credit.

CIMA will not accept challenges to these answers on the basis of academic judgement.

SECTION 1

Relevant costs for pricing

Minimum price for the new model robotic lawnmower

In order to determine a minimum price for the new product, we need to consider the relevant costs of the product. The relevant costs are the future, incremental cash flows which arise as a result of the manufacture and sale of the product. Any costs which have already been incurred will not be relevant and should not be included in the calculation of the minimum price.

1. The cost of raw materials is relevant and as they are in continual use, should be based on the higher replacement cost of E$330,000 plus the additional E$252,500 that we need to buy.

2. As there is limited direct labour capacity, the new model will require additional overtime working. The cost of this overtime, including the 50% premium above the normal rate, is relevant. 80% of the production of the new model can be done within normal paid working hours and this element is not therefore a relevant cost.

3. Production overheads in the schedule include both a fixed and a variable element, which are absorbed on labour hours. The fixed element is not incremental and is therefore irrelevant. Variable overheads however are expected to change as a result of the decision to manufacture the new product and any incremental variable overhead costs incurred are therefore relevant. The variable overhead absorption rate is taken to be representative of cash flow and is used to estimate the incremental expenditure.

4. The variable costs for the ongoing maintenance of the app are future cash flows and are therefore relevant. The share of the IT department costs is an arbitrary apportionment and not an incremental cost and is therefore irrelevant.

5. The development cost has already been incurred and is a sunk cost and not relevant. The amortisation cost is not a cash flow and therefore irrelevant.

6. The share of non-production overhead costs is an arbitrary apportionment and therefore not relevant. The only relevant costs would be any specific incremental costs directly relating to the product.

Suitability of a relevant cost approach

Relevant costs are a suitable basis for pricing for a short term or one-off decision. This approach would be useful in setting the minimum price where there is, for example, significant competition or spare production capacity. In this case, it is neither a one-off nor short-term decision. Over the longer term, the new model must be capable of covering a fair share of fixed overheads. A penetration pricing policy is based on charging a low price in the early stage of the product's life in order to gain a high market share. The high market share results in economies of scale and a lower cost per unit. There are potentially some long-term implications of charging minimum prices as it would be difficult to raise prices significantly at a later stage to incorporate fixed costs. A relevant cost basis may therefore be unsuitable to set the price for the new model.

Costing of the app

Type of costs

The cost of producing and maintaining the mobile phone app are very different to the costs incurred in producing the lawnmower. This is mainly due to the nature of the products, one of which is digital and the other is physical.

The majority of the costs of the app will be pre-launch: the costs associated with the design and development of the app. The costs of reproducing the app will be minimal compared to the costs of a physical product like the lawnmower.

The mobile phone app will have little or no material costs unlike the lawnmower for which material costs are a significant proportion of the total costs. For the mobile phone app, most of the staff costs will be specific as freelance staff were contracted to develop the app and will probably have been paid a fixed fee or a fee per day. Now the app has been developed these staff are no longer required. It means that, although there may be some permanent staff costs for preparing updates and providing product maintenance, the majority of staff costs are often upfront and pre-launch with very little ongoing post-launch costs.

The cost of developing the app, whilst significant, is not the only cost which needs to be considered. There will be ongoing costs associated with maintaining and operating the app post-development. Most of these costs will be fixed in nature in contrast to the costs associated with the manufacture of the lawnmower which will include material, labour and variable overheads.

The ongoing costs will consist of: costs to provide functionality such as push notification or SMS and email messaging; costs to manage and update the app and collect data on users; costs associated with hosting the app, storing data and delivering data; IT support services to deal with updates of the operating system and the app and maintenance costs of the infrastructure.

Determining the unit cost of the app

A major advantage of digital products is that there will be no inventory of the product. This avoids the need for inventory valuation by the accounting function. We will however want to establish the cost of the app for planning, control and decision-making purposes.

The development costs of the app will initially be capitalised and then amortised over the life of the app. The lifespan of digital products can vary greatly. Determining the lifetime of an app can be very difficult particularly when there are rapid changes in technology as there are at the present time. Similarly, determining sales volumes over the lifetime of the app will also be difficult.

Whilst most of the design and development costs will be specific to an individual app, there may be elements which are shareable with other apps and a method of allocating these costs to the individual apps will be required. In this case, we have only one app so all the costs will be direct, but this may change in future. Many product features or functions might also be shared amongst a number of products. We need to determine how to absorb these costs into each individual product. Determining the drivers associated with these costs may be difficult.

As discussed above, the ongoing costs of the app will be mainly fixed costs. The amount and frequency of these costs will also need to be determined as will the estimated sales volume in order to calculate the cost per unit.

SECTION 2

What-if analysis

Explanation of figures in schedule

What-if analysis involves revising the budget on the basis of a series of varied assumptions. One or more variables can be changed at a time to determine the impact on the budgeted profit, cash flow or other aspects of the budget. When changing more than one variable it is better to use a spreadsheet to speed up the process.

In this case, we have produced a spreadsheet to show the impact on profit of a different combination of selling price, variable costs and sales volume.

We can use the spreadsheet to try to assess the impact on profit of different selling price and variable cost combinations. For example, if our target profit was E$350,000, we can see from the spreadsheet that if sales volumes turn out to be 2,000 units that we will only achieve the target profit if selling prices are E$840 and variable costs are E$240. Also, we can tell that at this level of sales volumes that we will make a loss if the selling price is reduced to E$640.

If we were able to establish the price/volume relationship we could determine the potential profit. If we estimate for the budget that sales volumes would be 2,500 units at a selling price of E$740 and we knew, for example, that sales volumes would increase by 250 units for every reduction of E$100 in selling price, we can determine the revised profit figures for a combination of selling price of E$640 and sales volume of 2,750. It is clear from the spreadsheet that this combination of variables would result in a lower profit than the target. In contrast, a combination of sales volume of 2,250 and selling price of E$840 would result in a higher profit for all variable cost levels.

Benefits and limitations of what-if analysis

What-if analysis provides us with more information about the budget's sensitivities to changes in different variables. It allows us to make a decision about whether we are prepared to accept the impact on profit of these potential changes. It will also allow us to decide whether it is worth spending time and money on further investigation of the market. We can also make contingency plans for the eventuality that the sales volume, for example, turns out to be much lower than expected.

What-if analysis, however, is limited as it assumes that changes to variables can be made independently however many variables are interdependent. In reality, it is very unlikely that only one variable would change but more likely that there would be changes in a combination of variables. It also does not give us any indication of the likelihood or the probability of that change happening.

We could however determine the probabilities of different sales volumes and then calculate an expected value for both the sales volume and profit. However, this analysis is very dependent on the accuracy of the probabilities and, as this is a new market for us, these may be difficult to determine without expert advice.

Advantages and disadvantages of adopting rolling budgets

At present, ChargeIT budgets once per year and sets the budget for the next 12 months. A rolling budget process will result in a time horizon, as we move through the budget year, always stretching for 12 months ahead.

A rolling budget approach tends to be more accurate because a rolling budget does not just extend the period of the existing budget it also re-examines the nearest periods. It helps to reduce uncertainty and is vital when the environment is changing rapidly or, as in this case, where there is a lot of uncertainty surrounding a new product or market. As more attention is given to the nearest periods this should reduce the uncertainty caused by a longer-range forecast and more accurately reflect the prevailing conditions. With a rolling approach, our budgets for sales and costs of the new product would therefore be more accurate, reflecting the latest expectations. As a result, budgets would be more realistic, achievable and therefore more motivating.

A rolling budget process does not necessarily result in changes in budgets each month, but it does offer an opportunity for more frequent reviews. A rolling approach would offer additional opportunities to review the budget and ensure that ChargeIT both focuses on and considers the prospects further ahead. This approach will thus allow the business to react more quickly to a change in the environment than the current annual process allows.

Rolling budgets are particularly suited to planning cash flow which needs to be reviewed regularly. It is not clear whether ChargeIT, as well as producing an annual cash budget, also does regular cash flow forecasting however it is important to focus on improved cash management. We currently have a high cash balance and where the cash forecasts or budgets are suggesting that there will be a surplus, ChargeIT can arrange to reinvest these funds to make further gains. A rolling approach to cash flow budgets will also offer better visibility of cash flow and help to identify deficits. We can consequently either ensure appropriate financing arrangements are put in place to cover the shortage or adjust the timing of planned expenditure to avoid the cash flow shortage arising.

There are numerous benefits for ChargeIT using rolling budgets, in particular, improving the accuracy of future cash flow budgets and better reflection of the changing environment and sales expectations. Rolling budgets however can be a significant amount of work. This additional work is in preparing, checking and also in communicating the revised plans. In addition, there is limited benefit in planning too far ahead as accuracy may be questionable. It would be important to ensure that additional work is limited to where there are clear benefits, for example potentially reviewing budgets quarterly rather than monthly. It may also be more appropriate to implement rolling budgets for only some budgets, such as the budgets for new products where there is more uncertainty.

SECTION 3

Determining the selling price

Explanation of figures in pay-off table (Table 1)

Table 1 illustrates the impact on contribution of nine different combinations of selling price and reduced sales demand for the existing model from the introduction of the new model.

As the selling price of the new model decreases the demand for the new model will increase. However, this is offset by the impact on contribution from reduced sales demand of the existing model. At the lowest selling price of E$640 the impact on the new model is likely to be at its greatest as the price differential between the new and existing model is at its lowest. A higher selling price will result in lower sales demand for the new model but the impact on the sales demand for the existing model will be lower as the price differential between the old and new model is greater.

The best outcome of E$1,082,051 is where we set a selling price of E$640 and the impact on demand for the existing model is low. As the impact on demand for the existing model increases, the contribution reduces. The worst contribution of E$796,668 also results from a selling price of E$640 but a high impact on demand for the existing product, as a significant amount of potential sales will be lost.

Decision criteria

Maximax criterion:
The maximax criterion is where the decision maker takes an optimistic approach. In this approach, the alternative that maximises the maximum pay-off achievable under each alternative will be selected. We would therefore choose a selling price of E$640 which has the maximum payoff of E$1,082,501.

Maximin criterion:
Under the maximin criteria we would select the alternative that maximises the minimum pay-off achievable under each alternative. This is where a pessimistic approach is taken. We would therefore choose a selling price of E$840 as this gives the maximum of the minimum payoffs of E$872,501.

Minimax regret criterion:
Under this criterion the alternative that minimises the maximum regret under each alternative is selected. This is generally used where we want to minimise the effect of making a bad decision. ‘Regret’ refers to the opportunity loss from having made the wrong decision. This is also where a pessimistic approach is taken to the decision.

The regret matrix shows the regret depending on the impact on demand for the existing model and the selling price which we had chosen. For example, if the impact on demand turned out to be at the low level, we would have no regret if we had chosen a selling price of E$640. The regret for each of the other selling prices would be the difference between a contribution of E$1,082,501 and the contribution from each of the other selling prices.

Having calculated the regret for each different level of demand, we can then establish the maximum regret for each selling price. In this case the maximum regret would be

E$75,833 at a selling price of E$640, E$19,701 at a selling price of E$740 and E$129,967 at a selling price of E$840. Therefore, if we want to minimise the maximum regret, we would choose a selling price of E$740.

Inventory adjustments

IAS 2 Inventories requires that we value inventory at the lower of cost and net realisable value (NRV). Cost should include all costs of purchase (including taxes, transport, and handling) net of trade discounts received, plus costs of conversion (including labour, a share of fixed production overheads and variable production overheads), plus other costs incurred in bringing the inventories to their present location and condition. NRV is the estimated selling price in the ordinary course of business, less the estimated cost of completion and the estimated costs necessary to make the sale.

If we selected the brand clearance outlet, we should be able to sell the inventory above cost price, but this may be marginal, and we would also have incurred the cost of delivery to the outlet. Therefore, NRV is reduced by the cost of delivery which could push this value below cost. In this case, we would be obliged to make an adjustment to lower the carrying amount of the inventory, even if it has not already been delivered but the sale has been agreed.

If we opted for the price reduction in store, we could expect to receive more income than the brand clearance option. This suggests that NRV, whilst lower than previously anticipated, would exceed the cost and no adjustment would be required. The impact on the sales of the new model, whilst relevant to any decision, would not affect the inventory valuation.

If we decided the best option was to rework the inventory, then the carrying amount would be limited to the materials that could be re-used, inclusive of the conversion cost of dismantling. As these materials were previously finished goods, the net realisable value of the re-usable portion is likely to be well below their previous cost which would create the need for a write-down. The wastage materials/parts would be valued at their net realisable value which may be nil or if it can be sold for scrap, at the scrap value.

Impact on profit and cash flows

Any write-down to NRV should be recognised as an expense in the period in which the write-down occurs. The write-down would reduce the value of inventory in the statement of financial position and correspondingly increase the cost of sales thus lowering profits. Cash flow is unaffected by the write-down as there has been no cash transactions and the write-down will therefore just require a journal entry in the nominal ledger.

SECTION 4

Variance analysis

Component RB25 variance

Component RB25 price variance shows the amount actually paid compared to the budgeted purchase price for the components purchased. The variance is adverse which is due to the additional amount paid to source the components at short notice.
Component RB25 usage variance compares the actual quantity of components used with the standard quantity for the number of units produced. The variance is valued at the standard cost per component. In this case, the variance is adverse which means that we used more of component RB25 than standard. This is due to the quality issues which we experienced with the component which resulted in a number of units having to be reworked.

Labour variance

The labour rate variance compares the actual rate paid with the budgeted rate for the actual hours worked. This variance is also adverse which reflects the fact that there was a need to work overtime to ensure sufficient inventory was available.

The labour efficiency variance compares the actual hours worked for the number of units produced with the standard hours for the number of units produced. The variance is valued at the standard rate per hour. In this case, the variance is adverse which means that more hours were worked than standard for the number of units produced. This reflect the problems with component RB25 and the fact that the standard hours required per unit was set too low.

Variable production overhead variance

The variable production overhead efficiency variance is directly related to labour efficiency given that the absorption rate is based on labour hours.
It shows the difference between the number of standard hours to produce the actual output and the actual number of hours taken valued at the variable production overhead absorption rate. In this case the variance is adverse indicating that more time was used to produce the output than the standard had allowed. As mentioned above for the labour efficiency variance, the reductions in efficiency are likely to be the result of the production issues which were experienced with component RB25 and the incorrect standard.

The variable production overhead expenditure variance compares the actual overhead expenditure to the flexed budgeted expenditure. It is assumed that variable overheads will vary with direct labour hours of input therefore the budget is flexed based on the actual labour hours worked. As this variance is favourable, this indicates that the actual variable overhead costs are lower than standard. The favourable variance is likely to be due to the reduced price of power which would be considered a variable production overhead cost.

Fixed production overhead volume variance

The fixed production overhead volume variance identifies the portion of the total fixed overhead variance that is due to actual production being different from budgeted

production. The variance is calculated as the difference between actual production (at standard hours) and budgeted production (at standard hours) multiplied by the standard fixed overhead absorption rate per hour. The standard absorption rate is calculated using the budgeted activity level therefore if standard labour hours are more than the budgeted hours this means that the fixed overhead volume variance will, as in this case, be favourable. The favourable fixed overhead volume variance is therefore due to the increase in market demand which has resulted in us increasing production volumes.

Evaluation of suppliers

Financial stability:
Financial stability of our suppliers is important for us as we need to ensure that we have continuity of supply. From the information given in Table 2, we can see that Suppliers B and C are likely to have the greatest financial stability as they have significantly higher revenue than Supplier A. Supplier C has been trading longer and both Supplier B and C probably have the benefit of economies of scale. Supplier A may be unable to cover its total costs given its lower revenue figure as the business is less likely to have the benefit of economies of scale. Supplier B is also owned by a large company which suggests that, if they did have any financial difficulties, they would have the support of this company.

Liquidity:
Supplier C has the longest working capital cycles of all three suppliers at 94 days. It is questionable whether this is too long and looking at the inventory, receivables and payable days, there is some cause for concern. The inventory and receivable days, at 74 days and 65 days respectively are relatively high compared to the other suppliers. Payable days, at 45 days, tells us that Supplier C is paying its suppliers before it is receiving payment from its customers. The high inventory and receivable days may reflect the fact that Supplier C has contracts with large customers. Because of their relative power, these customers are able to pay their suppliers later than other customers and also expect that they can be supplied at short notice. It may also suggest that Supplier C has weak credit control and inventory management processes. Supplier C is adopting a very conservative approach to working capital management.

Supplier B is employing a more aggressive credit control policy than Supplier C as both the inventory days and receivable days are significantly lower than Supplier C. The payables days are 18 days more than the receivable days. A working capital cycle of 27 days is very low and is a risky approach. Supplier A employs a moderate approach to working capital management and all the ratios seem to be within acceptable bounds.

Potential credit terms:
As Supplier A is a relatively new business, we could expect to be offered better settlement terms in order for them to build their business. Their receivable days are 56 days which from our perspective is better than with Supplier B which has average days of 44 days.

Based on the average receivables days we would get the best credit terms from Supplier C, however as discussed above, the high receivable days for Supplier C may be due to contracts and we may not be offered similar terms. With Supplier B, it is possible that we can negotiate a settlement discount or better terms than the average receivable days suggest.

OPERATIONAL CASE STUDY MAY–AUGUST 2020
EXAM ANSWERS

Variant 3

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SECTION 1

Linear programming graph

Explanation of the graph and the optimum production plan

The linear programming graph shows the current situation in terms of available resources. The X axis depicts demand for our floorcare products and the Y axis is demand for our garden products. The minimum production required to meet the demand from retailers is 50,000 units for floorcare products and approximately 32,000 units for garden products.

We can determine the feasible region, which is the area within which all the possible combinations of output are contained, from the graph. We can see that the feasible region is the area to the right of the minimum demand for the floorcare products line and above the minimum demand for the garden products line. The constraint lines represent the maximum that can be produced using all of the moulding machine hours and labour hours in turn. These form a boundary for the feasible region which will be to the left of these lines as, given the constraints, it is impossible to produce above the line.

The ISO-contribution line represents the contribution that can be earned from all the possible combinations of floorcare and garden products. If this line is moved as far to the right as possible whilst still remaining within the feasible region, it will indicate the maximum contribution that can be earned. The furthest point within this area is the point where the labour hour constraint line and the moulding machine hour constraint line intersect. This is the point that will maximise contribution. The optimum production plan can be read from the graph as approximately 227,000 units of X (floorcare products) and 83,000 units of Y (garden products).

Appropriateness of the optimum production plan

The optimum production plan given by the graph may not be the most appropriate solution. The graph is based on maximising contribution from the constrained resources and whilst it may produce the maximum contribution available, it may not be appropriate

from a market perspective. The optimum production plan suggests that only 83,000 units of garden products should be produced but this is significantly below our current budgeted level of 106,950. In contrast, the suggested output of 227,000 units of floorcare products is significantly above the current budgeted level of 168,475 units. The estimated demand for each type of product is uncertain but failing to meet more than 20% of the budgeted demand for our garden products may not be a good decision and may have implications for the longer term if we lose customer loyalty. Also, whilst we are anticipating an increase in sales demand it is not clear to what extent this will be above budget and therefore output of 227,000 units of floorcare products would seem overly optimistic.

It may be more appropriate to estimate the increase in sales volume that we anticipate above budget and to add maximum demand lines to the graph. For example, we may decide that we anticipate a 20% increase above budget which will have the effect of reducing the production for floorcare to around 200,000 units with the remaining resources being used to increase production of garden products.

Cost drivers and costs control

Many costs in the warehouse will change in response to changes in activity levels. Costs will be higher when activity increases, for example, higher production volume or number of orders, and lower when activity reduces.

The cost of receiving the finished products and transferring them to storage is driven by the time needed for each operation, the hourly rate of staff and the volume of activity. If production volumes increase the number of deliveries of finished goods received at the warehouse will increase. The time taken for each delivery from the factory will be determined by the number of items in the delivery and the average distance between the receiving bay and the storage bay. By estimating each of these variables we can determine the total time and the number of staff required. The costs can be managed by adjusting some of these drivers. For example, the time taken may be reduced by ensuring that a particular product utilises the minimal number of bays by combining part full storage bays and, where a product has multiple bays, ensuring that the bays are placed closely together.

The picking cost is determined by the time needed for each operation (pick), the hourly rate of staff and the volume of activity. If sales volume increases the volume of activity will increase as the number of orders to be picked will increase. The time per pick is driven by the average distance between the storage hub and the packing hub and the number of items to be picked in each order. Again, we would need to produce an estimate for each of these variables to determine the total time and number of staff required. The cost can be managed by reducing the average time per pick. This can be achieved by reducing the average distance travelled, for example by storing the most popular lines closest to the packing hub. It may be that the popularity of the products changes regularly, and we have to shift the layout to reflect this on an ongoing basis.

Packing costs will consist of staff costs and the cost of packaging material. The staff cost is determined by the time taken to pack each order, the hourly rate for staff and the level of activity. If sales volume increases, the volume of activity will increase as the number of orders to be packed will increase. The time taken to pack each order will be determined by the number of items in each order. The total staff cost can be determined in the same way as for the other activities. The cost of packaging material is determined by the box size, the box cost and the volume of boxes and other packaging material used. We would need to establish our total requirement for each box size and multiply by the cost per box. We would then add an amount for the estimated volume of packaging material. The cost could be controlled by ensuring the correct, smallest box option is chosen which would lower the average cost of packaging and may also lower the amount of time used.

SECTION 2

Determining the order level for plastic parts

Explanation of figures in pay-off table (Table 1)

Table 1 illustrates the impact on contribution of nine different combinations of order level and increased sales demand for the next 6 months period.

If we choose an order level equal to the level of increased demand, then we will earn incremental contribution at that level. We will earn incremental contribution of E$2,973,000 for 10%, E$4,459,000 for 15% and E$5,945,000 for 20%. If we choose an order level which is lower than the additional demand, we will earn the incremental contribution associated with the order level but there will be a lost opportunity as we have failed to fulfil the increased demand. If we choose an order level greater than the level of demand, we will earn the incremental contribution associated with the level of demand less the cost of recycling the excess plastic parts.

Decision criteria

Maximax criterion:
The maximax criterion is where the decision maker takes an optimistic approach. In this approach, the alternative that maximises the maximum pay-off achievable under each alternative will be selected. We would therefore choose a high order level which has the maximum payoff of E$5,945,000.

Maximin criterion:
Under the maximin criteria we would select the alternative that maximises the minimum pay-off achievable under each alternative. This is where a pessimistic approach is taken. We would therefore choose a low order level as this gives the maximum of the minimum payoffs of E$2,973,000.

Minimax regret criterion:
Under this criterion the alternative that minimises the maximum regret under each alternative is selected. This is generally used where we want to minimise the effect of making a bad decision. ‘Regret’ refers to the opportunity loss from having made the wrong decision. This is also where a pessimistic approach is taken to the decision.

The regret matrix shows the regret depending on sales demand and the order level which we had chosen. For example, if the sales demand increase turned out to be at the low level, we would have no regret if we had chosen a low order level. The regret for each of the other order levels would be the difference between a contribution of E$2,973,000 and the contribution from each of the other order levels.

Having calculated the regret for each different level of demand, we can then establish the maximum regret for each order level. In this case the maximum regret would be E$2,972,000 at a low order level, E$1,486,000 at a medium order level and E$414,000 at a high order level. Therefore, if we want to minimise the maximum regret, we would choose a high order level.

Flexible budgets

Constructing a flexible budget

Flexible budgeting would allow us to predict the impact of changes in sales volumes on our budgeted profit. The budget shown in Table 3 is for the total product range. In order to construct a flexible budget, we would need to establish our selling price per unit for each type of floorcare and garden products and determine whether this selling price would remain constant at different activity levels. We can then determine the sales revenue at different activity levels by multiplying the selling price per unit by the activity level.

We would also need to establish whether our costs are variable or fixed in nature. A variable cost will vary with the level of activity. In many cases the activity level will be sales or production volume. Direct material and direct labour costs are assumed to be variable costs and will change in direct proportion to changes in production volumes. The budget for variable costs, such as direct material, can be flexed by calculating the cost per unit and multiplying this cost per unit by the revised volume.

Production overheads contain a mixture of fixed and variable costs and it would be necessary to separate these costs into their fixed and variable elements. We would then calculate a revised budget for all costs affected by the change in activity, our variable costs, and add the fixed costs which, by definition, would not vary with the different levels of activity under consideration. We would also need to understand if any of the fixed costs are stepped fixed costs which would increase when a particular level of activity is reached.

Non-production overheads will also contain a fixed and variable element. Whilst the majority of these costs are likely to be fixed, it will be necessary to also identify any variable costs and the costs drivers for these costs. For example, if we were looking at the cost of fuel for our delivery vehicles, it would vary with miles travelled. To determine the level of fixed costs required it will be necessary to consider the activities carried out. For example, staff costs will be fixed costs but the number of staff required will be determined by the volume of cost drivers for each activity.

Benefits of flexible budgeting for planning purposes

Flexible budgeting is helpful as it allows us to understand the impact on profit of differing levels of activity. There is a high level of uncertainty on sales volumes and this is likely to have significant implications for our material and labour cost budgets. The use of flexible budgeting will help us to better plan our resources and to put contingency plans in place if the budgeted level of activity is not achieved or exceeded. Whilst the use of flexible budgeting will create additional work, it will ensure that we understand the consequences of differing activity levels and will result in a more appropriate budget. This is likely to deliver benefits for our organisation.

SECTION 3

IAS 16 Property plant and equipment

Capitalisation of expenditure on new machine

Criteria for capitalisation

IAS 16 states that in order to capitalise the expenditure incurred as part of property, plant and equipment (PPE) an asset must have been created. There are two criteria that must be met in order to recognise an asset. Firstly, it is probable that the expenditure will result in future economic benefits to our business and secondly, the expenditure can be reliably measured. Both of these are met since the machine will generate future economic benefits in the form of profit and as the expenditure is cash related it can be reliably measured.

IAS 16 further states that the asset must be held for the supply of goods and services and will be held for more than one accounting period. Clearly, the machine is to be used for the manufacture of our products and we intend to keep the machine for more than a year.

Treatment of items in the schedule

IAS 16 also states that expenditure associated with an item of property, plant and equipment can be capitalised if it is either part of the purchase price (including import duties) or directly attributable to getting the asset ready for its intended use.

From the schedule, the purchase price of the machine clearly falls into this first category. As ChargeIT is VAT registered, the purchase price of the machinery that can be capitalised will be the ex-VAT price. The VAT amount will not be capitalised as part of the machine purchase price but will initially be treated as VAT recoverable within the VAT control account.

The costs that can be said to be directly attributable costs include the building costs relating to adjusting the factory layout to accommodate the machine and the installation costs. The building costs are necessary in order to prepare the building to enable installation of the machinery. Similarly, the machine needs to be installed before it can be brought into use. Therefore, this cost will be capitalised.

The training costs are unlikely to be incurred in order to get the asset ready for its intended use. The machine is likely to be ready for its intended use, even if staff need to be trained to use it. Even if we could argue that training costs are directly attributable to getting the machine ready for use, the fact that the trained staff are free to leave the business at any time, means that these costs do not meet the definition of an asset in terms of being able to control the economic benefits expected to arise. These costs will therefore be treated as revenue expenditure and charged to profit or loss.

Ongoing costs of maintenance and servicing of the machine cannot be capitalised as they are not directly attributable to getting the asset ready for its intended use. These costs will be treated as revenue expenditure and charged to profit or loss.

Responsibility accounting

Explanation of responsibility accounting

The idea of making individual managers responsible for achieving targets is referred to as responsibility accounting. Under a responsibility accounting system, managers are allocated specific targets which they are expected to achieve. For example, we may set a target for the Lawnmower Sales Manager of the number of lawnmowers sold in the period or the sales revenue achieved in the period. If there is any difference between

actual performance and targeted performance, we would expect the sales manager responsible to take action to ensure the target is achieved. In many cases, although not in this particular case, the achievement of targets is linked to pay and rewards.

Under a responsibility accounting system, the managers' performance should be evaluated only on the areas that they can control. The effect on managers' motivation will partly depend on whether they can control the factors that impact on the achievement of the target. For example, we may need to set different targets each period depending on factors such as new products launched or changes in the competitive environment.

For the system to be successful, it will also depend on the extent to which the managers are able to influence the setting of the targets.

Participation

Participation refers to the extent that managers are able to influence the setting of the targets. When the manager participates in target setting it is referred to as a bottom-up approach whereas a non-participatory approach is referred to as a top-down approach. At present, we are holding managers responsible for the achievement of targets, but they do not participate in the setting of the targets. A top-down approach to target setting is at odds with the idea of responsibility accounting. Encouraging our sales managers to be involved in setting the targets is likely to be beneficial for a number of reasons.

The managers are more likely to accept the targets, take responsibility for the targets and be committed to achieving them if they have been involved in the target setting process. A participatory approach would also enable more effective targets to be set that deal with operational constraints. The sales budget is extremely important for ChargeIT since sales normally represent the principal budget factor and all the other functional budgets are determined based on the sales budget. It is therefore important that the sales budget is as realistic as possible. Our sales managers are involved in the day-to-day operations, such as meeting with the retailers which we sell to, and therefore should be able to produce a more realistic budget. If we were to impose targets for sales to retailers this may result in demotivation of the managers. This can lead to the targets being rejected by the managers and poor performance.

Under a responsibility accounting system, managers are held responsible for their performance compared to the targets set. The managers are unlikely to feel a sense of responsibility if they have not been involved in setting the targets. Any deviation from the target will be blamed on poor target setting.

The level of challenge in the target is also an important factor in motivation. A loose, easily achievable target is not considered motivating. A tighter, more challenging target is optimal and motivating. However, an extremely challenging target will not motivate as it will be very difficult to achieve and may well result in failure.

However, participatory budgeting is much more time consuming than top-down budgeting. Managers will also potentially need training before they are able to be involved in the budget process. There is also a danger that managers could attempt to pad the budget in order to make the targets easier to achieve. This is more likely to happen where the budget targets are linked to pay and rewards.

SECTION 4

Variance analysis

Sales price variance

This is calculated by comparing the actual price received with the original price budgeted and multiplying the difference by the actual quantity sold. The sales price variance in total is adverse which is at least partly due to the voucher offering a 10% online discount. The lack of available inventory will also have affected the average price for the products since the sales mix will have a higher proportion of sales to retailers where the selling price is lower. The only product which has a favourable price variance is the robotic vacuum cleaner. It has to be assumed that the new model is at a higher price point than existing models which has resulted in a higher average price for the range.

Sales quantity profit variance

The sales quantity profit variance is calculated by comparing the budgeted sales with the actual sales at the budgeted mix and then multiplying the difference by the standard profit. The quantity variance is based on the total volume at the budgeted mix. The total volume is well above budget which is likely to be due to the magazine article.

If we look at the individual volumes shown in the top half of Table 1, we can see that all the product types had sales volume well above budget with the exception of hand-held vacuums where sales volume were only 5.7% above budget. The relatively poor performance by the hand-held vacuums is due to the release of a better performing model by the leading competitor. In contrast, the relatively good performance (26.1% above budget) by robotic vacuum cleaners is due to the introduction of our new model which can be operated by a mobile phone app.

Whilst the sales performance is good, sales volumes will have been adversely affected by the lack of availability of inventory in July. This didn't affect sales to retailers, but it did affect online sales. It is likely that potential online customers who tried to buy items which were not available, will have decided to buy competitors' models instead. Therefore, the sales quantity variance would have been even more favourable had it not been for the issue with inventory.

It should be noted also that the increased volumes have partly been achieved due to price discounting. The sales volume variance (sales mix variance plus sales quantity variance) is higher than the total sales price variance, but overall, the performance is not quite as good as it might have appeared at first.

Sales mix profit variance

The sales mix profit variance is calculated by comparing the actual sales with the actual sales at the budgeted mix and then multiplying the difference by the standard profit. The sales mix profit variance is favourable which reflects the mix between the different product categories. There is a higher percentage of sales of all product types other than hand-held vacuum cleaners which have performed relatively poorly. The change in mix to a certain extent reflects the market situation. The market segment for both robotic vacuum cleaners and hand-held vacuum cleaners is growing at a faster rate than other categories however our hand-held vacuum cleaners have been affected by the new model released by a competitor. In order to maintain our market position in this category

we will need to design and develop a better, more efficient model than our competitor's offering.

Review of key performance indicators (KPIs)

New customer orders v returning customer orders: this metric shows a comparison between new and repeat customers. Whilst customer acquisition in terms of new customer orders is important, customer retention in terms of returning customer orders can also drive loyalty, word of mouth marketing and higher order values. The metric shows that new customer orders represent 82% of total orders whilst returning customers represent 18%. This compares to the target of 70%/30%. It is likely that the magazine article has attracted more new customers than we would expect during a 'normal' trading period. Whilst the magazine article therefore is likely to have had a short-term impact in this metric thereby increasing the proportion of new customers, we would want to track the metric to ensure that our existing customers are also returning to buy.

Conversion rate: the conversion rate, measured as a percentage, is the rate at which our website customers are converting (or buying). The number of customers visiting the website pages for floorcare products indicates the level of interest in the products, but it is essential that we are able to convert these potential customers into buyers. The metric shows that the conversion rate has increased against target which will probably be mainly due to the detailed information that was given in the magazine article. The impact of this is potentially short term however and we need to track the metric carefully. A low conversion rate could indicate the need to make changes to our website to provide more product details to customers. A falling conversion rate could indicate that our prices are uncompetitive and that potential customers are purchasing from our competitors.

Shopping cart abandonment rate: the shopping cart abandonment rate will tell us how many users are adding products to their shopping cart but not checking out. The lower this number, the better. If the cart abandonment rate is high, this may indicate that there is too much 'friction' in the checkout process or that potential buyers are not convinced about whether to go ahead with the purchase. The metric shows that the abandonment rate for the period is good at 54% compared to our target of 65%. The magazine article has recommended our products and provided prospective customers with a lot of product detail. This may mean that more customers had made a firm decision to buy before they even accessed the website. We need to regularly track this metric to assess whether we need to make changes to the checkout process or to provide further product details or marketing to convince customers to make the purchase.

Investment of surplus cash

Factors to consider when investing surplus cash

The factors that need to be considered can be categorised into three main areas: profitability, liquidity and safety.

Profitability relates to the return to be gained from the investment. Clearly there is a need to earn as high a return as possible, however a high return usually correlates with high risk in an investment. Thus, it is important that any considerations regarding return are balanced with considerations about the risk of the investment. The risk of the investment is linked to both its liquidity and particularly to its safety.

Liquidity relates to how easily the investment can be converted into cash. Usually the easier it is to convert, the lower the level of return. From our perspective, as long as we are confident that this is surplus cash, then we could invest the funds until they are required for other purposes, for example, expansion of the production facility.

Safety relates to how secure the investment is. Usually the safer the investment, the lower its return. Clearly there is a need to protect the capital value of our investment.

Suggestions of suitable investments

Bank deposit account:

The surplus funds could be invested in an interest-bearing bank deposit account for a period. This is likely to be a safe investment since even if the bank were to find themselves in difficulty, there would likely be government backing in some form with deposits protected, although we would need to check this. The return is likely to be low on this type of investment.

Marketable securities:

We could invest in short term bonds or gilts on the money market. These types of investment are riskier than deposits, especially if the bonds are corporate, however they usually offer the opportunity of a greater return. One way to reduce the risk would be to invest in government bonds such as Treasury Bills. Because these are government backed the risk is negligible, although as a result the return will be lower.

OPERATIONAL CASE STUDY MAY–AUGUST 2020 EXAM ANSWERS

Variant 4

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SECTION 1

CGMA's cost transformation model

The CGMA's cost transformation model consists of six co-dependent areas, which when viewed together, should help us to achieve and maintain long-term cost-competitiveness. The six areas and how these apply to our business are explained below.

Engendering a cost-conscious culture: This part of the model suggests that everyone in our business from the directors to the employees on the factory floor making plastic parts and our distribution employees driving our delivery trucks, should be aware and conscious of the costs being generated and be motivated to reduce cost as far as possible. It is not just top-level managers that should be concerned about cost: there should be a culture where everybody within the business has a part to play.

Managing the risk inherent in driving cost-competitiveness: For this part of the model we need to consider and then manage any risks associated with cost reduction. For example, we could reduce costs by only using the cheapest supplier of batteries. However, this could potentially lead to quality issues and customers choosing our competitors' cordless products rather than ours if these batteries result in a reduction in the running time of the product. Ultimately, we need to balance cost reductions with quality and our customers still wanting to buy our products.

Understanding cost drivers and cost accounting systems and processes: This part of the model suggests that we need to fully understand why the costs that we incur arise and how different variables affect those costs. We need to be aware of the drivers of cost as this will enable us to manage those drivers with the aim to reduce cost. In order to achieve this understanding, we could implement activity-based costing rather than our current absorption costing system. This would involve identifying individual activities within the business and the associated driver of the cost associated with that activity.

Connecting products with profitability: This part of the model is about ensuring that all of our products make a positive contribution towards profit. This means that each product should be costed as accurately as possible to identify any products which are not achieving this, with a view that such products are withdrawn. To achieve an accurate

cost is relatively straightforward for inputs such as raw material, bought-in components and direct labour but is less straightforward for overheads. This is where understanding cost drivers is important.

Generating maximum value through new products: Developing new innovative products is a strength of ours and this part of the model suggests that we should make the most of all the new products that we develop. As well as making sure that all new products are going to be profitable, we should make our new products as appealing to as broad a range of customers as possible. For example, we could consider making our upright vacuum cleaners in different colours.

Incorporating sustainability to optimise profits: This part of the model is about embracing environmental concerns to ensure that we operate in a sustainable way because this helps to reduce cost (in terms of waste) and also potentially gives a competitive advantage. We can embrace this by ensuring that we keep at the forefront of battery technology.

Promotional campaign decision

What the measures mean

The expected value for each campaign is the weighted average of all outcomes, weighted by the probabilities associated with each outcome. The schedule shows that Campaign 2 has the highest expected value and Campaign 3 the lowest. The standard deviation for each campaign is a measure of the variations of the outcomes from the expected value and is therefore a measure of volatility. Based on the estimates Campaign 3 has the greatest volatility of possible outcomes and is therefore potentially the riskiest. The co-efficient of variation for each campaign is its standard deviation divided by its expected value. This gives the relative size of the risk when compared to the expected return and so enables comparison between the campaigns in respect of risk. The schedule shows that Campaign 1 has the lowest risk per E$1 of expected value.

The decision under different risk attitudes

A risk seeker is a decision-maker who is interested in the best outcome no matter how small the likelihood that it will occur. Campaign 3 has the highest of all of the nine possible outcomes of E$1,900,000 and a risk seeking decision-maker would therefore choose this campaign, despite the fact that there is only a 20% chance of this occurring.

A risk neutral decision maker will consider all possible outcomes and will choose the campaign that maximises the expected value. Thus, a risk neutral decision-maker would select Campaign 2. This type of decision-maker would ignore both standard deviation and coefficient of variation.

A risk averse decision-maker will choose the campaign which given the same level of return has the lowest level of risk. Such a decision-maker will choose the lowest coefficient of variation because this is a measure of risk for each E$1 of expected return. Such a decision-maker would therefore choose Campaign 1.

Limitations of using this information to make the decision

The expected values, standard deviations and coefficients of variation are all based on Anthea Mansell's estimates of the impact of each campaign in terms of generating additional profit. Although Anthea is clearly an experienced marketeer and will know the Eastland market well, these estimates could be wrong, and this could affect the decision. In addition, the probabilities are estimated. It could be that the chance of a very good reaction is higher than 20% and this would give more weighting to this outcome for each campaign which, again, might change the decision.

Expected value is not the most likely result, it is the long run average outcome if the same event was to be repeated over and over. This is a one-off decision and hence the expected value is not representative. In addition, the co-efficient of variation assumes a linear relationship between risk and return and that decision-makers will be willing to risk more when the return is higher. This is seldom the case as a decision-maker's attitude towards losing changes as the value risked changes.

SECTION 2

Sales variances

Sales price variances: The variance for the on-line sales channel is adverse which means that the average price achieved per lawnmower was less than budget. This is a direct result of the 30% discount available to all online customers. The variance for the retailer sales channel is favourable which means that the average price achieved for lawnmowers was higher than budgeted. There were no price promotions for this type of customer, although there has been a change in retailers which will have changed the average selling price achieved across all the retailers compared to the budget. The major retailer that left had probably negotiated a significant discount, whilst the smaller new retailers have been secured at a higher selling price.

Sales mix variances: The on-line sales channel is our most profitable channel (because we are dealing directly with the consumer at retail prices) and hence the favourable variance here indicates that we sold proportionately more to this, our most profitable customer group than we had expected. The sales mix variance is also favourable for the retailer sales channel, however because the average profit per lawnmower earned from retailers is lower than the weighted average this indicates that we sold proportionately less to retailers than expected. This is likely the result of the 30% discount promotion in April and May, which will have encouraged the end consumer to purchase online with us rather than through our retailer sales channel.

Overall, the variance is favourable which means that for this lawnmower model the change in mix between the sales channels has resulted in additional profit. However, this change in mix may only be temporary given that the 30% discount has now finished.

Sales quantity variances: This variance indicates that profit is lower than budgeted for the five-month period as a result of selling less of this lawnmower model in standard mix than we expected to. Overall, despite the 30% discount for on-line sales during the period, sales based on standard mix across both sales channels are disappointing and perhaps reflect the increasing competitive pressures facing our garden range.

Total: The total variance is adverse and shows that for this model of lawnmower the impact of selling a lower quantity outweighs the impact of both a favourable (but perhaps temporary) move towards on-line sales rather than through retailers and a favourable change in the selling prices achieved from retailers. However, it should be noted that this variance relates to only one lawnmower model and it's possible that the total of sales variances for other models is favourable which might indicate that there are issues of popularity for this model. Additionally, we need to consider the variances for this model in relation to all garden products because the 30% discount promotion will have had an impact across the range.

Activity based budgeting (ABB) for warehouse employee costs

The budget for warehouse employees during the budget period will be the hours needed for the level of activity expected multiplied by the rate of pay per hour. The rate of pay per hour is relatively straightforward to establish as this will be the agreed rate with the employees. The number of hours required is less straightforward but will be calculated under ABB as follows:

- The first step to determine the hours required is to establish the activities that drive those hours. For the finished goods warehouse these activities include receiving finished goods and placing pallets onto the delivery trucks.

- The next step is to consider each activity separately and to determine the employee time that we expect to need for each of these activities during the budget period. For example:

    - For receiving, each pallet of finished goods received from the production facility is moved into the correct location by forklift. Each time a pallet is moved, employee time is used to operate the forklift and therefore we can establish the total time needed as the number of pallets to be moved (which is the cost driver) in the budget period multiplied by the time taken to move each pallet. However, not all pallets will take the same amount of time to move because there are different locations in the warehouse. However, we could split the warehouse into say three zones and establish an average time to move a pallet into each zone and calculate a total per zone and then an overall total.
    - For placing the loaded pallets onto delivery trucks, the number of hours required should be more straightforward to establish. Each truck has the same capacity and we know that on average each truck is loaded to 85% of this capacity. Therefore, we can establish the time it takes to achieve this. The total hours required will be the number of trucks loaded (which is the cost driver) multiplied by the time taken to load each truck.

- The next step is to accumulate all the hours required for each activity into a total number of hours required for the budget period. This can then be used to establish how many staff are required based on the number of hours each staff member would be available for work during the budget period. This would need to include any hours needed for training and allowances for sickness and employee holidays.

- The final step would be to quantify this as a cost by applying the appropriate hourly rate for the employees required.

Benefits of using activity based budgeting for warehouse employee costs

Our current system of budgeting means that inefficiencies have possibly been built into the budget. For example, the number of employees in the warehouse is determined by the Warehouse Manager, although ultimately, he or she is not held accountable for the cost of this. Therefore, it is possible that the number of employees is higher than it really needs to be. Using activity based budgeting means that we look at what we need our finished goods warehouse employees to do in terms of activities. It could be, as a result of looking in detail at how much time each activity takes, that the warehouse needs less than 34 employees, and hence a cost saving can be identified.

Another benefit from using this approach is that we will have a much better idea of what we expect our employees to be doing and when they will be active. This can help us

with planning and utilising staff more effectively. For example, it could be that we identify a period within the budget where perhaps the loading employees are likely to have idle time (because sales orders are low) but the receiving employees are stretched because of inventory being built up. Predicting this means that we can be more effective at moving employees around within the warehouse.

SECTION 3

‘Beyond budgeting’

With a ‘beyond budgeting’ approach, rolling forecasts on a monthly or quarterly basis, would be created as an alternative to the annual budget. These rolling budgets will use the latest information each time (for example, latest prices for bought-in components, plastic pellets, batteries and so on as well as latest sales and production forecasts). This means that the budgets will be more up to date than the budgets that we currently have. This should result in budgets which are more forward looking leading to better resource allocation (because our plan will be more informed) and allow us to adapt to changes more quickly.

Additionally, under a beyond budgeting approach, instead of just evaluating performance against budget targets (through variance reporting) the focus is on a wide range of key performance indicators (KPIs). For example, percentage of customer returns or percentage of customers placing an order compared to visiting the website. We generate a lot of data analytics from our website and as we increase automation and digitalisation within our production and distribution processes this will increase: KPIs can be established which utilise this data. In addition, when setting KPIs we should look at external targets set by our competitors. For example, if our main competitor promised next day delivery then we should be setting similar targets. Assessing managers’ performance against appropriate KPIs measured over time will encourage them to strive for continuous improvement within the business and should also improve performance against competitors as managers focus on key metrics linked to customer satisfaction.

Beyond budgeting also involves participation across the business and is a team-based approach. Currently, we take a central approach to budgeting where the annual budget is set by the directors with little input from the rest of the business. Under a beyond budgeting approach this would change as the people within the business with the detailed knowledge would be involved in creating the rolling budgets. The main benefit of this is that the budget itself will potentially be more realistic. In addition, participation in the process should motivate our managers by giving them clear responsibilities and targets that they will have been involved in setting.

Suggested KPIs for the Warehouse Manager

Percentage of orders delivered after the agreed delivery date
This would be calculated as the number of orders delivered in the period after the agreed delivery date divided by the total number of orders despatched in the period x 100. The target should be nil.

The Warehouse Manager is responsible for ensuring that sales orders are satisfied in a timely manner. If corporate customers and our distributors continually receive their orders late this could damage our relationship with them to the point where they seek alternative cordless homecare and garden product brands. If not monitored, lateness could result in lost sales and hence it is important that any lateness is monitored.

Percentage of products returned because they were not ordered
This would be calculated as the number of products returned in the period because they had not been ordered divided by total number of products despatched on the period x 100. Again, the target here should be nil.

The Warehouse Manager will be responsible for ensuring that the correct items are picked for each sales order and hence it is important to understand the level of errors. Where items are incorrectly sent to a customer or mistakes in orders are continually made, this could damage customer relations and hence potentially future sales.

Forklift truck decision

To make the decision, from a purely financial perspective, we need to apply relevant costing principles. We will need to identify costs and savings that are incremental (that is costs or savings that are cash flows and that only arise as a result of that option being taken) to each of options A and B. We will then choose the option with the highest incremental net benefit.

In respect of option A, the incremental net benefit will be calculated as:

- The net proceeds of selling the forklifts in six-months' time (E$24,000 – E$800) less the cash flows associated with operating the forklifts for the six months, which are the fuel and repair costs of E$8,000. Note that the depreciation cost is ignored because it is an accounting adjustment rather than a cash flow.

In respect of Option B, the incremental net benefit will be calculated as:

- The net proceeds of selling the forklifts now (E$30,000 – E$1,000) plus the labour cost savings of E$4,500 less the lease cost of E$15,000 less the fuel costs of E$4,000 for the period.

Other factors to consider:

The decision of which option to take should not be based solely on which has the highest incremental net benefit. We should also consider the following:

- The specifications and operating capacity of the forklift trucks that will be leased. We need to consider whether the labour cost savings are valid in light of the efficiency of the forklift trucks compared to what we have now.
- Will staff need to be trained to use the new forklift trucks? There could be hidden training costs which will need to be factored into the financial analysis.
- Are there other hidden costs, such as maintenance costs, for the leased forklift trucks which might make it a less attractive option?

SECTION 4

Accounting treatment for the leased equipment

In accordance with IFRS 16, Leases, where equipment is leased, this gives rise to both a right-of-use asset and a liability. The right-of-use asset represents the fact that we, ChargeIT, have the right to use the equipment for the lease term. The liability reflects the fact that we have a future obligation to pay the lease payments over the lease term. For this lease there is an initial lease term of 10 years and then we have the option to extend for a further 5 years. IFRS 16 states that the lease term should be the period of non-cancellable payments plus any optional period if the option is reasonably certain of being exercised. In our case the lease term would appear to be the full 15 years.

Lease liability

The liability will initially be measured and recorded at the present value of the lease payments that have not yet been paid. This will include the nine payments of E$25,000 a year to be made from 1 January 2022 onwards and the further five payments of E$15,000 a year after that. The discount rate used to calculate the present value should be the interest rate implicit in the lease which is 10%.

For the year ended 31 December 2021, the lease liability will be increased by a finance charge of 10% of the initial liability value. This will be charged to profit or loss. In subsequent financial years the opening liability will be first decreased by the payment at the start of the year and then the interest charge at 10% will be added. This interest charge will also be charged to profit or loss and reflects that fact that leasing is essentially a form of finance.

Right-of-use asset

The right-of-use asset will initially be measured at the initial measurement value of the liability plus the lease payment made at the start of the lease (E$25,000).

The right-of-use asset will need to be depreciated over the lower of the lease term and the life of the asset, which as noted above is the same at 15 years. For the year ended 31 December 2021 this will result in a full year's depreciation charge in the statement of profit or loss with initial value of the right-of-use asset reduced by the depreciation. In subsequent years, there will be a further depreciation charge each year and further reductions in the right-of-use asset.

Additional expenditure on packing equipment

IAS 16: Property, plant and equipment normally requires expenditure on an asset that had previously been recognised to be charged to profit or loss as incurred. However, if that expenditure is expected to increase the future economic benefit of the asset in excess of the originally assessed level of performance, then it can be added to the carrying value of the asset. In our case the packing equipment is to be reconditioned, the effect of which is to increase its capacity and to extend its useful life by 2 years compared to our original assessment. Therefore, the future economic benefit that will be derived from this asset is increased and hence this subsequent expenditure on the asset can be capitalised.

In January 2021 once the expenditure has been incurred, the asset value will increase to E$61,000 + E$34,000. For the year ended 31 December 2021, this asset will be depreciated over its remaining life of 5 years and so the depreciation charge will be E$61,000 + E$34,000 divided by 5. This will be debited to profit or loss for the year and

in the statement of financial position at 31 December 2021, the asset will be included at a value of E$61,000 + E$34,000 less the depreciation for the year.

Inventory management

An aggressive approach to inventory management would mean that we reduce the level of inventory we hold, thus reducing part of our investment in working capital and improving cash flow.

Bought-in components and other raw materials

Our current policy is to hold surplus inventory to ensure that there is no disruption to production and to take full advantage of bulk discounts available from our supplier. With an aggressive approach our key principle will be to reduce inventory levels as much as possible which means that we would not hold surpluses or take advantage of bulk discounts just because they are available.

This could be achieved by adopting a Just-In-Time approach for purchasing where we time orders so that the components and raw materials can be delivered and then used straight away in production. This would need good relationships with our suppliers who would be able to satisfy our orders quickly. We would also need good information about future production and therefore purchasing requirements, which may require investment in new systems.

The main implications of taking an aggressive approach will be a potential reduction in profit as a result of losing the bulk discounts (although this would be mitigated slightly by the reduction in holding costs). In addition, there would be a greater risk of not having raw materials and components when we need them because say a supplier is late with a delivery.

Finished goods

Our current policy is to ensure that we have a certain level of finished goods inventory of all models that we make because we do not always know what our retailers and distributors will order at any time. It is also hard to predict what our online customers will order.

With an aggressive approach, we could seek to move towards a system of producing on the basis of sales orders rather than for inventory. This would require a change in the relationship with our customers and a change in their expectations of how quickly we can supply them. It would also possibly require investment in more sophisticated sales ordering and production scheduling systems.

The main implications of taking an aggressive approach such as this will be an increased risk of damaging customer relationships, especially in relation to online customers who will expect to place an order and receive the goods in a short space of time. These customers are our most profitable and it would be counter-productive if they started buying through a retailer rather than directly with us because of a long delivery time.

OPERATIONAL CASE STUDY MAY–AUGUST 2020
EXAM ANSWERS

Variant 5

These answers have been provided by CIMA for information purposes only. The answers created are indicative of a response that could be given by a good candidate. They are not to be considered exhaustive, and other appropriate relevant responses would receive credit.

CIMA will not accept challenges to these answers on the basis of academic judgement.

SECTION 1

Decision about which agent to use

The decision tree and how we should use it to make our decision

This decision tree is a diagrammatic representation of the decisions that we need to make. For this decision tree the two decisions are whether to choose option 1 or option 2 for Bryants and then whether it would be better to use Bryants or Hoppers. There are three possible combinations: use Bryants with option 1, use Bryants with option 2 or use Hoppers.

For each of these three possible combinations, the decision tree shows on the right-hand side, a circle which represents the point at which there are three possible outcomes and at which the expected value is calculated. For example, looking at Bryants and option 1, the decision tree shows that we expect to generate E$13,200,000 of cash flow in Asia if the market reaction is very good, E$9,900,000 if it is good and E$6,600,000 if it is poor. The expected value of E$9,240,000 represents the weighted average of the possible outcomes when the outcomes are weighted by the probabilities.

To make each decision we need to look at the decision points (shown by the square boxes). Point A is the decision whether to choose option 1 or option 2 for Bryants. To make this decision we need to compare the expected value of option 1 (E$9,240,000) with the expected value of option 2 (E$9,300,000) and choose the highest. Thus, we should choose option 2 which is to have a commission rate that changes with sales value.

Point B is the decision whether to use Bryants or Hoppers. To make this decision we need to compare the expected value of choosing Bryants (which is E$9,300,000) with that of Hoppers (E$11,979,000 less E$2,000,000, which is E$9,979,000). Again, we should select the highest value as this gives us the highest expected cash flow. We would therefore choose Hoppers.

Limitations of using this decision tree

A key limitation of using this decision tree to make our decisions is that it is based on estimates of the additional cash flow achievable for each of the market reactions. Asia is a completely new market for us and therefore our estimates of sales volumes and

cash flows are subject to potentially significant error. In addition, we have assumed that the extra marketing campaign under Hoppers will increase volumes sold by 10%, however again this is purely our own estimate. In reality there could be no impact on volumes sold.

Linked to this, the probabilities are also estimated. There are a whole range of factors that will affect market reaction to our products such as competition and consumer preference in Asia for cordless floorcare and gardening products. We have assumed that the probability of a very good reaction increases from 20% to 50% as a result of the additional targeted promotional campaign. There is no guarantee that this will be the case. Indeed, there is every chance that the probabilities of each market reaction stay the same. If this were the case the expected value of E$11,979,000 would fall as there would be less weighting for the outcome associated with a very good market reaction and this would change the decision.

A decision tree approach to decision making is based on expected values which are weighted averages of all possible outcomes, weighted according to their probability of occurrence. This approach is valid where a project is to be repeated time and time again because the expected value should be the same as the average of the results from all of the occurrences. However, this approach is not valid for a one-off decision such as this.

Because a decision tree approach uses expected values there is an assumption that the decision maker is risk neutral. This means that the range of possible outcomes and their probabilities are ignored. In this instance, whilst Hoppers gives the best result on an expected value basis, this includes a 20% chance that the outcome will be a profit of E$7,260,000 less E$2,000,000 which is the lowest of all of the possibilities.

Non-financial factors to be considered for this decision
As well as considering the financial implications of the decision we also need to consider qualitative non-financial factors such as:

- The quality of service that the agents are likely to give us. Whilst both Bryants and Hoppers are offering the same basic services (with Hoppers also offering the additional targeted promotional campaign), we need to consider what their track record and reputation for providing these services are. We also need to consider how they apply business ethics to ensure that we protect our own reputation. Poor quality of service could jeopardise the success of the launch into Asia.

- Asia is a big territory and therefore we need to be sure that these agents are able to access all the areas that we want to target. It could be that each agent is stronger in some areas than others and hence we need to ensure that these strengths match up with our requirements.

- Linked to this we should consider whether it is better to contract with a single agent or to split the territory either by country or area and engage specialist agents in each.

KPIs for the new agent

Three KPIs that could be used to assess the performance of our Asian agent are as follows:

Number of customer complaints about distribution issues: The agent will be selling our products on our behalf and will be responsible for ensuring that customers receive the products that they have ordered within the agreed time. The agent will be representing our brand and hence we need to ensure that the level of complaints regarding any distribution issues are as low as possible.

Percentage of customer orders not satisfied within 2 working days: The agent will be responsible for ensuring that it has sufficient inventory to satisfy customer orders in a timely manner and this measure will capture when this is not happening. If there isn't sufficient inventory, then customers are likely to move to a competitor's products and our sales will be reduced. Also, if orders for our products are consistently not satisfied this would affect our reputation in this new territory where we are trying to build a brand presence.

Number of new customers compared to target: The agent will be responsible for all aspects of sales management including securing new customers. This KPI reported each month will measure how well the agent is performing in relation to a pre-agreed target for new customers. The more customers, the higher the level of sales and profit.

SECTION 2

Fixed production overhead variances

Expenditure variance
The fixed production overhead expenditure variance is the difference between actual fixed production overhead incurred in July 2020 and the budgeted fixed production overheads. The variance is adverse which means that we incurred E$25,034 more fixed production overhead than we had budgeted. This is because:

- We expanded the motor assembly production area at the start of the month resulting in the purchase of additional equipment. This will have resulted in additional depreciation costs which were not included in the original budget. There might also have been additional insurance costs as a result of the new equipment.

- We have had to hire off-site warehouse space to accommodate additional bought-in component inventory. This will have increased storage costs compared to our original budget. Also, we've paid more overtime than anticipated, and the overtime premium will have increased production overhead costs.

Efficiency variance
The fixed overhead efficiency variance compares the actual hours used with standards hours for actual production. This difference in hours is then valued at the fixed production overhead absorption rate. The variance is adverse which means that we used more direct labour hours to produce our products compared to standard. In other words, direct labour was not as efficient as it should have been. In order to increase capacity, we took on additional trainees who learned what was required of them by watching others rather than through formal training. This is likely to have slowed down the rate at which our employees worked because they will have been explaining as they worked. In addition, once the trainees were operating, it is likely that because they were new to the process, they will not have worked as quickly as our experienced employees.

Capacity variance
The fixed overhead capacity variance is the difference between the originally budgeted direct labour hours and the actual direct labour hours for the month, multiplied by the standard absorption rate. The variance is favourable which means that we have increased our capacity. This has arisen because we have invested in new equipment and taken on more trainees.

Usefulness of using these fixed production overhead variances for cost control
Of the three fixed production overhead variances calculated, the only one that is potentially useful for cost control is the expenditure variance because this tells us the difference between what we incurred and what we planned to incur on fixed production costs. However, because we only calculate this on a total factory-wide basis, its usefulness is limited. We know that certain costs such as depreciation and equipment insurance will have increased, but we don't know how much of the expenditure variance as calculated relates to this. It could be that there are other factors affecting the variance, which are hidden because the variance is only one figure. It would be more useful to break this expenditure variance down into perhaps different areas of production to have a better idea of how each area is performing. The efficiency and capacity variances are

components of the volume variance which measures the difference between the budgeted fixed production overhead and the fixed production overhead absorbed during the period. The volume variance therefore has little if any value in terms of controlling overhead costs as it just tells us that the level of activity was different to that budgeted. The efficiency variance does tell us about direct labour efficiency, but even this is of little use because it is not specific to any department or production area.

Activity based costing (ABC)

How an ABC approach will differ from what we do now

If we were to use ABC, there would be a number of differences to the approach we take now. Firstly, we would look at our overhead costs in a lot more detail by identifying production areas (injection moulding, motor assembly, finished good assembly) and then for each production area break it down into activities. For example, for injection moulding, production activities will include setting up the machinery each time a new mould is required, requisitioning raw materials from stores, loading of the plastic pellets into the melting vat, operating the machine and cleaning the machine each time a colour change is required.

Secondly, each activity would have its own cost centre (known as a cost pool) into which all the costs associated with the activity would be collated. For example, cleaning the machine would include the cost of indirect labour, the cost of cleaning products and water used as well as a share of the cost of energy consumed in the cleaning process. Thirdly, we would not use direct labour hours as the basis for absorbing each of the overhead cost pools. Instead each cost pool would be absorbed on the basis of a cost driver, that is the activity or action that drives or generates the cost. For example, the cost driver for injection moulding machinery cleaning could be the number of cleans because each time the machine is cleaned a cost is incurred: this is an example of a transaction driver.

There are some activities though where direct labour hours may still be an appropriate driver. For example, the cost of operating the injection moulding machinery (largely energy, depreciation and maintenance) is going to be driven by the running time of the machine and hence a volume related driver such as direct labour hours or machine hours would be appropriate.

Would implementing ABC be beneficial to our business for cost control

Whether implementing ABC would be beneficial for our business ultimately depends on whether the benefits gained (in terms of improvements to profitability) exceed the significant costs (in terms of time) associated with its implementation. There is no doubt that the detailed information arising from implementing ABC would allow management to be better placed to control overhead cost. Knowing what each separate element of cost is within each production department and then establishing what drives each element of cost, means that management can more easily identify where cost savings are possible by controlling the cost driver.

For example, it could be that by reviewing the injection moulding machinery cleaning costs, a more cost-effective process can be established whereby production is scheduled so that all plastic parts in a particular colour are moulded at the same time, meaning fewer cleans.

SECTION 3

Expenditure on the finished goods assembly line

IAS 16: Property, plant and equipment, states that the cost of an item of property, plant or equipment is made up of its purchase price (inclusive of duties and non-recoverable taxes) and the total of any costs which are directly attributable to bring the asset into working order for its intended use. Therefore, for the new finished goods assembly line we can capitalise its purchase price of E$1,000,000. In addition, we can also include the costs of installation of E$125,000 as these are directly attributable to being able to use the assembly line.

The cost of training of E$5,000 should not be included in the asset value on the basis that the training is not necessary to enable the assembly line to be in working order for its intended use: this will happen at the point that it has been installed. Instead, the training costs will be charged to the statement of profit or loss because staff are free to leave employment when they wish and therefore, we cannot control what they do.

Thus, an asset of E$1,000,000 + E$125,000 will initially be recorded and this will be depreciated over its useful economic life of 15 years from the date that the assembly line is available for use (even if it isn't used from that date). Therefore, there will be depreciation of approximately two months charged to the statement of profit or loss. The amount reflected in the statement of financial position will be the cost of the assembly line less this depreciation.

100% first year tax allowances

In simple terms our taxable profit for the year is calculated as profit for the year, add back accounting depreciation less tax depreciation allowances. Normally our tax depreciation allowances are 25% on a reducing balance basis, but for this asset, first year allowances of 100% are available.

The effect of the purchase of the new assembly line is that it will reduce taxable profit for the year ended 31 December 2020 because the accounting depreciation added back will be a relatively small value ((E$1,000,000 + $125,000) x 1/15 x 2/12) compared to the first year tax depreciation allowances ((E$1,000,000 + E$125,000). Thus, the tax charge and the amount of tax we will have to pay for this year will be significantly lower than it would have been had we not purchased the asset.

The effect of a 100% first year tax depreciation allowance is that all of the tax benefit is received in the year that the asset is purchased. This means that there will be no allowances available for this asset in 2021 and onwards to lower the amount of tax payable.

Finished goods assembly line conveyor

To be reclassified as an asset held for sale, an asset needs to be available for immediate sale in its present condition and its sale must be highly probable. A sale is highly probable when: management are committed to sell the asset; there is an active programme to find a buyer; the asset is marketed at a reasonable price; the sale is expected to take place within 12 months; and it is unlikely that the plan to sell the asset will change.

The old assembly line will cease to be used on 31 October 2020 but will not be available for immediate sale in its present condition until it has been dismantled, which will happen in November. From 1 December 2020 the assembly line will be advertised for sale and

therefore from that date it could be said that there is a management plan to sell the asset and that a buyer is being sought, presumably at a reasonable price. In addition, we expect the old assembly line to sell quite easily and therefore this would be within 12-month period specified in the accounting standard.

Therefore, once it has been dismantled the old assembly line asset will be reclassified as an asset held for sale and depreciation will stop. At 31 December 2020 it is unlikely that the asset will have been sold and therefore, it will be recorded in the statement of financial position as an asset held for sale. This will be at the lower of its carrying amount at the date that is reclassified as held for sale (which is after it has been dismantled and so will be E$35,000 less any depreciation) and fair value less costs to sell (E$50,000 less $4,500). It would appear that this asset would be carried at its carrying amount as this is lower than the fair value less costs to sell.

Feedforward control

Currently we use a form of feedback control whereby at the end of each budget period we calculate and review the variances between what we expected to happen based on the standards in our budget, and what actually happened. Corrective action is then taken, if necessary, to ensure that costs are controlled. For example, this month we have given our new production employees additional training as a result of the high direct labour efficiency variance for last month.

Feedforward control is different in that it involves the comparison of what we expect to happen with a forecast of what is currently expected to happen based on the latest information. With this system of control the process of taking action is much earlier. For example, in the early stages of last month we could have forecast the number of direct labour hours we expected to use based on the way that the new production employees were performing and compared this to our expectation based on our standards. This would have allowed us to identify the problem with the low efficiency of the new production employees and hence start the training earlier.

Benefits to our business of using a feedforward control approach

The main benefit of using a feedforward system, as illustrated above, is that we can take corrective action much sooner than with a feedback control system. This should lead to better cost control because we can more quickly identify when issues are arising. Given the example above, this will be especially important going forward as we are planning to recruit more new production employees.

Such a system also allows us to foresee possible constraint issues. Recently there has been significant growth in sales, and it is anticipated that this rate of growth will continue as the ChargeIT name and reputation continues to grow globally. However, we can only make these sales if production is able to keep up with demand. Whilst we are taking steps to expand production capacity, the use of feedforward control in respect of sales and production areas of the business will allow us to foresee any issues.

Feedforward control is particularly useful for cash forecasting where there is a constant need to look forward and update comparisons. This will be particularly important as we expand and increase investment in working capital.

SECTION 4

Zero based budgeting (ZBB)

Establish activities and objectives
The first stage of applying ZBB will be to decide on the discretionary support activities. One example of such an activity is maintenance of production machinery. For each activity an objective is established: for example, the objective of production machinery maintenance could be to ensure that machinery breakdowns are limited.

Establish decision packages
For each activity, there will be different ways in which its objective can be achieved or different levels of expenditure that could be incurred. These choices are reflected in decision packages which should be drawn up by those people closest to the activities.

Decision packages can either be mutually exclusive (different ways of achieving the objective) or incremental (different levels of service to achieve slightly different outcomes). For machinery maintenance, mutually exclusive decision packages could be developed to either perform the maintenance in-house, with our own dedicated employees or we could outsource to an external specialist maintenance company.

Incremental decision packages can then be developed for each option, starting with the base package, which is the minimum level of machinery maintenance. We could decide in respect of this base package that none of the new machinery installed as part of the expansion needed any form of maintenance and that existing machinery had an annual check or was only maintained when there was evidence of issues. Clearly this would be a potentially risky strategy as any breakdown in machinery, no matter how small could be costly in terms of lost production.

After the base package has been developed incremental packages will then build on this and add additional maintenance time and different activities that should be performed. For example, it could be that the new machines are scheduled to have an annual service rather than having no service. Whilst this will generate additional cost (in terms of either the fee for a specialist maintenance company or the cost of the time for our own employees), it will help to ensure that the new machinery keeps working optimally.

Perform cost/benefit analysis and rank decision packages
After the decision packages have been fully developed with all of the costs quantified, a cost/benefit analysis needs to be performed. Clearly, one benefit of spending money on machinery maintenance is to reduce the risk of breakdown, which if it happened could have a detrimental effect on the ability to produce. There are other benefits though to maintenance in terms of keeping the machinery working optimally in order to safeguard throughput and the quality of production as well as prolonging the useful lives of machinery. Each decision package would need to be considered against these benefits and then ranked in order of preference.

Allocate resources
After all decision packages across the business for support activities such as for machinery maintenance have been ranked, the whole budget is then considered and the resources available allocated to each part of the business accordingly.

Economic order quantity (EOQ) model

How the model works and the nature of our holding and ordering costs
The key principle underpinning the EOQ model is to minimise the total of inventory holding costs and inventory ordering costs. The optimal order quantity is the order quantity size which would achieve this. If this model were adopted, we would, for each type of bought-in component, order the same quantity (the EOQ) each time at regular intervals throughout the year.

Our holding costs will include the costs associated with storing the bought-in components such as the costs of operating and maintaining our warehouse (including depreciation, energy, employee training costs and so on). Holding costs will also include insurance, the cost of any inventory that becomes damaged (which is a current problem). Significantly, the cost of holding also includes the finance cost associated with the investment in working capital: the higher the level of inventory the higher this cost.

Ordering costs will include supplier's delivery charges (which are higher for emergency orders) and the internal costs of administration associated with ordering (such as procurement labour cost).

Suitability of this model
In principle, the model is useful because it determines an order quantity that minimises the total of holding and ordering costs. It is possible to build in a level of buffer inventory and we can use the model to assess whether bulk purchase discounts are worthwhile or not, by considering purchase costs alongside the costs of holding and ordering.

However, the model is based on assumptions, which reduce its suitability for us. Firstly, EOQ assumes that demand for the bought-in component in question is constant throughout the year and can be predicted accurately. Over the past few months, we have expanded into new markets and sales have been higher than we expected, meaning that our predictions have not been that accurate. However, given that we have been in the market for a while now, it's likely that this will settle down and demand will be easier to predict. However, if in time we launch a new product, the level of predictability will fall (certainly initially) and this will affect the accuracy of the EOQ.

Secondly, the EOQ model assumes that holding costs are variable with the amount of inventory held. The reality is that this is not the case for most of our holding costs. The costs of operating the warehouse are likely to be mostly fixed in nature.

Thirdly, the EOQ model assumes that lead time (the time taken from placing the order to receiving the components) is known with certainty. However, as we've recently experienced, this is not necessarily the case because some suppliers have not delivered when expected.

OPERATIONAL CASE STUDY MAY–AUGUST 2020 EXAM ANSWERS

Variant 6

These answers have been provided by CIMA for information purposes only. The answers created are indicative of a response that could be given by a good candidate. They are not to be considered exhaustive, and other appropriate relevant responses would receive credit.

CIMA will not accept challenges to these answers on the basis of academic judgement.

SECTION 1

Time series information

What the information shows

The regression trend lines represent the trend in the purchases of cordless vacuum cleaners over the period 2015 to 2019 inclusive. The trend is the average position over time with seasonal variations smoothed out.

The first number in each trend equation represents the starting point for the trend at the beginning of the period: 80,000 purchased through websites and 150,000 purchased at physical stores. The second part of each equation represents the trend in purchases since this starting point. For purchases through websites this means that for each successive quarter on average the trend is for the volume purchased to increase by 6,400. For purchases at physical stores, the trend is for the volume purchased to decrease by an average of 1,200 in each successive quarter. These trends indicate that online purchases by consumers are increasing at the expense of buying in a physical store. The relative movements in the trends shows that over the past 5 years the overall trend in the purchases of cordless vacuum cleaners is upwards (by 5,200 units a quarter). This is in line with our own sales growth over the past few years and consumers switching from corded to cordless vacuum cleaners.

The second part of the analysis looks at how seasonality affects the trend. For example, we can see that in the period October to December total purchases are on average 500 units higher than the trend, but in April to June were 300 units lower than the trend. These seasonal differences are not significant given the size of quarterly total purchases which indicates that the time of year has little impact.

The time series analysis clearly shows that over the past 5 years demand for cordless vacuum cleaners is growing and that consumers are increasingly buying online rather than in stores. Therefore, on this basis, it would seem sensible to target those retailers with a strong online presence or online only presence. However, this analysis is based on the final activity of the buying process which is actually making the purchase. Many consumers will visit a retail store to view our products and perhaps try them out before

making a purchase later online. It therefore might be better to focus on retailers where there is both a strong physical and online presence.

How to use the time series information to create our sales forecast and how this sales forecast will affect our budgetary planning

The total trend line and seasonal variations can be used to help us forecast total sales of cordless vacuum cleaners in Eastland by extrapolating onwards from the end of 2019. For example, quarter 2 of 2021 would be quarter 26 and using the regression line this would give total predicted website purchases of 230,000 + (5,200 x 26) before the seasonal adjustment of minus 300 units. From this total we can then estimate our share of the market based on our existing position adjusted for the increase in retail opportunities that taking on new corporate customers gives us. This will give us a sales forecast.

Establishing a sales forecast is the first stage of revising our budget to reflect the changes in the business. The budget is our plan of what we expect to happen in the future, and its starting point is the level of sales because this is the key factor that drives production and all of our other activities.

In order to sell more cordless vacuum cleaners, we need to produce more which means that we need to plan for an increase in production. This might require additional capital spend in terms of equipment and it could mean that we need to plan to hire new staff. In addition, we buy in a lot of components and sub-assemblies and therefore in order to meet increased production we need to make sure that our supply chain is adequate. We may need to secure new suppliers which takes time. Having a good sales forecast allows us to know where we need to plan to make these sorts of production changes.

Receivables management

Impact on the management of receivable balances

If we increase the number of retailer accounts, it will have a direct administrative impact on the workload of our credit control function. Each potential retailer will need to have their creditworthiness checked and once accepted as customers, we will need to set credit limits and monitor payments received against these credit limits. There is a risk that our existing staff are unable to deal with the increased workload.

Another impact of expanding our customer base to include smaller independent retailers, is that there is an increased risk of irrecoverable debts. At the moment, we have three major retailers with whom we have good relationships and who usually pay on time. Increasing the number of retailers increases the chance that we take on a retailer that either is a poor payer or will struggle to pay.

Ways to mitigate any additional risk

In order to mitigate and manage any additional risk we need to ensure that the following happens:

- We have sufficient trained resource in the Finance Department to manage the increase in workload. We should consider recruiting an additional credit controller if necessary.

- We need to ensure that we only accept new retailers which are creditworthy by performing robust creditworthiness checks. We should look at the potential retailer's financial health from reviewing financial statements, looking at press information and possibly also obtaining a credit reference from an independent agency.
- Once the retailers are accepted as customers, we need to ensure that we set reasonable credit terms (both in terms of the amount we are prepared to sell to them on credit and the length of time given to pay). This should be based on the assessment of their creditworthiness.
- We need to have robust credit control procedures in place which ensure that invoices are accurately processed in a timely manner and that aged receivables reports are prepared and monitored so that outstanding debts are chased up in a timely manner.

SECTION 2

Comparison of suppliers for Superclean batteries

The graph

The graph has been drawn up to visualise the charging structures of the two suppliers and shows us that:

- Supplier A and supplier B have different charging structures. The demand probability table shows that demand can only be in discrete batches of 2,000 batteries, but we have assumed a continuous range when drawing the graph to help with the visualisation.
- Supplier B is charging only a variable cost per unit. This cost per unit is initially high but falls after 8,000 units as shown by the kink in the line and the fact that the gradient on the line becomes less steep. This indicates that Supplier B is offering a bulk discount for batteries purchased in excess of 8,000 units a month.
- Supplier A is charging a fixed cost each month plus a variable cost per unit. The fixed cost is approximately E$25,000 per month because this is the cost where demand is nil. The gradient of the line for Supplier A indicates that the variable cost per unit is lower than for Supplier B both before and after the bulk discount because the line is less steep than the line for Supplier B.
- If demand is lower than approximately 7,000 units a month Supplier B is the cheapest option. If demand is higher than this, Supplier A is the cheapest option, although the differential between the two suppliers, as shown by the gap between the two lines, is not that significant.

Using an expected value approach to make the decision, the information in the table shows that the sum of the demand levels multiplied by the associated probabilities is 11,600: this is the expected value of demand. Therefore, on financial grounds based on the expected value of demand we should choose Supplier A because at this level of demand, this supplier has the lowest total cost.

The limitations of using expected value to make this decision

The use of expected values to make a decision such as this is flawed for the following reasons:

- The probabilities have been established internally and therefore it is quite possible that this data is not accurate.
- This is based on the expected value of demand. If we looked at the expected value of cost for each supplier, we would not necessarily make the same decision. This is because the cost at the expected value of demand is not always the same as the expected value of the cost where the cost structure is not linear across the range (which it is not here because of the bulk discount available).
- Expected value represents a long run average and assumes that over time the average result will occur. We need to make a choice here of committing to use either supplier A or supplier B for a period of a year and hence effectively this is a one-off decision. In addition, the expected value of demand has been calculated to be 11,600 batteries, which is not one of the delivery options available.

- An expected value approach ignores risk. There is a 15% probability that actual demand will be less than 7,000 units and, in this situation, supplier B would be the cheapest option. This probability is relatively small, however, it does need to be taken into account.
- Expected value ignores other non-financial factors that should be considered including the reliability of the supplier in terms of battery quality and delivery and factors such as the ease of the supplier relationship and the willingness to commit to a fixed cost.

Digital costing system

How a digital costing system would change the way we gather information for use in costing our products

Currently we cost our products using standard absorption costing for which information on the standards is manually gathered once a year. We set standards for all inputs that go into making a product. For example, we expect that on average an upright vacuum cleaner will cost us E$65 for direct materials and E$8.25 for direct labour (the latter of which is calculated as the number of hours expected to produce an upright vacuum cleaner multiplied by the hourly rate). In addition to the direct costs, the standard cost for each of our products includes a share of variable and fixed production overheads based on the expected level of expenditure and the number of direct labour hours required to make the product.

A digital costing system would be dynamic and would involve linking our internal digital systems (for example, our digital production, purchasing and sales systems) with those of our suppliers, customers and the market. In a digital costing system, data is gathered from all of these sources and from the internet in real time to give up-to-date costing data which reflects current information. For example, our production systems could give us up-to-date information about time in production. Purchasing and supplier systems would give us current input prices for each of the components that we buy in, or, for the plastic pellets that we use in our injection moulding. Linking this to information on the internet would also allow us to compare prices with alternative suppliers. Purpose built digital costing systems can be developed which allow all of this to happen.

The benefits of using a digital costing system for our business

Sourcing suppliers and supplies could be improved because we will be able to identify the best price or the best lead times available by linking our production and purchasing systems with supplier systems and the wider internet. We have a lot of bought-in components and having up-to-date information available about pricing and delivery times would assist with procurement decisions. Some digital costing systems can even make intelligent suggestions for supply options through the use of artificial intelligence.

Standards can be regularly updated. Currently standards are only changed once a year and therefore can potentially be out of date quite quickly. However, by using a digital costing system, standards can be updated to be appropriate for the time (that is, reflect ruling market prices and current operating conditions). Knowing these up-to-date standards, managers will be aware of the current environment and should act accordingly in terms of purchasing and operating decisions.

As a result of the standards being real time there should be no planning variances and any operational variances will arise because the manager is not acting in accordance

with the current environment. We can then hold managers accountable for performance against the up-to-date standard. For example, procurement management can be held accountable for bought-in component prices.

In addition, it will allow us to better understand the factors or activities that are driving cost, particularly overhead costs. The system will give us information that allows us to see where cost is being incurred and therefore where focus should be directed in managing cost. A digital costing system would also give us better information to allow us to use dynamic pricing for our products so that we can change prices as soon as costing changes or the market changes.

SECTION 3

SuperClean variances

Sales variances
The sales price variance is adverse which means that we sold our SuperClean products at a selling price lower than we had budgeted. It is possible that discounts have been offered as an incentive to boost sales in light of the quality issues. It's also possible that the mix of sales has changed, possibly the online sales channel (where sales prices are significantly higher than other sales channels) has been the most greatly affected.

The sales volume profit variance is also adverse which means that we also sold less than we budgeted to. This will be the result of potential customers being put off by the poor reviews and any bad publicity surrounding the product recall.

Direct labour variances
The direct labour rate variance is adverse which means that we paid on average more per hour for our production staff than we had budgeted to. We had to hire temporary agency staff during the month to cover the work of our own production line staff that were moved to rectify the recalled products. It is likely that these agency workers were paid at a higher hourly rate than our own staff.

The direct labour idle time variance is also adverse, which indicates that we had to pay our staff for hours where they were not able to be productive. It's likely that the agency staff had to be trained and possibly this utilised the time of both the agency workers and our own production line operatives.

The direct labour efficiency variance is also adverse, which means that we used more labour time than we should have to create our output of good production. In other words, direct labour was not as efficient as it should have been. We have used temporary agency workers on the main production line, and it is highly likely that because of a lack of familiarity with our processes these workers took longer to complete assembly tasks than our own workers would have done.

Customer Services Department key performance indicators (KPIs)

The KPIs for the Customer Services Department clearly show the increase in the number of queries that had to be dealt with in December compared to November. There were 750 telephone calls (compared to 200 for November) and 440 email queries (compared to 120 in November). This increase in the volume of activity was largely driven by initially the complaints about the SuperClean range and then queries surrounding the product recall. In order to meet this increased level of activity, overtime had to be paid and agency workers were temporarily hired, both of which will have increased the costs associated with running the department for the month.

Despite the significant increase in the volume of calls received, the speed with which calls were answered shows a small improvement on November and indicates that our own staff and the agency staff worked efficiently to deal with the calls. In addition, the percentage of calls where queries were successfully dealt with improved from 80% in November to 85% in December. This is really encouraging given the issues with the product recall and the fact that there were three agency staff involved (clearly these agency staff were well trained). However, there has been a downturn in the performance of the department in relation to how quickly email queries have been dealt with, from an average of 2.5 hours in November to an average of 9.2 hours in December. It would

appear given the volume of queries, that the department prioritised dealing with telephone calls rather than emails and this is probably why the time to respond was so much higher than the previous month. Alternatively, it could be that the nature of the email queries received were more complex to resolve than normal and therefore required more time.

Overall, the department has performed well in difficult and testing times. Our customer service satisfaction rating on the TrustUs.com website has actually increased slightly, which demonstrates that despite the product issues our Customer Services Department did its job well.

Inventory valuation in the financial statements for the year ended 31 December 2020

The fundamental principle of IAS2: Inventories, is that inventory should be stated in the financial statements at the lower of cost and net realisable value (NRV). NRV is the estimated selling price less the estimated cost of completion and the estimated cost necessary to make the sale.

The 200 units of the SuperClean model need to be rectified before they can be sold and hence their NRV will be the selling price (which is expected to be full retail price) less the E$5.50 a unit required to rectify each unit before it can be sold. Given that the average standard gross profit per unit is E$81.35 and the rectification cost is only E$5.50 per unit it would seem that NRV will be significantly higher than cost. Hence these 200 units should be recorded at the year end at cost.

The 150 units of the hand-held vacuum cleaner model that is no longer produced can be sold to a customer for E$8,800 which is slightly higher than the recorded cost of E$8,700. However, the NRV of the inventory will also include the delivery costs of E$300 which should be netted off the sale proceeds of E$8,800. This inventory will therefore be valued at the lower of E$8,800 less E$300 (NRV) and E$8,700 (cost).

SECTION 4

Accounting for the damaged and new warehouses

Damaged warehouse

The warehouse damaged by the fire has been impaired and therefore we need to apply the provisions of IAS 36: Impairment of assets. As a result of the impairment the warehouse property needs to be recorded at the lower of carrying amount (which is currently its revalued amount of E$270,000) and its recoverable amount.

Recoverable amount is defined as the higher of value in use and the property's fair value less costs to sell. For this property its value in use is E$Nil because we can no longer use the warehouse. It's fair value less costs to sell is the salvage value of the metal of E$15,000 less the costs of getting this ready for sale which are E$5,000. Therefore, in our accounting records we need to write down the value of the property to its fair value less costs to sell.

The difference between recoverable amount of E$15,000 less E$5,000 and the carrying amount of E$270,000 will firstly be debited to the revaluation surplus account (to remove the E$65,000 revaluation surplus related to this property). The remaining difference will then be debited to profit or loss.

The effect of this adjustment will be reflected in the financial statements for the year ended 31 December 2021. The fire happened after the year-end but before the financial statements for 2020 have been signed. According to IAS 10: Events after the reporting period, the fire is a non-adjusting event because it does not give evidence of a condition in existence on 31 December 2020. However, this is likely to be material and hence we would make disclosure of it in the financial statements for the year ended 31 December 2020.

New warehouse

The new warehouse will initially be recorded at its cost which will be the building cost of E$200,000 as well as any costs which are directly attributable to getting the warehouse ready for its intended use. This will include the cost of E$17,000 for clearing the site to enable the building work to start. It will also include the E$2,000 that will need to be paid to the building inspectors. Without the inspection and the subsequent sign-off against building regulations, the warehouse cannot be used and therefore this is directly attributable to getting the warehouse ready for its intended use.

Linear programming graph

Feasible region and optimal production plan

The feasible region is the area of the graph which includes all of the possible combinations of SuperClean model P56 and SuperClean model R18 that can be produced given the raw material constraints and the two minimum production levels.

Lines A and B on the graph represent the different combinations of production of SuperClean model P56 and SuperClean model R18 which utilise all of the available grey plastic pellets and FF components respectively. These lines therefore represent the maximum that can be produced and form a boundary for the feasible region which will be to the left of these lines. Given the constraints, it is impossible to produce above the line.

Lines C and D on the graph represent the committed orders for each model. Line C is for model P56 and shows that minimum production needs to be 150 units. Line D is for model R18 and shows that minimum production needs to be 200 units. The feasible region will be to the right of line C and above line D.

The feasible region is the small triangular area of the graph which starts at the point where lines C and D intersect and is contained by line A. The optimal production plan can be found by moving the iso-contribution line (the dotted line which represents the relative contributions of each SuperClean model) until it reaches the furthest point from the origin that is still within the feasible region: this is where lines A and C intersect. Therefore, the optimal production plan for the next two weeks is to produce approximately 150 of model P56 and approximately 300 of model R18 over the next 2 weeks.

Purchase of additional grey plastic pellets?

We need to consider if it is worth purchasing more grey plastic pellets at a premium price to allow us to satisfy more of the uncommitted orders for the next 2 weeks. The optimal point is where lines A and C intersect which means that grey plastic pellets are a binding constraint and FF components are a non-binding constraint. Therefore, it would potentially be worthwhile buying more grey plastic pellets. The maximum price that we would be prepared to pay will be the normal price per kilogram plus its shadow price, where the shadow price is the increase in contribution from obtaining an additional kilogram of grey plastic pellets.

Assuming that purchasing more grey plastic pellets is worthwhile in terms of its shadow price, as we purchase each additional kilogram, line A on the graph will move away from the origin and the size of the feasible region increases. This changes the optimal solution and given that we cannot obtain more of component FF gives us two new potential solutions: where lines B and C intersect or where lines B and D intersect. If we move the iso-contribution line away from the origin, we can see that contribution will be maximised where lines B and C intersect (because this is the furthest point that the line will reach in this new feasible area).

At this point line A would only have moved a small amount and the new optimum production plan would therefore be 150 P56s and approximately 320 R18's. Therefore, we need to purchase enough grey plastic pellets to make an additional 20 R18s. The maximum price that we would pay for these additional pellets would be normal price per kilogram plus the additional contribution earned from the additional 20 R18s.

Operational level integrated case study – Examiner's report — May and August 2020 exam session

This document should be read in conjunction with the examiner's suggested answers and marking guidance.

General comments

The OCS examinations for May and August 2020 were based on the company ChargeIT, a developer, designer and manufacturer of cordless domestic electrical products based in Eastland, a country in Northern Europe. The company's product range consists of cordless floorcare products (vacuum cleaners) and cordless garden products (lawnmowers and hedge trimmers). All products in the range have been developed and designed by ChargeIT's own Research and Development Department and are manufactured at its own manufacturing site in Eastland. The company sells its products in Eastland to consumers through its own website and directly to major retailers. Sales are also made in the USA and Europe through local distributors. Approximately 75% of ChargeIT's sales revenue is from sales in Eastland. The company has a reputation of producing quality products and being a reliable supplier. In the financial year to 31 December 2019 ChargeIT reported sales revenue of E$96.7 million (an increase of 32.4% on the previous year) and profit before tax of E$12.0 million (an increase of 59.4% on the previous year).

Six variants were written based on ChargeIT and the focus of each variant was as follows:

- Variant 1: the launch of a new range of e-bikes.
- Variant 2: the development of a new model of robotic lawnmower which can be operated using a mobile phone app.
- Variant 3: a significant increase in sales volumes leading to capacity issues and investment in new equipment.
- Variant 4: a reduction in the rate of sales growth leading to a review of company operations.
- Variant 5: expansion of sales into a new territory and expansion of the production facility.
- Variant 6: the launch of a new type of vacuum cleaner and expansion of the customer base.

Each variant was based on the OCS case study blueprint and covered all core activities in accordance with the weightings prescribed. A levels-based approach was used for marking candidate answers. Each variant consisted of four tasks and each of these tasks was broken down into between two and four elements. Each element of a task was then broken down into between one and three traits for marking. For each trait there was a detailed marking guide which split the total mark available into three levels: level 1, level 2 and level 3. It was also possible to achieve a score of zero for a trait if there was no rewardable material.

To achieve a level 3 in most traits, it was expected that a candidate would demonstrate good technical understanding of the topic being tested, through clear and comprehensive explanation and **apply** this technical understanding to the ChargeIT business and the particular scenario within the task. If a candidate scored only at a level 1 on a trait, it is likely that they did one or all of the following:

- Demonstrated some technical understanding, but with gaps in knowledge.
- Explained issues too briefly or with a lack of clarity.
- Failed to relate their answer to the task scenario and the specifics of ChargeIT.

It must be stressed that demonstrating good technical understanding is not enough on its own to pass. Candidates need to demonstrate technical understanding in the context of the scenario and the particulars of the issue being addressed. Information given to candidates as part of the task is there for a reason and should be, as far as possible, incorporated into answers, along with relevant information from the pre-seen. Application to the scenario is key to achieving high level 2 and level 3 scores. Clearly where there are gaps in knowledge, application is not possible and therefore the importance of candidates ensuring that their knowledge base is complete needs to be stressed.

One other area worthy of mention is candidates' ability to explain. At the operational level many of the tasks require explanation and to achieve high level 2 and level 3, it is expected that this will be clear and comprehensive. It should also be an explanation rather a description.

Candidate Performance

Overall, performance across the variants was mixed. There were some excellent answers, indicating well prepared candidates. However, at the other extreme there were a significant minority of candidates that were clearly not prepared, with many of these scoring less than 20% of the marks available.

Specific topic areas where candidates demonstrated good technical understanding and application to the scenario included costing for a digital cost object, the use of and limitations of expected value, beyond budgeting, activity based costing (ABC), raw material and labour variances and for the most part, defining and reviewing KPIs. Other topic areas which were generally well answered included recognition of capital expenditure under IAS16, assessing the working capital position of a company using ratios, working capital management, IFRS 5 and IFRS 16.

There where however, a number of topic areas where candidates demonstrated a lack of technical understanding and also a lack of application. These included sales mix and quantity variances, fixed overhead efficiency and capacity variances, make or buy decisions, linear programming, flexible budgeting, responsibility accounting, decision trees and zero-based budgeting. In addition, there would

still appear to be confusion regarding tasks about decision making where there is either risk or uncertainty. To repeat what I stated in my last report, as a rule of thumb, if the task gives payoff tables without probabilities this is decision making under uncertainty and therefore maximax, maximin and minimax regret will be relevant. If the task gives probabilities, expected values, standard deviations and coefficients of variation, then this is about decision making with risk and maximax, maximin and minimax regret approaches are not appropriate. Instead, risk attitudes should be considered.

There were many examples where candidates answered the task that they had prepared for and wished they had been asked, rather than what they were asked. Preparation, ahead of sitting the exam is to be applauded, but candidates need to mindful that they must tailor their answer to address the task given to them on the day. If a task asks for the benefits of ABC for cost control, then it is pointless explaining the benefits for pricing or problems associated with ABC, because there will be no marks for this. Candidates need to read the task very carefully to ensure that they do not end up wasting time.

With respect to the core activities, candidate performance was typically best for F (working capital), D (financial reporting) and C (performance evaluation). The less competent core activities appeared to be B (budgeting) and E (decision making), but this often depended on the topic area that the task was based on.

Variant 1

Task 1

The first element of this task asked for an explanation of the reasons why changing to an ABC system would potentially result in a different share of production overhead costs for the existing products and the new e-bikes, compared to the current absorption costing system. This tested core activity A. This was reasonably well answered with the vast majority of candidates scoring at level 2. Most candidates could explain the difference between an absorption costing system and an ABC system. Some candidates then identified the elements that would result in a change to the overheads charged to the new e-bikes and existing products, however, many of these candidates did not explain why this would happen. For example, they said that smaller batch sizes would result in a higher proportion of production overheads being charged to e-bikes but did not explain why this would be the case. Similarly, the candidates identified that the e-bikes did not require the injection moulding process and therefore should not be charged overheads from this process but did not go on to explain how ABC would avoid this happening or what would happen under the current absorption costing system.

The second element of the task asked for an explanation of a multi-product break-even chart, and the benefits and limitations of the break-even analysis for the new range of e-bikes. This tested core activity E. Most candidates were able to explain the chart and identify the various lines and points, with many scoring at level 3. The part of the task relating to the benefits and limitations of break-even analysis was not particularly well-answered. Most candidates gave a very brief answer here, which therefore limited their ability to score much above a low level 2.

Task 2

The first element of this task asked for an explanation of a graph of sales data and how the trend line shown on the graph had been calculated. This tested core activity B. Most candidates gave a reasonable explanation of the graph although some gave very limited explanations of how the trend line had been calculated.

The second element of this task asked for an explanation of how time series would be applied to the data in the graph to determine quarterly sales volumes for the new range of e-bikes and any limitations of using time series analysis for this purpose. This also tested core activity B. This was generally not well answered with few candidates scoring above a level 1 for this part of their answer. Many candidates simply just repeated what they had said about the graph and very few candidates specifically addressed the task, as to how a budget could be established. The part relating to the limitations of time series analysis however was generally well done with many candidates achieving level 3 for this part of their answer.

The third element of this task asked for an explanation of the potential actions that would be taken to avoid a cash flow deficit arising and any other factors that would need to be considered, before deciding whether to take the potential action. This tested core activity F. Some candidates provided a good range of potential actions but most tended to concentrate solely on working capital management. A number of candidates suggested that the deficit should be funded by long term sources of finance and failed to realise that this would be an inappropriate way to fund a short-term cash deficit.

Task 3

The first element of this task asked for an explanation of the relevant requirements of IFRS 16: Leases and how a lease would be initially recorded in the accounting records. It also asked for an explanation of how the lease would be treated in the financial statements for the year ended 31 December 2020 and subsequent years. This tested core activity D. The quality of candidate answers to the first part were very mixed and it was clear which candidates had revised this (who scored at level 3) and those that had not (who scored at level 1). Candidates at times did not clearly separate the treatment in the financial statements for the year ended 31 December 2020 and the treatment for subsequent years, which also limited marks.

The second element of this task asked for an explanation of how the figures shown in a schedule would be used to decide on which model should be bought in and which should be assembled in-house. It also asked for an explanation of any other factors to be considered before making a final decision. This tested core activity E. In general, the answers were very weak and those candidates who did know the method to be used, clearly could not then explain it well. Most candidates understood that the fixed production costs should be ignored but did not necessarily explain why this was the case. Many candidates compared the variable costs of production with the buy-in price and mentioned that the limiting factor should be considered but did not know how it should be considered. Lower performing candidates just compared the full costs of production with the buy-in price and said to buy-in the motors with the greatest saving. The part about explaining other factors to be considered was well answered with a significant number of candidates achieving a level 3 here.

Task 4

The first element of this task asked for explanation of how each of variances shown on a schedule had been calculated, the reasons why they may have arisen and what they told us about market conditions. This tested core activity C. This was not particularly well answered. Many candidates demonstrated weak technical understanding of sales variances and were not able to clearly explain how the variances were calculated. Few candidates correctly explained the sales price variance, and explanations of the sales mix variance and sales quantity variance were generally inaccurate. Candidates need to be more precise in their explanation of variances to clearly demonstrate their technical understanding. For example, some candidates did not make it clear that the sales price variance was in respect of the actual sales and invariably candidates offered an explanation of the sales volume variance, rather than the sales quantity

variance. Many candidates failed to recognise that the sales mix and quantity variances were calculated using the individual units methods and were giving explanations that related only to the weighted average method. As a consequence, most candidates failed to score at a higher level 2 or above.

The second element of this task asked for an explanation of the potential benefits. This is the case of separating the variance into planning and operational variances. This also tested core activity C. Most candidates were able to achieve some marks for explaining the control element of planning and operational variances. Fewer candidates discussed the motivational aspect or referred to the examples from the scenario even though the question clearly asked for 'the potential benefits in this case'.

The third element of this task asked for suggestions of three KPIs, based on the data analytics from the company website, explaining how they would be calculated and why they would be appropriate. This tested core activity C. This was reasonably well answered. The majority of candidates described three relevant issues that could be monitored, using data analytics from the website and could explain why these were important for the business. In many cases however, whilst candidates knew what they wanted to measure, they failed to express this as a KPI. Some candidates gave a KPI and then went on to discuss the measurement and appropriateness of another aspect or gave a combination of different aspects in the explanation. Candidates should remember that a KPI is, as the name suggests, a 'key' performance indicator and we are expecting to see more than just a general explanation of lots of things, that the information from the website could be used to measure.

Variant 2

Task 1

The first element of this task asked for an explanation, with clear justification, of why each of the costs in an attached schedule and accompanying notes would be relevant or irrelevant to a minimum pricing decision. It also asked for an explanation of whether a relevant cost approach was appropriate in this situation. This tested core activity E. The majority of candidates did well in the first part of this task because they were able to identify and correctly explain which costs were relevant and irrelevant to the decision. Answers that were only awarded a level 1 often failed to explain the reason why a cost was relevant or irrelevant; simply stating the figure is or is not relevant, without a clear rationale, is not enough to achieve the higher levels. Many candidates failed to address the second part of this task at all. Those candidates who did submit an answer often failed to apply it to the information presented in the scenario. To ensure success at OCS, candidates must take care to answer all parts of every task and to apply that answer to the context given.

The second element of this task asked for an explanation of how the costs of a mobile phone app differed, in terms of type of costs and the timing of occurrence, compared to a lawn mower. It also asked for an explanation of the potential issues with determining the unit cost of the mobile phone app for planning and decision-making purposes. This tested core activity A. This was answered with varying levels of competence, but few answers were excellent. Higher performing candidates separated this into two sub-tasks and clearly identified the costs of the intangible app and the tangible lawnmower, and then were able to discuss the key points for determining the unit cost of the app. Lower performing candidates confused these two criteria and tried to answer them together. Identifying cost information for digital cost objects is a new subject to this syllabus and most candidates demonstrated enough knowledge and understanding to achieve level 2. Candidate answers could have been so much better if time had been taken to read the task carefully. Few answers clearly compared the app and lawn mower costs, focussing instead on a list of costs incurred by the app.

Task 2

The first element of this task asked for an explanation of the figures in an attached spreadsheet and what they told us about the impact on profit of potential changes to variables. This tested core activity B. Many candidate answers could only be awarded a level 1 because they simply described the figures in the reference material without adding any value; an explanation adds value to a description, and this was lacking in many answers. Better answers explained how as one input variable increased or decreased, profit increased or decreased.

The second element of this task asked for an explanation of the benefits and limitations of what-if analysis. This tested core activity B. Many candidate answers were generic rather than applied and therefore did not score above a middle level 2. Answers that achieved a high level 2 were applied to the context of the case.

The third element of this task asked for explanation of the potential advantages and disadvantages of adopting a rolling budget approach compared to the current budgeting approach. This tested core activity B. Candidates were well equipped to answer this task, with good explanations of the differences between the approaches and the advantages and disadvantages of a rolling budget approach. However, there was a lack of application to the scenario. Higher performing candidates identified that there was a new product being launched which made a rolling budget approach more suitable. Lower performing candidates often explained the advantages and disadvantages of the current budgeting approach which was not asked for. This was clearly pre-learned and while it is important that candidates prepare for the OCS examination by analysing the practices detailed in the pre-seen, it is vital that they can also respond to new information in the new material.

Task 3

The first element of this task asked for an explanation of figures in a payoff table and how the maximax, maximin and minimax regret decision criteria would be used to select the selling price. It also asked for the selling price that would be chosen under each criterion. This tested core activity E. The first part of this about explaining the figures in the payoff tables was answered by only a minority of candidates demonstrating, the need for candidates to read what is required of them very carefully. Where candidates did attempt to explain the figures, they simply described rather than explained and therefore were restricted to a level 1 mark. There were some excellent answers that explained how the different criteria would be used to select the selling price. However, most answers simply stated the most basic principles of each criteria and did not explain fully the “how”. The lower performing answers simply stated a selling price for each decision criteria, perhaps in the mistaken belief believing that this was good examination technique. At OCS there is minimal credit given for guesses, candidates must demonstrate knowledge and understanding of a technique in order to pass.

The second element of this task asked for an explanation of the specific requirement under IAS 2: Inventories and how they would apply to three options, including details of the costs to include or exclude. It also asked for an explanation of whether each of the options would require a write-down and the impact of a write-down on profit and cash flows. This tested core activity D. Most candidates could state the basic principles of IAS2 as a rote - learned definition but lacked the ability to apply them. This highlights the gap between knowledge and application. OCS is an examination that requires candidates to recall technical definitions accurately, but the candidate must be able to apply this knowledge to the information presented. Few candidates achieved a level t3 on this part of the task and this was because, few seemed to know the mechanics of inventory write down. Other common errors were a failure to explain correctly the

impact on profit of offering a discount, not understanding the basic double entry of an inventory write-down and the misunderstanding of the impact of inventory adjustments on cash flows.

Task 4

The first element of this task asked for an explanation of the variances and the reasons why they had arisen, clearly explaining the linkages between variances. This tested core activity C. Few candidates fully addressed the task. Most candidates were able to provide reasonable explanations of the materials and labour variances but gave very poor explanations of overhead variances. When explaining each variance many candidates did little more than state that 'an adverse variance means that the actual is higher than budgeted' and didn't explain what was higher. Overall, the explanations of the variances were generally very limited with many candidates only scoring at level 1 here. However, explanation of the reasons for each variance was much better applied with most candidates making use of the information given and correctly identifying linkages between the variances. Lower performing candidates often incorrectly identified that the labour rate was adverse due to labour working longer on units produced, and labour efficiency was adverse due to the overtime paid, this is not an acceptable standard of knowledge for the OCS examination. Very few candidates were able to explain the fixed overhead volume variance, therefore they were also unable to identify correctly how this had arisen.

The second element of this task asked for a comparison of three potential suppliers in terms of their financial stability, liquidity and the credit terms they could offer. This tested core activity F. Most candidates were able to compare the financial stability and credit terms well and achieved a level 2 or 3 for this part of their answer. The discussion of liquidity proved more of a challenge. Higher performing candidates were able to identify the reasons behind, and the potential impact of, the liquidity data and went on to further explain that the figures may be a reflection of an aggressive or conservative approach to working capital management. Lower performing candidates just stated that the numbers they were presented with were good or bad with no explanation or justification for these conclusions and were only awarded a low level 1.

Variant 3

Task 1

The first element of this task asked for an explanation of a linear programming graph and how the optimal production plan could be determined. It also asked for a discussion of why the optimal production plan might not be appropriate and how the graph could be improved. This tested core activity E. Whilst most candidates understood what the graph showed and were able to correctly explain the axis and constraints, few explained how to use the iso-contribution line to determine the optimal production plan and hence failed to achieve a level 3. Candidates must take notice of the verb and for this part of the task it was “explain” and not “state” or “identify”. It was not enough to correctly state the optimal solution, an explanation was required. Very few candidates were able to discuss why the optimal production plan might not be appropriate and ignored the fact that the optimal solution using the graph meant that Floorcare products would be far in excess of the number in the original budget and significantly lower for Garden products. The budgeted figures were repeated twice in the case material in order that candidates would notice this and make the connection, but few did.

The second part of this task asked for the identification of cost drivers for activities and an explanation of how these could be used to determine the costs of operating the warehouse. It also asked for an explanation of how the cost drivers could be used to control the costs of the activities. This tested core activity A. Performance on this question was very limited. Few answers explained even the basics needed to achieve a low level 2 score. Most answers consisted of bald statements without any explanation or justification. The task clearly stated that 48% of time should be spent on this task and it is therefore unlikely that an answer that simply states “ number of batches”, “number of orders “ and “labour hours” is likely to gain anything but a low level one.

Task 2

The first element of this task asked for an explanation of a payoff table and how the maximax, maximin and minimax regret criteria would be applied to select the order level. It also asked the candidate to state the order level that would be chosen under each criterion. This tested core activity E. The first part of this task to explain the payoff table was ignored by most candidates. Those who did attempt to explain the payoff table often described the figures rather than explaining them and therefore failed to achieve more than a level 1 here. Future candidates must understand the difference between a description and an explanation; an explanation adds value to the description. Most candidates provided level 2 and level 3 answers when explaining and applying the decision criteria, although it was interesting to notice, how many believed that these were somehow based on probabilities.

The second part of this task asked for an explanation of how to prepare a flexible budget and the benefits of using flexible budgets for planning purposes. This tested core activity B. Answers for this task were mixed. Many candidates simply did not know what a flexible

budget was and therefore could not explain how to produce one. Those candidates who did correctly explain that a flexed budget flexes to activity levels and further explained the different cost behaviours, mostly achieved level 2. However, most answers did not use the figures provided in the reference material or relate the explanation to the company to achieve a level 3. OCS is testing a candidate's ability to apply techniques and models to different situations and so it is expected that the reference material, pre seen and other information provided, is used and not ignored. The explanations of how useful a flexed budget is for planning purposes were often answers to a different question, namely, "how useful is a flexed budget for control purposes". Some of these answers were excellent but because they did not address the task set, were limited to a level 1 score.

Task 3

The first element of this task asked for an explanation of the criteria for capitalisation of costs under IAS 16 Property, Plant and Equipment and whether a moulding machine met these criteria. It also asked for an explanation of the treatment, as either capital or revenue expenditure, for each of the individual costs on a list. This tested core activity D. Most candidates could explain some of the criteria and were able to conclude that the machine met these. However, quite a few answers then explained how the machine should be depreciated and treated in subsequent periods, which was not necessary. The treatment of the costs shown in the reference material was answered reasonably well by most and most candidates correctly identified the costs that could be capitalised.

The second element of this task asked for an explanation of a responsibility accounting system and whether it would be beneficial in future to allow sales managers to participate in setting budgets and targets for sales volume and revenue. This tested core activity B. There were some very good answers to this task. However, common faults were ignoring the part of the requirement about responsibility accounting altogether and/or only explaining the advantages of a participative approach to budgeting. It has been stated, that if answers do not address all parts of the task, they cannot be awarded a level 3 mark. There seemed to be many pre-prepared answers to this task and candidates had obviously prepared for the question "Explain the advantages and disadvantages of an imposed approach to budgeting". Whilst many of these are the mirror image of the advantages and disadvantages of a participative approach, the task was specifically about whether participation would be beneficial, and many failed to actually answer this.

Task 4

The first element of this task asked for an explanation of how three sales variances had been calculated and the reasons why they had arisen. This tested core activity C. Approximately only half of the answers attempted to explain how the sales variances were calculated, despite a clear instruction to do so. Most candidates could explain what an adverse and favourable variance meant, and whilst this demonstrated some understanding, it was not what the task had asked for. Many candidates demonstrated a lack of understanding about the mix and quantity variances. A sizable number of answers explained the sales volume profit variance in place of the sales profit quantity variance.

The second element of this task asked for an explanation of the reasons why the KPI targets has not been achieved or had been exceeded. It also asked for an explanation of why the KPIs provided useful information about the online sales performance of the products and operation of the website. This tested core activity C. Most candidates answered this quite well, although the majority did not appreciate that if new customers increase as a proportion of total customers, the proportion of existing customer has to decrease, and it is not necessarily “a cause for alarm “.

The third element of this task asked for an explanation of the factors that the company needed to consider when choosing short-term investment and two suggestions of suitable short-term investments for the surplus cash. This tested core activity F. While there were some excellent answers that proposed two suitable short-term investments and explained risk, return, liquidity, maturity and diversification very well, other answers took a different approach and questioned whether there should be an investment at all. While some of these explanations had good justification, it was not answering the task set. Candidates should remember that their role is that of a Finance Officer. A Finance Officer must be able to identify, explain and apply concepts, models and techniques but not advise or recommend different courses of action.

Variant 4

Task 1

The first element of this task asked for an explanation of each of the six specific areas of the CGMA cost transformation model and how these applied to ChargeIT. This tested core activity A. This was the first time this model had been tested and candidates were given the six headings to help them. This was reasonably well answered with most candidates scoring at level 2 or level 3. As candidates were given the headings, some further explanation was required as to the meaning of each, as well as consideration of how each could be applied within ChargeIT. Higher performing candidates used examples which were more pertinent to the scenario. Lower performing candidate answers did not go further than a repetition of the heading. In addition, some candidates misinterpreted the meaning of some elements of the model. For example, for area 2 'Managing the risk inherent in driving cost competitiveness', some candidates discussed risk to the business more generally as opposed to discussing the specific risks of focusing on cost reduction. Candidates that did not attempt to apply each area to the business were not able to achieve level 3 or high level 2 scores.

The second element of this task asked for an explanation of expected values, standard deviations and coefficients of variation and how different attitudes to risk would affect a decision about the choice of promotional campaign. In addition, candidates were asked to comment on the limitations of basing a decision on the information in the schedule. This tested core activity E. Whilst most candidates were able to explain expected value and standard deviation, lower performing candidates did not know the meaning of the coefficient of variation. Good answers to this part of the question made use of the data to improve the clarity of their explanations. Candidates were mostly able to identify the campaigns that would be chosen given a risk seeking, risk averse and risk neutral attitude. However, some candidates tried to use maximax, maximin and minimax regret to answer this part of the question rather than referring to the measures they had been given. A level 3 answer to this task demonstrated good technical understanding of the risk measures and then used them to recommend which campaign would be chosen under each campaign and why. Risk and uncertainty are tested in several ways within the case study and it is important that candidates answer the task set. The task clearly signposted the three measures of risk as the basis of decision making. Most candidates were able to score at least a level 2 in relation to the limitations of using the data to make decisions. However, candidates are reminded to ensure points are sufficiently well developed.

Task 2

The first element of this task asked for an explanation of the meaning of sales price, sales mix profit, sales quantity profit and sales total variances and the possible reasons for their occurrence. This tested core activity C. Not all candidates were able to correctly explain the technical meaning of the variances. In particular, few candidates were able to articulate the mix profit variance, and many

ignored the meaning of the total variance. It was common for answers to the mix variance to refer to mix of products as opposed to the mix of sales channels and very few answers made reference to the favourable mix variance relating to the retailers. This demonstrated a lack of technical understanding in relation to the weighted average method of calculating mix variances. Candidates were much better at identifying reasons for the variances and many achieved at a least level 2 mark for this part. Lower performing candidates tended to reproduce pre-learnt reasons that did not relate to the scenario.

The second element of this task asked for an explanation of how a revised budget for employee costs in the Finished Goods Distribution Warehouse could be established using activity-based budgeting. Candidates were required to make reference to two activities; receiving finished good inventory and placing loaded pallets onto delivery trucks having been provided with details of both activities. This tested core activity B. This task was not answered well, and most candidates only achieved level 1 or low level 2 scores. Many candidates still fail to differentiate between activity-based costing and activity-based budgeting. Most were able to achieve a level 1 answer by explaining some of the main features of ABC such as the need to establish cost pools and cost drivers. However, to do well in this task, candidates needed to use the information provided to consider how a budget would be established. Level 2 answers made reference to the activities and attempted to explain how to establish the time taken for each using the information. However, answers often then lacked the detail required to explain how this would be used to establish a budget.

The final element in this task asked for an explanation of the benefits of activity-based budgeting for establishing the warehouse employee cost. This tested core activity B. Despite relatively limited answers on how to apply activity-based budgeting, most candidates were able to explain the benefits. Higher performing candidates who achieved a level 3 score clearly focused the benefits on the budget for employee warehouse costs as opposed to discussing benefits of activity-based approaches more widely. Lower performing candidates scoring at level 1 tended to discuss generic benefits with little or no reference to the scenario. Candidates are reminded to ensure that points made are sufficiently developed and applied.

Task 3

The first element in this task asked for an explanation of the principles of a beyond budgeting approach, how these principles could be applied to ChargeIT and the benefits of doing so. This tested core activity B. Most candidates were able to explain at least two of the principles of beyond budgeting and in doing so scored at level 2. To achieve level 3, candidates needed to discuss the features of rolling budgets, the use of performance measures and participation, explaining clearly how these would be applied within ChargeIT. Lower performing candidates did not apply these principles to the business and gave more generic accounts of beyond budgeting. Most candidates achieved level 2 or 3 in their explanations of the benefits of beyond budgeting. A high number of candidates scored maximum marks in this section. Candidates used their knowledge of the pre seen and the case well here. Limited answers failed to explain or justify the points made and did not situate them within the context of the case.

The second element of this task asked candidates to suggest two KPIs to monitor the performance of the Finished Goods Warehouse Manager. Candidates were required to justify why each was appropriate and how it would be calculated. This tested core activity C. Candidates mainly achieved at level 2 on this trait. Most were able to come up with two KPIs and justify them, but a smaller number were able to articulate how they would be calculated. Candidates need to think about the features of good performance measures when answering these types of questions. Many candidates suggested KPIs that would be very hard to measure or were not wholly attributable to the Warehouse Manager. For example, total returns would not be wholly appropriate as there may be numerous reasons for customers to return products, not all of which the Warehouse Manager would be responsible for. Other limited answers focused on KPIs for the production of inventory as opposed to the warehouse functions. Candidates also often over-complicated KPIs and where this was the case, answers then lost clarity.

The final element of this task asked for an explanation of how to make a decision from a financial perspective between two options and based on a schedule, provide reasons why each of the costs listed would or would not be included in the decision process. Candidates were also required to explain any non-financial factors that should be considered. This tested core activity E. This task was done well by most candidates and many achieved full marks. Most were at least able to achieve level 2. Where an answer only scored at level 1 it was because the candidate did not explain relevant costing principles and purely listed the costs rather than explain. Relevant cost questions normally require candidates to provide a justification of their approach and this task was no different. Some candidates were able to identify a range of non-financial considerations, but some were vague or missing.

Task 4

The first element of this task asked for an explanation of how an asset that had been leased would be initially recorded and subsequently measured in the financial statements for the year ended 31 December 2021 and future years. This tested core activity D. Most candidates were able to explain some elements of both the right of use asset and the lease liability, and in doing so achieve a level 2 score. However, although there were some very good level 3 answers, there were also many candidates who did not know how to account for leased assets. Common errors were failing to recognise that the right of use asset would be depreciated over 15 years and lack of clarity around which cash flows, would be included in both the lease liability and the asset. In answering financial reporting tasks clarity of answer could be improved by taking time to plan.

The second element of this task asked for an explanation of how expenditure incurred in reconditioning packing equipment would affect the financial statements for the year ended 31 December 2021. This tested core activity D. This task was generally well done with most candidates score a high level 2 or level 3.

The final element of this task asked candidates to explain how a to apply a more aggressive approach to the management of inventories of raw materials, components and finished goods, as well as the implications of doing so for ChargeIT. This tested core activity F. Most

candidates who discussed just in time achieved level 2 or level 3 scores. However, some candidates focused their answer on an aggressive approach to working capital management more widely, which was not what was asked. Some limited answers also failed to apply this to ChargeIT. Most candidates were able to explain the implications of reduced inventory.

Variant 5

Task 1

The first element of this task asked for an explanation of a decision tree and how it should be used to make the decision about which agent to use. This text core activity E. Few candidates scored above a mid-level 2 here. Most identified what the circles and squares on the decision tree represented, but application to the scenario was often limited. Where candidates did expand beyond this in terms of explaining the decision tree, this was quite often a description rather than an explanation. Many candidates failed to explain how to use the tree to make the decision about which agent to choose. Many candidates just said that Hoppers should be chosen because it had the highest EV without explaining how to arrive at this decision. Some candidates ignored the E$2 million of promotional expenditure.

The second element of this task asked for an explanation of the limitations of using the decision tree to make the decision and to explain any non-financial factors to be considered. This tested core activity E. There were a variety of answers to this element of the task, some good and therefore at level 3, and others very limited at only level 1. Better candidates could explain some limitations of using decision trees and were able to discuss some relevant non-financial factors. For lower performing candidates, a fairly common mistake was to discuss limitations and non-financial factors in terms of ChargeIT's decision to expand into the Asian market, raising issues such as the wealth of potential customers in Asia, political stability in Asia, competition in Asia, and whether this was the right expansion strategy for ChargeIT. This was not the what the task had asked for. The decision to go into Asia had been made and what was required was a discussion of non-financial factors affecting which agent to choose.

The third element of this task asked candidates to suggest and justify three KPIs which would be appropriate to assess the performance of the agent for the Asian market. This tested core activity C. A significant number of candidates produced very good answers which scored a high level 2 or level 3. Such answers chose relevant KPIs that covered a range of performance areas including sales generation, customer satisfaction and logistical matters and justified these well. Those who scored at a low level 2 of level 1, tended to either concentrate on only one aspect such as sales which meant that the KPIs were not distinct enough or to give more general KPIs which related to the performance in Asia rather than the agent.

Task 2

The first element of this task asked for an explanation of three production overhead variances and possible reasons why each had occurred. It also asked for an explanation of the usefulness of the fixed production variances for manging fixed production overhead cost. The tested core activity C. Though production overhead variances has been tested many times before, candidate understanding

of these variances is relatively poor. Most candidates demonstrated understanding that the expenditure variance was the difference between actual and budgeted expenditure and gave clear reasons for the adverse variance which were relevant to the scenario. However, the efficiency and capacity variances were often poorly explained, with a significant number of candidates failing to identify that the efficiency variance related to labour efficiency. The reasons given for these variances were often very limited with some candidates simply stating that the staff had been less efficient and that there had been an increase in capacity. Very few candidates managed to score a level 3 for this part of the task. The usefulness of the variances was not answered well, if at all. It was clear that candidates did not really understand what these variances explained for the business. The idea of cost control was often referred to as comparing actual and budget with no indication of how only the expenditure variance concentrated on the costs. Few candidates scored above a level 1 here.

The second element of this task asked for an explanation of how an ABC approach would affect the way that production overheads were allocated and absorbed compared to the current absorption costing system with specific reference to the injection moulding part of the production process. The task also asked for an explanation of whether implementing an ABC system would be beneficial for cost control. This tested core activity A. Very few candidates managed to score higher than a mid-level 2 for the first part of this. Most candidates could identify the main elements of ABC, such as cost pools and cost drivers, but fewer were able to explain these in any depth or to explain how this would change the way that costs were allocated and absorbed. Very few candidates applied their explanation to the injection moulding process given in the scenario. For the part of the task about the benefits of ABC for cost control, many would have scored well if the question had asked for the benefits of ABC compared to absorption costing as many gave a list of these. However, few made reference to cost control and although explained that the set-up was costly did not try and compare this to the benefits it could bring.

Task 3

The first element of this task asked for an explanation of how the expenditure on the new finished goods assembly line would be recorded in the statements of financial position and profit or loss for the year ended 31 December 2020. This tested core activity D. This was answered well by most candidates. Clear knowledge and understanding of IAS16 was demonstrated by most, which was good to see. Candidates that did not score well here, did so because they did not consider all elements of the expenditure or simply stated the treatment rather than explain it. For example, for full marks it was expected that a candidate would say that training would be expensed and give a reason why this was the case.

The second element of this task asked for an explanation of how the 100% first year tax depreciation allowance would impact the amount of tax paid this year and in future years. This tested core activity D. This part of the exam was not attempted very well. There were a many confusing answers due to a lack of knowledge. For example, many candidates said that there would be a 100% tax

allowance in the first year followed by an annual allowance of 25% a year on a reducing balance basis. Other examples included “there will be no taxes to be paid in the first year for the purchase of the equipment”. Statements like these lacked clarity and scored few marks.

The third element of this task asked for an explanation of how the old assembly line should be reflected in the financial statements for the year ended 31 December 2020. This tested core activity D. This was reasonably answered by many candidates. To achieve a level 3 score candidates were expected to not just list the IFRS5 criteria for recognition of an asset held for sale, but to explain within the context of the scenario given if these had been satisfied. In addition, for a level 3 score candidates were expected to also explain and apply the valuation rule and the need to stop depreciation. Reasons why candidates did not score at level 3 included: a lack of knowledge of IFRS5; a lack of application of the criteria to the scenario; confusion regarding the valuation rule and confusion about how the E$4,500 selling fees affected the valuation.

The final element of this task asked for an explanation of how a feedforward control approach differed from a feedback control approach and the benefits to our business of using a feedforward control approach. This tested core activity B. There were a few level 3 answers for this element of the task, although most answers scored at level 2. For many candidates, a general understanding of the difference between feedforward control and feedback control was demonstrated. However, many answers lacked depth with often just a one-line sentence explaining each type of control. The benefits to ChargeIT were also often obvious statements such as “will help management to take correcting action earlier” without any further explanation or examples of how this would be achieved.

Task 4

The first element of this task asked for an explanation of how zero-based budgeting (ZBB) could be used to allocate funds to discretionary support activities, using a budget for production machinery maintenance to illustrate the explanation. This tested core activity B. Candidate answers tended to be one of two types. On the one hand, some candidates demonstrated a good general understanding of the ZBB process but often struggled to explain how ZBB could be used for preparing the production machinery budget. On the other hand, there were many answers where knowledge of ZBB was very poor, with little if any attempt at application. Many candidates wasted time explaining the benefits and drawbacks of ZBB compared with incremental budgeting, which had not been asked for and scored no marks. Again, another example of candidates answering the question they wish they had been asked, rather than the task given.

The second element of this task asked candidates to explain the purpose of the EOQ model and the nature of the ordering and holding costs associated with bought-in component inventory. It also asked for an explanation of the suitability of using the EOQ model for the purposes of bought-in component inventory management. This tested core activity F. There were some good answers for the first part of this task which scored at a high level 2 or level 3, where good understanding of the purpose of the EOQ model was demonstrated

and the nature of ordering and holding costs were explained with the use of examples. However, there were also some poor answers where candidates seemed confused about what the economic order quantity was and often ignored holding and ordering costs. There were also a range of answers for the second part of this task on the suitability of the EOQ model. Some candidates discussed the limitations of the EOQ model, whilst some candidates discussed whether the EOQ model would help resolve ChargeIT's stock out problems. Either approach taken by candidates was valid.

Variant 6

Task 1

The first element of this task asked for an explanation of what the time series information showed about purchases of cordless vacuum cleaners by the end consumer and the type of retailer than should be targeted. This tested core activity B. The first part of this was well answered by most candidates and there were good number of candidates who achieved a level 3. The second part of this about which type of retailer to target was not so well answered. Some candidates suggested that physical stores should be targeted purely based on the January 2015 data ignoring the impact of the quarterly trend data towards on-line sales. Others only suggested on-line retailers without considering the potential impact of customers trying before they buy.

The second element of this task asked for an explanation of how to use the time series information to prepare a sales forecast and how the sales forecast would affect budgetary planning. This tested core activity B. This was generally poorly answered. Most candidates assumed the time series data referred to the company rather than to Eastland and those who did go on to discuss the impact on budgeting often only made very brief reference to the implications for resource planning. Some candidates only discussed budgeting issues and failed to explain how a sales forecast could be prepared from the data.

The third element of this task asked for an explanation of the impact on the management of receivables of taking on new retailers and how to mitigate any additional risks. This tested core activity F. Many candidates did not read the task or scenario carefully enough. Many candidates provided a rather standardised answer on mitigations (factoring was very popular) without explaining what impact (problems) they were trying to resolve. Most candidates missed the fact that there would be a significant increase in the workload of credit control which was disappointing because it was clearly sign-posted in the scenario. As a result, few candidates above a level 2.

Task 2

The first element of this task asked for an explanation of what a graph showed about each supplier's price structure, which supplier to choose on an expected value basis and the limitations of using expected value for this decision. This tested core activity E. This was well answered by most candidates. Not all identified the indifference point of 7,000 units, but most candidates made the correct decision to choose Supplier A and could discuss the limitations of expected values. A few candidates assumed monthly contracts could be awarded and recommended an initial contract with Supplier B, to be reviewed as sales commenced: this is an example of not reading the scenario clearly enough.

The second element of this task asked for an explanation of how a digital costing system would change the way of gathering information for use in costing products and the benefits to the business of using such a system. This tested core activity A. The explanation of a digital costing system was a difficult topic for many candidates who made very broad comments such as it would mean having IT links

between production and suppliers without really explaining the implications for product costing. Some candidates thought the question was about activity-based costing versus traditional overhead costing. Few candidates scored more than a low level 2 here. However, most candidates managed to make some valid points on benefits, although the focus of their answers was often on issues such as speed of data processing, accuracy and freeing up finance staff time.

Task 3

The first element of this task asked for an explanation of what sales and labour variances meant and the reasons for their occurrence. This tested core activity C. This was well answered with good technical understanding of the variances demonstrated by most candidates. Lower performing candidates typically did not explain the variances but did make a reasonable attempt at providing reasons for the variances based on the scenario. Some candidates provided generic reasons for some variances, for example raw material shortages or machine downtime for the labour idle time variance, rather than considering the information provided in the case study. A significant portion of candidates scored at level 3 here.

The second element of this task asked for an explanation of what KPIs indicated about the activity level of the Customer Services Department during December and how the department performed. This tested core activity C. Most candidates were able to earn at level 2 here. Lower performing candidates often only paraphrased the information provided in the case study which made their answers descriptive rather than adding any depth to the explanation of activity level and performance. Some candidates failed to recognise that the Customer Service Department had actually performed well in very difficult circumstances.

The third element of this task asked for an explanation of how finished goods inventory would be valued in the financial statements for the year ended 31 December 2020. This tested core activity D. Most candidates were able to state the general rule of lower than cost or NRV for inventory valuation, but often then failed to correctly apply this rule to the two lines of inventory. Nearly every candidate got the wrong answer for the 200 units of a SuperClean model to be rectified in January and then to be sold at full price. Many candidates just valued the inventory at E$5.50 each, with others adding E$5.50 to the current inventory value, both of which were incorrect. The valuation of the hand-held model was better explained but even this was not always correct; for example, some candidates added the sales value to the transport costs to arrive at an inventory value of E$9,100 even though they had already explained the inventory valuation rule. This is clearly a technical area that candidates need to be better prepared for.

Task 4

The first element of this task asked for an explanation of how to account for the damage to a warehouse in the accounting records and whether this would be reflected in the financial statements for the year ended 31 December 2020 or 2021. This tested core activity D. Whilst there was general recognition of the need for impairment of the damaged warehouse the explanation of how to account for the

damage was often confusing. The main confusion was how to account for the revaluation surplus of E$65,000 and a range of accounting treatments were suggested with some candidates treating this as an additional cost to be written off and some treating this as a capital gain for tax purposes. On the other hand, most candidates correctly explained that the impact would be in the 2021 accounts and clear reference made to IAS 10: Events after the reporting period.

The second element of this task asked for an explanation of how the expenditure related to the new warehouse should be initially recorded. This tested core activity D. The accounting treatment for the new expenditure was correctly and fully explained by many candidates who scored level 3. A minority of candidates incorrectly suggested writing off either the site clearance or building inspector fees, rather than capitalising these costs. However, the main weakness with some answers was a lack of explanation, with several candidates just saying all the costs could be capitalised.

The third element of this task asked for an explanation of where the feasible region was on a linear programming graph and what the optimal production plan was for the next two weeks. It also asked for an explanation of how to use the graph to determine the maximum quantity to be ordered and the maximum price to pay for additional grey plastic pellets from an alternative supplier. This tested core activity E. A wide range of answers were provided for this task with a significant minority of candidates getting a “no rewardable material” mark. Other candidates were able to identify the correct feasible region but failed to explain how this was arrived at. Other candidates simply guessed at an optimal production plan. Also, very few candidates could make a valid attempt at determining the maximum price to pay for additional grey pellets. There was a recognition by some candidates that this involved a shadow price, but even these could not always explain this term. For example, some thought the shadow price was the price that should be paid rather than being the increase in contribution. Only a few of candidates explained how the graph could be used to determine the maximum to order, although some did recognise that it was only worth ordering up until the point that component FF was used up. Few candidates scored well here.

Tips for future candidates

There are several key points to take into account when preparing for future Operational level case study examinations. These points are:

- Key to achieving a score at level 2 and above is to ensure that:
  - You have the technical knowledge and understanding of all of topics included in each of the core activities. It is not sufficient to rely on the fact that you remember it from the OTQ exams, because the chances are you won't. You need to revise technical material: if you don't have the knowledge, you can't score well.
  - You are able to apply your technical knowledge and understanding within the case study context. Simply reproducing rote-learned answers or pure knowledge of a topic area will score very few, if any, marks. Similarly, taking a non-targeted approach to an issue and commenting on everything that you know about it from a theoretical point of view will score few marks.
  - You are able to explain with clarity and comprehensively, rather than making unsupported statements. Writing comments such as, "this improves decision making", "this graph is essential" or "planning is enhanced" is not enough to gain any marks. Candidates must explain "how" and ''why'' this is the case. Explanations can quite often be improved by adding "because of …." at the end of a sentence. Explanations should also utilise the information given to you within the case study itself, especially financial information. For example, reasons for variances are often given to you in the unseen information, the skill is to pick this out and use it.
- To help you achieve this you need to:
  - Study the pre-seen material in depth. Ensure that you are very familiar with the business, especially the financial information, before the exam as this will help you with applying your knowledge and will save you time. Similarly, an awareness of the industry that the business is in will help you to think of the wider issues that might impact on decisions that you could be asked to comment on.
  - Practise, practise, practise past OCS exam tasks. Whilst this is a new syllabus and a new blueprint, many of the old P1 tasks and a number of the old F1 tasks are still relevant. Practising past tasks and then checking against the published answers will help you to understand what the examiner is looking for.
- On the day:

- It is important to take time to plan your answer so that you are able to apply your knowledge to the specifics of the case. I suggest that for certain tasks you plan your answers in the answer screen itself. For example, if you are asked for the potential benefits and problems of activity-based costing, I suggest that you first note down headings for benefits and problems. Under each heading list your benefits and problems; these will become your sub-headings. Then you can write a short paragraph under each sub-heading. This will allow you time to think about all of the points that you want to make and will help to give your answer a clear format. Ultimately, it should save you time.
- Please take care over how your answer looks. Some answers are very difficult to read because of poor spelling and grammar. Whilst this examination is not a test of English, it is important that answers are presented well so that markers can see that you have demonstrated clear understanding of the issues.

Operational Level Case Study May–August 2020
Marking Guidance
Variant 1

About this marking scheme

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Care must be taken not to make too many assumptions about future marking schemes on the basis of this document. While the guiding principles remain constant, details may change depending on the content of a particular case study examination form.

General marking guidance

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- All marks on the scheme are designed to be awarded and full marks should be awarded when all level descriptor criteria are met.
- The marking scheme and indicative answers are provided as a guide to markers. They are not intended to be exhaustive and other valid approaches must be rewarded. Equally, students do not have to make all of the points mentioned in the indicative answers to receive the highest level of the marking scheme.
- An answer which does not address the requirements of the task must be awarded no marks.

- Markers should mark according to the marking scheme and not their perception of where the passing standard may lie.

  Where markers are in doubt as to the application of the marking scheme to a particular candidate script, they must contact their lead marker.

How to use this levels-based marking scheme

1. Read the candidate's response in full

2. Select the level

- For each trait in the marking scheme, read each level descriptor and select one, using a best-fit approach.
- The response does not need to meet all of the criteria of the level descriptor – it should be placed at the level when it meets more of the criteria of this level than the criteria of the other levels.
- If the work fits more than one level, judge which one provides the best match.
- If the work is on the borderline between two levels, then it should be placed either at the top of the lower band or the bottom of the higher band, depending on where it fits best.

3. Select a mark within the level

- Once you have selected the level, you will need to choose the mark to apply.
- A small range of marks may be given at each level. You will need to use your professional judgement to decide which mark to allocate.
- If the answer is of high quality and convincingly meets the requirements of the level, then you should award the highest mark available. If not, then you should award a lower mark within the range available, making a judgement on the overall quality of the answer in relation to the level descriptor.

Summary of the core activities tested within each sub task

Sub Task	Core Activity		Sub task Weighting (% section time)
Section 1			
(a)	**A**	Prepare costing information for different purposes to meet the needs of management.	48%
(b)	**E**	Prepare information to support short-term decision-making.	52%
Section 2			
(a)	**B**	Prepare budget information and assess its use for planning and control purposes.	24%
(b)			44%
(c)	**F**	Prepare information to manage working capital.	32%
Section 3			
(a)	**D**	Apply relevant financial reporting standards and corporate governance, ethical and tax principles.	52%
(b)	**E**	Prepare information to support short-term decision-making.	48%
Section 4			
(a)	**C**	Analyse performance using financial and non-financial information.	40%
(b)			24%
(c)			36%

SECTION 1

Task (a) Explain the reasons why changing to an activity based costing system would potentially result in a different share of production overhead costs for the existing products and the new e-bikes, compared to the current absorption costing system.			
Trait			
Overhead allocation	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains a few of the reasons for the different allocation but explanation lacks clarity and there is little attempt to link to the scenario.	1 – 4
	Level 2	Explains clearly some of the reasons for the different allocation and makes a reasonable attempt to link these to the scenario.	5 – 8
	Level 3	Explains clearly most of the reasons for the different allocation and makes a good attempt to link these to the scenario.	9 – 12
Task (b) Include in your report an **explanation** of the multi-product break-even chart and the benefits and limitations of the break-even analysis for the new range of e-bikes.			
Trait			
Chart	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Identifies correctly some of the lines and points on the chart.	1 – 2
	Level 2	Identifies correctly most of the lines and points on the chart.	3 – 4
	Level 3	Identifies correctly all of the lines and points on the chart.	5
Benefit & Limitations	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Identifies at least one benefit of the analysis and at least one limitation but the explanation lacks clarity.	1 – 3
	Level 2	Identifies more than one benefit of the analysis and at least two limitations and gives a reasonable explanation of these.	4 – 6
	Level 3	Identifies the main benefits of the analysis and more than two limitations and gives a good explanation of these.	7 – 8

SECTION 2

Task (a) Explain the graph and how the trend line shown on the graph has been calculated.			
Trait			
Graph & trend line	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Provides a weak explanation of the graph and the calculation of moving averages.	1 – 2
	Level 2	Provides a reasonable explanation of the graph and the calculation of moving averages.	3 – 4
	Level 3	Provides a good explanation of the graph and the calculation of moving averages.	5 - 6
Task (b) Explain how time series analysis would be applied to the data in the graph to determine quarterly sales volumes for the new range of e-bikes and any limitations of using time series analysis for this purpose.			
Trait			
Time series	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains at least one aspect of time series analysis (trend line, cyclical variations and seasonal variations) but the explanations lack clarity and there is no application to determining the sales forecast.	1 – 2
	Level 2	Explains at least two aspects of time series analysis (trend line, cyclical variations and seasonal variations) but the explanations may lack clarity or depth and/or there may be limited application to determining the sales forecast.	3 – 5
	Level 3	Explains all of the aspects of time series analysis (trend line, cyclical variations and seasonal variations). The explanations are clear and there is good application to determining the sales forecast.	6 – 7
Limitations	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains at least one limitation of using times series analysis but the explanation lacks clarity or depth.	1

	Level 2	Explains at least two limitations associated with using time series analysis. The explanations are reasonably clear but there is little application to the scenario.	2 – 3
	Level 3	Explains at least two limitations associated with using time series analysis. The explanations are clear and there is some application to the scenario.	4
Task (c) Explain the potential actions we could take to avoid a cash deficit arising and any other factors that would need to be considered before deciding whether to take the potential action.			
Trait			
Actions	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Provides only a few examples some of which may not apply in this case and with no discussion of other factors.	1 - 3
	Level 2	Provides a number of appropriate actions including some discussion of working capital management. Some reference made to other factors.	4 – 6
	Level 3	Provides a number of appropriate actions including good discussion of working capital management. Good consideration of other factors.	7 - 8

SECTION 3			
Task (a) **Explain** the provisions of *IFRS 16 Leases* and how the lease will be initially recorded in our accounting records. Please also explain how the lease will be treated in our financial statements for the year ended 31 December 2020 and subsequent years.			
Trait			
IFRS 16	**Level**	**Descriptor**	**Marks**
		No rewardable material	0
	Level 1	Demonstrates some technical understanding of the provisions of IFRS 16 about initial and subsequent treatment but makes little reference to the information in the scenario to apply them.	1 - 4
	Level 2	Demonstrates reasonable technical understanding of the provision of IFRS 16 and attempts to apply these to the information in the scenario although sometimes incorrectly.	5 - 9
	Level 3	Demonstrates good understanding of the provisions of IFRS 16 and mostly correctly applies these to the information in the scenario.	10 -13
Task (b) **Explain** how the figures shown in the attached schedule would be used to decide on which of the models we should buy-in and which we should assemble in-house. Please also explain any other factors we should consider before making a final decision.			
Trait			
Use of figures	**Level**	**Descriptor**	**Marks**
		No rewardable material	0
	Level 1	Demonstrates little understanding of how to approach a make or buy decision. The explanation may lack technical accuracy and may ignore the effect of the limiting factor	1 - 3
	Level 2	Demonstrates reasonable understanding of how to approach a make or buy decision. The explanation might lack some clarity or technical accuracy and the treatment of the limiting factor may be unclear or incorrect.	4 - 6
	Level 3	Demonstrates good understanding of how to approach a make or buy decision. The explanation is technically accurate including the treatment of the limiting factor.	7 – 8
Other factors	**Level**	**Descriptor**	**Marks**

		No rewardable material	0
	Level 1	Explains at least one other factor to consider, but the explanation lacks clarity and application to the scenario.	1
	Level 2	Explains more than one other factor to consider that are related to the scenario, although the explanations may lack a little clarity.	2 – 3
	Level 3	Explains clearly a range of other factors to consider that are related to the scenario.	4

SECTION 4			
Task (a) **Explain** how each of the variances have been calculated, the reasons why they may have arisen and what they tell us about market conditions.			
Trait			
Variances	**Level**	**Descriptor**	**Marks**
		No rewardable material	0
	Level 1	Explains the sales variances with weak technical accuracy and with limited explanation of how these variances have occurred and may not relate to the information given in the scenario. Limited or no explanation of market conditions.	1 – 3
	Level 2	Explains the sales variances with reasonable technical accuracy. Gives reasonable explanations of the reasons why these variances have occurred and what they tell us about market conditions. Reasons given might not relate to the correct variance or to the information given in the scenario.	4 – 7
	Level 3	Explains the sales variances with technical accuracy. There are good explanations of the reasons why these variances have occurred and what they tell us about market conditions. Reasons given clearly relate to the specific variance and are drawn for the information presented in the scenario.	8 - 10
Task (b) **Explain** the potential benefits in this case, of separating the variances into planning and operational variances.			
Trait			
Planning & operational	**Level**	**Descriptor**	**Marks**
		No rewardable material	0
	Level 1	Demonstrate little understanding of the benefits of separating the variances into planning and operational variances.	1 - 2
	Level 2	Demonstrate reasonable understanding of the benefits of separating the variances into planning and operational variances. Explanation may not refer to the information given in the scenario.	3 – 4
	Level 3	Demonstrate good understanding of the benefits of separating the variances into planning and operational variances. Explanation relates well to the information given in the scenario.	5 – 6

Task (c) Suggest three suitable KPIs, based on the data analytics from our website, explaining how they would be calculated and why they would be appropriate measures.			
Trait			
KPIs	**Level**	**Descriptor**	**Marks**
		No rewardable material	0
	Level 1	Provides at least one appropriate KPI based on data analytics from the website. Explanation of how it would be measured and why it is appropriate lacks clarity.	1 - 3
	Level 2	Provides more than one appropriate KPI based on data analytics from the website. Explanation of how they would be measured and why they would be appropriate lacks some clarity.	4 - 6
	Level 3	Provides three appropriate KPIs based on data analytics from the website. Good explanation given of how they would be measured and why they would be appropriate.	7 - 9

Operational Level Case Study May–August 2020
Marking Guidance
Variant 2

About this marking scheme

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General marking guidance

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- All marks on the scheme are designed to be awarded and full marks should be awarded when all level descriptor criteria are met.
- The marking scheme and indicative answers are provided as a guide to markers. They are not intended to be exhaustive and other valid approaches must be rewarded. Equally, students do not have to make all of the points mentioned in the indicative answers to receive the highest level of the marking scheme.
- An answer which does not address the requirements of the task must be awarded no marks.

- Markers should mark according to the marking scheme and not their perception of where the passing standard may lie.
  Where markers are in doubt as to the application of the marking scheme to a particular candidate script, they must contact their lead marker.

How to use this levels-based marking scheme

1. Read the candidate's response in full

2. Select the level

- For each trait in the marking scheme, read each level descriptor and select one, using a best-fit approach.
- The response does not need to meet all of the criteria of the level descriptor – it should be placed at the level when it meets more of the criteria of this level than the criteria of the other levels.
- If the work fits more than one level, judge which one provides the best match.
- If the work is on the borderline between two levels, then it should be placed either at the top of the lower band or the bottom of the higher band, depending on where it fits best.

3. Select a mark within the level

- Once you have selected the level, you will need to choose the mark to apply.
- A small range of marks may be given at each level. You will need to use your professional judgement to decide which mark to allocate.
- If the answer is of high quality and convincingly meets the requirements of the level, then you should award the highest mark available. If not, then you should award a lower mark within the range available, making a judgement on the overall quality of the answer in relation to the level descriptor.

Summary of the core activities tested within each sub task

Sub Task	Core Activity		Sub task Weighting (% section time)
Section 1			
(a)	E	Prepare information to support short-term decision-making.	48%
(b)	A	Prepare costing information for different purposes to meet the needs of management.	52%
Section 2			
(a)	B	Prepare budget information and assess its use for planning and control purposes.	28%
(b)			32%
(c)			40%
Section 3			
(a)	E	Prepare information to support short-term decision-making.	52%
(b)	D	Apply relevant financial reporting standards and corporate governance, ethical and tax principles.	48%
Section 4			
(a)	C	Analyse performance using financial and non-financial information.	68%
(b)	F	Prepare information to manage working capital.	32%

SECTION 1			
Task (a) **Explain**, with clear justification, why each of the costs in the attached schedule and accompanying notes would be relevant or irrelevant to the minimum pricing decision. Also, please explain whether a relevant cost approach would be appropriate in this situation.			
Trait			
Relevant costs	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Identifies correctly whether a few of the costs would be relevant or irrelevant. In most cases, the explanations lack clarity or are incorrect.	1 – 2
	Level 2	Identifies correctly for most of the costs whether they would be relevant or irrelevant. Some of the explanations lack clarity or are incorrect.	3 – 5
	Level 3	Identifies correctly for all of the costs whether they would be relevant or irrelevant. Explanations are mostly clear and correct.	6 – 7
Trait			
Appropriateness	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrate a weak technical understanding of relevant cost analysis and fails to consider the appropriateness in this case. The explanation lacks clarity.	1 – 2
	Level 2	Demonstrate a reasonable technical understanding of relevant cost analysis and considers the appropriateness in this case. The explanation may lack clarity.	3 – 4
	Level 3	Demonstrate a good technical understanding of relevant cost analysis and considers the appropriateness is this case in a clear manner.	5

Task (b) **Explain** how the costs of the mobile phone app differ, in terms of the type of costs and the timing of their occurrence, compared to the lawn mower. Please also explain the potential issues with determining the unit cost of the mobile phone app for planning and decision-making purposes.			
Trait			
Type of costs	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Identifies very few types of costs of developing and operating the app and gives a limited explanation of when the costs arise or the cost behaviour.	1 – 2
	Level 2	Identifies a few types of costs of developing and operating the app and gives a reasonable explanation of when the costs arise and how the cost behaves compared to the lawn mower.	3 – 5
	Level 3	Identifies a number of types of costs of developing and operating the app and provides a good explanation of when the costs arise and how the cost behaves compared to the lawn mower.	6 – 7
Trait			
Unit cost	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates a weak technical understanding of how the unit cost would be determined. Does not explain any issues in trying to determine the cost.	1 – 2
	Level 2	Demonstrates a reasonable technical understanding of how the unit cost would be determined. Explains at least one potential issue in trying to determine the cost.	3 – 4
	Level 3	Demonstrates a good technical understanding of how the unit cost would be determined. Explains a few potential issues in trying to determine the cost.	5 – 6

SECTION 2			
Task (a) Explain the figures in the spreadsheet and what they tell us about the impact on profit of potential changes to variables.			
Trait			
Figures	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Provides a limited explanation of the figures in the spreadsheet. Does not consider the impact on profit of changing variables.	1 – 2
	Level 2	Provides a reasonable explanation of the figures in the spreadsheet with some consideration of the impact on profit of changing variables.	3 – 5
	Level 3	Provides a good explanation of the figures in the spreadsheet and clearly explains the impact on profit of changing variables.	6 – 7
Task (b) Explain the benefits and limitations of what-if analysis.			
Trait			
Benefits & limitations	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains at least one benefit or limitation of what-if analysis although the explanation lacks clarity.	1 – 3
	Level 2	Explains at least two benefits and/or limitations of what-if analysis but the explanations may lack clarity or depth and/or there may be limited application to the scenario.	4 – 6
	Level 3	Explains a range of benefits and limitations of what-if analysis. The explanations are clear and there is good application to the scenario.	7 – 8

Task (c) Explain the potential advantages and disadvantages of adopting a rolling budget approach compared to our current budgeting approach.			
Trait			
Rolling budgets	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates weak understanding of how a rolling budget operates and offers little in terms of the advantages and disadvantages of rolling budgets. No application to the company or specific scenario.	1 - 3
	Level 2	Demonstrates reasonable understanding of how a rolling budget operates and explains some of its advantages and disadvantages. Limited application to the company or specific scenario.	4 – 7
	Level 3	Demonstrates good understanding of how a rolling budget operates and explains a range of advantages and disadvantages. Good application to the company or specific scenario.	8 - 10

SECTION 3			
Task (a) Explain the figures shown in the payoff table and how the maximax, maximin, and minimax regret decision criteria would be used to select the selling price. Please also state the selling price that would be chosen under each criterion.			
Trait			
Payoff table	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Provides a weak explanation of the figures in the payoff table.	1
	Level 2	Provides a reasonable explanation of the figures in the payoff table.	2 – 3
	Level 3	Provides a good explanation of the figures in the payoff table.	4
Trait			
Criteria	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates a weak technical understanding of the decision criteria and how they are applied. The explanations given may lack clarity and/or the selling prices identified are incorrect.	1 – 3
	Level 2	Demonstrates a reasonable technical understanding of the decision criteria and how they are applied. There may be a few inaccuracies in the explanations and/or one or more of the selling prices identified are incorrect.	4 – 6
	Level 3	Demonstrates a good technical understanding of the decision criteria and how they are applied. The explanations given are technically correct and the correct selling prices are identified.	7 – 9
Task (b) Explain the specific requirements under IAS 2: Inventories and how they would apply to each of the three options including details of the costs to include or exclude. Please also explain whether each of the options would require a write-down and the impact of a write-down on profits and cash flows.			
Trait			
IAS 2	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates a weak technical understanding of the provisions of IAS 2. Application to the three options contains significant	1 – 4

		inaccuracies and the explanation of the impact of the write-down lacks clarity or is incorrect.	
	Level 2	Demonstrates a reasonable technical understanding of the provisions of IAS 2. Application to the three options contains some inaccuracies. The explanation of the impact of the write-down may lack clarity and may be incorrect regarding the impact on cash flow.	5 – 8
	Level 3	Demonstrates a good technical understanding of the provisions of IAS 2. Application to the three options is correct but there may be some omissions. The impact of the write-down on profit and cash flow is well explained.	9 – 12

SECTION 4			
Task (a) **Explain** each of the variances and the reasons why they may have arisen, clearly explaining the linkages between the variances.			
Trait			
Variances	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains the variances with little technical accuracy.	1 – 2
	Level 2	Explains the variances with reasonable technical accuracy.	3 - 5
	Level 3	Explains the variances with good technical accuracy.	6 - 7
Trait			
Reasons	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Provides limited explanation of how these variances have arisen and may not refer to the information given in the scenario. Limited or no explanation of linkages between variances.	1 – 3
	Level 2	Provides reasonable explanation of the reasons why these variances have occurred although some of the reasons given might not relate to the correct variance or to the information given in the scenario. Demonstrates some understanding of the linkages between the variances.	4 – 7
	Level 3	Provides good explanations of the reasons why these variances have occurred. Reasons given clearly relate to the specific variance and are drawn from the information presented in the scenario. Demonstrates good understanding of the linkages between the variances.	8 - 10
Task (b) **Compare** the potential suppliers in terms of their financial stability, liquidity and the credit terms they may offer ChargeIT.			
Trait			
Supplier selection	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates limited understanding of what the figures mean in terms of stability, liquidity and credit terms.	1 – 3

	Level 2	Demonstrates reasonable understanding of what the figures mean in terms of stability, liquidity and credit terms.	4 – 6
	Level 3	Demonstrates good understanding of what the figures mean in terms of stability, liquidity and credit terms.	7 – 8

Operational Level Case Study May–August 2020
Marking Guidance
Variant 3

About this marking scheme

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- The marking scheme and indicative answers are provided as a guide to markers. They are not intended to be exhaustive and other valid approaches must be rewarded. Equally, students do not have to make all of the points mentioned in the indicative answers to receive the highest level of the marking scheme.
- An answer which does not address the requirements of the task must be awarded no marks.

- Markers should mark according to the marking scheme and not their perception of where the passing standard may lie.
  Where markers are in doubt as to the application of the marking scheme to a particular candidate script, they must contact their lead marker.

How to use this levels-based marking scheme

1. Read the candidate's response in full

2. Select the level

- For each trait in the marking scheme, read each level descriptor and select one, using a best-fit approach.
- The response does not need to meet all of the criteria of the level descriptor – it should be placed at the level when it meets more of the criteria of this level than the criteria of the other levels.
- If the work fits more than one level, judge which one provides the best match.
- If the work is on the borderline between two levels, then it should be placed either at the top of the lower band or the bottom of the higher band, depending on where it fits best.

3. Select a mark within the level

- Once you have selected the level, you will need to choose the mark to apply.
- A small range of marks may be given at each level. You will need to use your professional judgement to decide which mark to allocate.
- If the answer is of high quality and convincingly meets the requirements of the level, then you should award the highest mark available. If not, then you should award a lower mark within the range available, making a judgement on the overall quality of the answer in relation to the level descriptor.

Summary of the core activities tested within each sub task

Sub Task	Core Activity		Sub task Weighting (% section time)
Section 1			
(a)	E	Prepare information to support short-term decision-making.	52%
(b)	A	Prepare costing information for different purposes to meet the needs of management.	48%
Section 2			
(a)	E	Prepare information to support short-term decision-making.	48%
(b)	B	Prepare budget information and assess its use for planning and control purposes.	52%
Section 3			
(a)	D	Apply relevant financial reporting standards and corporate governance, ethical and tax principles.	52%
(b)	B	Prepare budget information and assess its use for planning and control purposes.	48%
Section 4			
(a)	C	Analyse performance using financial and non-financial information.	32%
(b)			36%
(c)	F	Prepare information to manage working capital.	32%

SECTION 1			
Task (a) **Explain** the graph and how the optimum production plan can be determined using the graph. Please also include a discussion on why it may not be appropriate to proceed with this production plan and how the graph might be improved to enable an appropriate production plan to be determined.			
Trait			
Graph	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains some aspects of the graph but may lack clarity. There is a poor attempt to explain how to use the graph to determine the optimal solution.	1 – 2
	Level 2	Explains most aspects of the graph but lacks clarity in parts. There is a reasonable attempt to explain how to use the graph to determine the optimal solution.	3 – 5
	Level 3	Explains all aspects of the graph clearly. There is a good attempt to explain how to use the graph to determine the optimal solution.	6 - 7
Trait			
Appropriateness	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Provides a weak discussion of why the optimal solution may not be appropriate in this case and may not consider improvements to the graph.	1 – 2
	Level 2	Provides a reasonable discussion of why the optimal solution may not be appropriate in this case. This may not include discussion of how the graph can be improved.	3 – 4
	Level 3	Provides a good discussion of why the optimal solution may not be appropriate in this case and how the graph could be improved.	5 – 6
Task (b) **Identify** the costs drivers for the activities and explain how these could be used to determine the costs of operating the warehouse. Please also explain how the cost drivers could be used to control the cost of the activities.			
Trait			
Cost drivers	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0

	Level 1	Demonstrates weak technical understanding of cost drivers and fails to correctly identify appropriate cost drivers in each case. Gives a limited explanation of how the cost drivers could be used to determine the cost of operating the warehouse and how they could be used for cost control.	1 – 4
	Level 2	Demonstrates reasonable technical understanding of cost drivers and identifies some appropriate cost drivers, although the explanation may lack some clarity. Gives a reasonable explanation of how the cost drivers could be used to determine the cost of operating the warehouse and how they could be used for cost control.	5 – 8
	Level 3	Demonstrates good technical understanding of cost drivers and correctly identifies appropriate cost drivers in each case. Gives a good explanation of how the cost drivers would be used to determine the cost of operating the warehouse and how they could be used for cost control.	9 – 12

SECTION 2			
Task (a) **Explain** the figures shown in the payoff table and how the maximax, maximin, and minimax regret decision criteria would be applied to select the order level. Please also state the order level that would be chosen under each criterion.			
Trait			
Payoff table	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Provides a weak explanation of the figures in the payoff table.	1
	Level 2	Provides a reasonable explanation of the figures in the payoff table.	2
	Level 3	Provides a good explanation of the figures in the payoff table.	3
Trait			
Criteria	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates a weak technical understanding of the decision criteria and how they are applied. The explanation given may lack clarity and / or the order quantities identified are incorrect.	1 – 3
	Level 2	Demonstrates a reasonable technical understanding of the decision criteria and how they are applied. There may be some inaccuracies in the explanation and / or one or more of the order quantities identified are incorrect.	4 – 6
	Level 3	Demonstrates a good technical understanding of the decision criteria and how they are applied. The explanation given is mostly clear and the correct order quantities are identified for at least two of the criteria.	7 – 9
Task (b) **Explain** how we would prepare a flexible budget and the benefits of using flexible budgets for planning purposes.			
Trait			
Flexible budgeting	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates a weak technical understanding of how a flexible budget would be prepared and the potential benefits for planning purposes. Explanation makes little or no reference to the scenario.	1 – 4

	Level 2	Demonstrates a reasonable technical understanding of how a flexible budget would be prepared and the potential benefits for planning purposes. Explanation makes some reference to the scenario.	5 – 9
	Level 3	Demonstrates a good technical understanding of how a flexible budget would be prepared and the potential benefits for planning purposes. Explanation makes a number of references to the scenario.	10 – 13

SECTION 3			
Task (a) Explain the criteria for capitalisation of costs under *IAS16 Property, Plant and Equipment* and whether the moulding machine meets these criteria. Please also explain the treatment, as either capital or revenue expenditure, for each of the individual costs in Ben's list, based on the requirements of *IAS16.*			
Trait			
IAS16 criteria	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates a weak technical understanding of the criteria of IAS16. Considers at least one of the criteria but the explanation may lack clarity and application to the scenario.	1 – 2
	Level 2	Demonstrates a reasonable technical understanding of the criteria of IAS16. Considers a few of the criteria but the explanation may lack some clarity and / or there is little attempt to apply to the scenario.	3 – 4
	Level 3	Demonstrates a good technical understanding of the criteria of IAS16. Considers a number of the criteria with clear explanation and application to the scenario.	5
Trait			
Costs	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains the correct treatment for some of the costs but explanation lacks clarity and /or depth.	1 – 3
	Level 2	Explains the correct treatment for most of the cost items. Some of the explanation may lack clarity or depth.	4 – 6
	Level 3	Explains the correct treatment for all of the cost items. Explanations are mostly clear and comprehensive.	7 – 8

Task (b) Explain a responsibility accounting system and whether or not it would be beneficial in future to allow the sales managers to participate in setting budgets and targets for sales volumes and revenue.			
Trait			
Responsibility accounting	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates weak understanding of responsibility accounting and offers little in terms of the advantages / disadvantages of participation by the sales managers. Little or no application to the scenario.	1 – 4
	Level 2	Demonstrates reasonable understanding of responsibility accounting and provides a reasonable explanation of the advantages / disadvantages of participation by the sales managers. Application to the scenario may be limited.	5 – 8
	Level 3	Demonstrates good understanding of responsibility accounting and provides a good explanation of the advantages / disadvantages of participation by the sales managers. Some application to the company or specific scenario.	9 – 12

SECTION 4			
Task (a) Explain how each of the sales variances have been calculated and the reasons why they have arisen.			
Trait			
Variances	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains the variances with some technical accuracy but with limited explanation of how these variances have arisen. May not refer to the information given in the scenario.	1 – 3
	Level 2	Explains the variances with reasonable technical accuracy. Gives reasonable explanations of the reasons why these variances have occurred although some of the reasons given might not relate to the correct variance or to the information given in the scenario.	4 – 6
	Level 3	Explains the variances with technical accuracy. Provides good explanations of the reasons why these variances have occurred. Reasons given clearly relate to the specific variance and are drawn from the information presented in the scenario.	7 – 8
Task (b) Explain the reasons why the targets have not been achieved or have been exceeded. Please also explain why the KPIs provide useful information about the online sales performance of our products and the operation of our website.			
Trait			
KPIs	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Provides some reasons for why the KPI targets have been exceeded or not achieved, although there is likely to be a lack of clarity or depth. The explanation of the usefulness of the KPI is likely to be limited.	1 – 3
	Level 2	Provides reasons for why the KPI targets have been exceeded or not achieved, although there may be some lack of clarity or depth. The explanation of the usefulness of the KPI is reasonable.	4 – 6
	Level 3	Provides reasons for why the KPI targets have been exceeded or not achieved which are clear and comprehensive. The explanation of the usefulness of the KPI is good.	7 – 9

SECTION 4 (continued)			
Task (c) **Explain** the factors that we need to consider when choosing short-term investments and two suggestions of suitable short-term investments for the surplus cash.			
Trait			
Investments	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Provides a vague explanation of the factors that need to be considered. Suggests investments that may not be suitable for the scenario.	1 – 3
	Level 2	Provides a reasonable explanation of the factors that need to be considered. Suggests at least one suitable short-term investment.	4 – 6
	Level 3	Provides a good explanation of the factors that would need to be considered. Suggests two suitable short-term investments.	7 – 8

Operational Level Case Study May–August 2020
Marking Guidance
Variant 4

About this marking scheme

This marking scheme has been prepared for the CIMA 2019 professional qualification Operational Case Study [May–August 2020].

The indicative answers will show the expected or most orthodox approach; however the nature of the case study examination tasks means that a range of responses will be valid. The descriptors within this level-based marking scheme are holistic and can accommodate a range of acceptable responses.

General marking guidance is given below, markers are subject to extensive training and standardisation activities and ongoing monitoring to ensure that judgements are being made correctly and consistently.

Care must be taken not to make too many assumptions about future marking schemes on the basis of this document. While the guiding principles remain constant, details may change depending on the content of a particular case study examination form.

General marking guidance

- Marking schemes should be applied positively, with candidates rewarded for what they have demonstrated and not penalised for omissions.
- All marks on the scheme are designed to be awarded and full marks should be awarded when all level descriptor criteria are met.
- The marking scheme and indicative answers are provided as a guide to markers. They are not intended to be exhaustive and other valid approaches must be rewarded. Equally, students do not have to make all of the points mentioned in the indicative answers to receive the highest level of the marking scheme.
- An answer which does not address the requirements of the task must be awarded no marks.

- Markers should mark according to the marking scheme and not their perception of where the passing standard may lie.
  Where markers are in doubt as to the application of the marking scheme to a particular candidate script, they must contact their lead marker.

How to use this levels-based marking scheme

1. Read the candidate's response in full

2. Select the level

- For each trait in the marking scheme, read each level descriptor and select one, using a best-fit approach.
- The response does not need to meet all of the criteria of the level descriptor – it should be placed at the level when it meets more of the criteria of this level than the criteria of the other levels.
- If the work fits more than one level, judge which one provides the best match.
- If the work is on the borderline between two levels, then it should be placed either at the top of the lower band or the bottom of the higher band, depending on where it fits best.

3. Select a mark within the level

- Once you have selected the level, you will need to choose the mark to apply.
- A small range of marks may be given at each level. You will need to use your professional judgement to decide which mark to allocate.
- If the answer is of high quality and convincingly meets the requirements of the level, then you should award the highest mark available. If not, then you should award a lower mark within the range available, making a judgement on the overall quality of the answer in relation to the level descriptor.

Summary of the core activities tested within each sub task

Sub Task	Core Activity		Sub task Weighting (% section time)
Section 1			
(a)	A	Prepare costing information for different purposes to meet the needs of management.	52%
(b)	E	Prepare information to support short-term decision-making.	48%
Section 2			
(a)	C	Analyse performance using financial and non-financial information.	44%
(b)	B	Prepare budget information and assess its use for planning and control purposes.	36%
(c)			20%
Section 3			
(a)	B	Prepare budget information and assess its use for planning and control purposes.	36%
(b)	C	Analyse performance using financial and non-financial information.	24%
(c)	E	Prepare information to support short-term decision-making.	40%
Section 4			
(a)	D	Apply relevant financial reporting standards and corporate governance, ethical and tax principles.	40%
(b)			20%
(c)	F	Prepare information to manage working capital.	40%

SECTION 1			
Task (a) **Explain** the six areas of the CGMA cost transformation model and how these apply to our business.			
Trait			
Areas 1 and 2	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains areas 1 and / or 2 (engendering a cost-conscious culture and managing the risk inherent in driving cost-competitiveness) of the model, but the explanation lacks clarity and there is little if any reference to the business.	1
	Level 2	Explains areas 1 and 2 of the model, but the explanation may lack some clarity. There is some attempt to relate this to the business.	2 - 3
	Level 3	Explains areas 1 and 2 of the model and the explanation is clear. There is a good attempt to relate this to the business.	4
Areas 3 and 4	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains areas 3 and / or 4 (understanding cost drivers and cost accounting systems and processes and connecting products with profitability) of the model, but the explanation lacks clarity and there is little if any reference to the business.	1
	Level 2	Explains areas 3 and 4 of the model, but the explanation may lack some clarity. There is some attempt to relate this to the business.	2 - 3
	Level 3	Explains areas 3 and 4 of the model and the explanation is clear. There is a good attempt to relate this to the business.	4 - 5
Areas 5 and 6	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains areas 5 and / or 6 (generating maximum value through new products and incorporating sustainability to optimise profits) of	1

		the model, but the explanation lacks clarity and there is little if any reference to the business.	
	Level 2	Explains areas 5 and 6 of the model, but the explanation may lack some clarity. There is some attempt to relate this to the business.	2 – 3
	Level 3	Explains areas 5 and 6 of the model and the explanation is clear. There is a good attempt to relate this to the business.	4
Task (b) Explain what the expected values, standard deviations and co-efficient of variations on Sophie's schedule mean and how different attitudes to risk will affect the decision about which promotional campaign to choose. Please also explain any limitations of basing our decision about which campaign to choose solely on the information in the schedule.			
Trait			
The decision	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains with technical accuracy at least one of the measures. Demonstrates some understanding of how different risk attitudes affect the decision but there is little or no attempt to apply this to the information.	1 – 2
	Level 2	Explains with technical accuracy at least two of the measures. Demonstrates reasonable understanding of how different risk attitudes affect the decision and attempts to apply this to the information with some accuracy.	3 – 5
	Level 3	Explains with technical accuracy all three measures. Demonstrates good understanding of how different risk attitudes affect the decision and applies this to the information mostly correctly.	6 – 7
Trait			
Limitations	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains at least one limitation, although the explanation may lack clarity and / or depth.	1 – 2
	Level 2	Explains at least two limitations, although the explanation may lack clarity or depth.	3 – 4

	Level 3	Explains at least three limitations in mostly a clear and comprehensive manner.	5

SECTION 2			
Task (a) Explain what the sales price variances, sales mix profit variances, sales quantity profit variance and total variance shown on the attached schedule mean and the possible reasons for their occurrence.			
Trait			
Variances: technical	**Level**	**Descriptor**	**Marks**
		No rewardable material	0
	Level 1	Demonstrates limited technical understanding of what the sales variances represent, including the meaning of the adverse or favourable variances. There are technical inaccuracies.	1
	Level 2	Demonstrates reasonable technical understanding of what the sales variances represent, including the meaning of the adverse or favourable variances. There are some technical inaccuracies.	2 - 3
	Level 3	Demonstrates good technical understanding of what the sales variances represent and the meaning of the adverse or favourable variances	4
Variances: reasons	**Level**	**Descriptor**	**Marks**
		No rewardable material	0
	Level 1	Provides reasons for some of the sales variances, but the explanation lacks clarity and some of the reasons are likely to not be valid in respect of the variance explained.	1 - 2
	Level 2	Provides some valid reasons for the variances which are reasonably explained. Demonstrates limited understanding of the interrelationships between the variances but does reference the scenario.	3 - 5
	Level 3	Provides valid reasons for the sales variances which are well explained. Demonstrates good understanding of the interrelationships between the variances and the scenario.	6 - 7

Task (b) **Explain** how a revised budget for the employee costs in the Finished Goods Distribution Warehouse could be established using an activity-based budgeting approach. Please illustrate your explanation with reference to both of the activities of receiving finished goods inventory and placing of loaded pallets onto delivery trucks identified in the attachment.			
Trait			
Application of ABB	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates some understanding of an activity based budgeting approach. There may be an attempt to apply this to explain how to establish the budget, but this explanation is poor. Little or no reference is made to the activities suggested or to the scenario.	1 – 3
	Level 2	Demonstrates reasonable understanding of an activity based budgeting approach and makes a reasonable attempt to apply this to explain how to establish the budget. Explanation makes reference to the activities suggested, but the illustration lacks depth or clarity.	4 – 6
	Level 3	Demonstrates clear understanding of an activity based budgeting approach and applies this to explain how to establish the budget. Explanation is clearly linked to the activities suggested.	7 - 9
Task (c) **Explain** the benefits of using an activity-based budgeting approach for establishing the warehouse employee cost.			
Trait			
Benefits of ABB	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains at least one benefit, but there is likely to be a lack of clarity in the explanation and little if any reference to the scenario.	1 – 2
	Level 2	Explains more than one benefit, but there may be a lack of clarity in the explanation. There is an attempt to link this to the scenario.	3 – 4
	Level 3	Explains with clarity more than one benefit with good reference to the scenario.	5

SECTION 3			
Task (a) Explain the principles of a 'beyond budgeting' approach, how we might apply these principles and the benefits of doing this for our business.			
Trait			
Beyond budgeting	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains at least one of the key principles of beyond budgeting and how this can be applied. The answer lacks clarity and is unlikely to make reference to the scenario.	1 - 2
	Level 2	Explains at least two of the key principles of beyond budgeting and how these can be applied. The answer makes some reference to the scenario but may lack some clarity.	3 - 4
	Level 3	Explains clearly the key principles of beyond budgeting and how these can be applied with reference to the scenario.	5 – 6
Benefits	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains a benefit but the explanation lacks clarity or is generic rather than applied.	1
	Level 2	Explains at least one benefit but the explanation may lack some clarity or not be well applied.	2
	Level 3	Explains more than one benefit with clarity and in the context of the business.	3
Task (b) Include suggestions of two KPIs that we could introduce to monitor the performance of the Finished Goods Warehouse Manager. For each KPI explain how it would be calculated and why it would be appropriate.			
Trait			
KPIs	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0

	Level 1	Identifies at least one KPI which is relevant for monitoring the performance of the Warehouse Manager, but the explanation of measurement and appropriateness is either missing or not clear.	1 - 2
	Level 2	Identifies two KPIs which are relevant for monitoring the performance of the Warehouse Manager, but the explanation of measurement and appropriateness may not be clear.	3 – 4
	Level 3	Identifies two KPIs which are relevant for monitoring the performance of the Warehouse Manager and the explanation of measurement and appropriateness is clear.	5 - 6
Task (c) Explain how we would make a decision from a financial perspective about whether to choose Option A or Option B, giving reasons why each cost would or would not be included in this decision process. Please also explain any non-financial factors that we should consider before making a final decision.			
Trait			
Relevant costs	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates understanding of relevant costing principles and attempts to apply these to the decision, although with little accuracy. The explanation of why each cost would or would not be included is limited.	1 – 2
	Level 2	Demonstrates understanding of relevant costing principles and applies this to the decision, although there may be some inaccuracies. The explanation of why each cost would or would not be included may be limited	3 – 4
	Level 3	Demonstrates understanding of relevant costing principles and applies this to the decision mostly accurately. The explanation of why each cost would or would not be included is comprehensive and clear.	5 - 6
Non-financial factors	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains at least one non-financial factor, but the explanation is brief or lacks clarity.	1

	Level 2	Explains at least one non-financial factor. The explanation may lack some clarity or depth.	2 - 3
	Level 3	Explains with clarity at least two non-financial factors. The explanation is mostly clear and comprehensive.	4

SECTION 4			
Task (a) Explain how the asset that has been leased will be initially recorded and then subsequently measured in our financial statements for the year ended 31 December 2021 and future years.			
Trait			
Right of use asset	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains with technical accuracy some of the generic aspects of how the right of use asset will be initially and subsequently accounted for. Reference to the specific leased asset in the scenario and the financial statements might be missing or only briefly commented on.	1 – 2
	Level 2	Explains with technical accuracy most of the generic aspects of how a right of use asset will be initially and subsequently accounted for. Reference to the specific leased asset in the scenario might be limited, although there has been an attempt to explain the treatment in the financial statements for 2021, although future years may be missing.	3 – 4
	Level 3	Explains with technical accuracy how a right of use asset will be initially and subsequently accounted for with reference made to the specific leased asset in the scenario. The impact in the financial statements for 2021 is fully explained and future financial statements are also commented upon.	5
Lease liability	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0

	Level 1	Explains with technical accuracy some of the generic aspects of how the lease liability will be initially and subsequently accounted for. Reference to the specific leased asset in the scenario and the financial statements might be missing or only briefly commented on.	1 – 2
	Level 2	Explains with technical accuracy most of the generic aspects of how the lease liability will be initially and subsequently accounted for. Reference to the specific leased asset in the scenario might be limited, although there has been an attempt to explain the treatment in the financial statements for 2021, although future years may be missing.	3 – 4
	Level 3	Explains with technical accuracy how a lease liability will be initially and subsequently accounted for with reference made to the specific leased asset in the scenario. The impact in the financial statements for 2021 is fully explain and future financial statements are also commented upon.	5
Task (b) Explain how the expenditure incurred in reconditioning the packing equipment will affect our financial statements for the year ended 31 December 2021.			
Trait			
Subsequent expenditure	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains the recognition rule for capitalisation of subsequent expenditure in IAS16 with no application to the scenario. May not comment on depreciation for 2021.	1 – 2
	Level 2	Explains how the subsequent expenditure on the asset can be capitalised in accordance with IAS16 but the explanation lacks clarity. The impact on the financial statements for 2021 is considered, but this may not be completely accurate.	3 – 4
	Level 3	Explains fully how the subsequent expenditure on the asset can be capitalised in accordance with IAS 16 and the impact in the 2021 financial statements.	5

Task (c) **Explain** how we might apply a more aggressive approach to the management of our inventories of raw materials, components and finished goods. Please also explain the possible implications for ChargeIT of your suggested actions.			
Trait			
Aggressive approach	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains the need to decrease both types of inventory, but there is little explanation of how this might be achieved. The explanation is general rather than about this business.	1 – 2
	Level 2	Explains that an aggressive approach means to decrease inventory, with sensible suggestions of how this could be achieved. The explanation makes some use of the scenario.	3 - 4
	Level 3	Explains that an aggressive approach means to decrease inventory, with appropriate suggestions for how this could be achieved based on the scenario and pre-seen.	5 - 6
Implications	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates some understanding of the implications of the actions suggested to reduce inventory, but the explanation is brief, lacks clarity and is not linked to the business context.	1
	Level 2	Demonstrates reasonable understanding of the implications of the actions suggested to reduce inventory, but the explanation may lack clarity. There is some attempt to link this to the business context.	2 – 3
	Level 3	Demonstrates good understanding of the implications of the actions suggested to reduce inventory and the explanation is clear. There is a good attempt to link this to the business context.	4

Operational Level Case Study May–August 2020
Marking Guidance
Variant 5

About this marking scheme

This marking scheme has been prepared for the CIMA 2019 professional qualification Operational Case Study [May–August 2020].

The indicative answers will show the expected or most orthodox approach; however the nature of the case study examination tasks means that a range of responses will be valid. The descriptors within this level-based marking scheme are holistic and can accommodate a range of acceptable responses.

General marking guidance is given below, markers are subject to extensive training and standardisation activities and ongoing monitoring to ensure that judgements are being made correctly and consistently.

Care must be taken not to make too many assumptions about future marking schemes on the basis of this document. While the guiding principles remain constant, details may change depending on the content of a particular case study examination form.

General marking guidance

- Marking schemes should be applied positively, with candidates rewarded for what they have demonstrated and not penalised for omissions.
- All marks on the scheme are designed to be awarded and full marks should be awarded when all level descriptor criteria are met.
- The marking scheme and indicative answers are provided as a guide to markers. They are not intended to be exhaustive and other valid approaches must be rewarded. Equally, students do not have to make all of the points mentioned in the indicative answers to receive the highest level of the marking scheme.
- An answer which does not address the requirements of the task must be awarded no marks.

- Markers should mark according to the marking scheme and not their perception of where the passing standard may lie.
  Where markers are in doubt as to the application of the marking scheme to a particular candidate script, they must contact their lead marker.

How to use this levels-based marking scheme

1. Read the candidate's response in full

2. Select the level

- For each trait in the marking scheme, read each level descriptor and select one, using a best-fit approach.
- The response does not need to meet all of the criteria of the level descriptor – it should be placed at the level when it meets more of the criteria of this level than the criteria of the other levels.
- If the work fits more than one level, judge which one provides the best match.
- If the work is on the borderline between two levels, then it should be placed either at the top of the lower band or the bottom of the higher band, depending on where it fits best.

3. Select a mark within the level

- Once you have selected the level, you will need to choose the mark to apply.
- A small range of marks may be given at each level. You will need to use your professional judgement to decide which mark to allocate.
- If the answer is of high quality and convincingly meets the requirements of the level, then you should award the highest mark available. If not, then you should award a lower mark within the range available, making a judgement on the overall quality of the answer in relation to the level descriptor.

Summary of the core activities tested within each sub task

Sub Task	Core Activity		Sub task Weighting (% section time)
Section 1			
(a)	E	Prepare information to support short-term decision-making.	28%
(b)			40%
(c)	C	Analyse performance using financial and non-financial information.	32%
Section 2			
(a)	C	Analyse performance using financial and non-financial information.	52%
(b)	A	Prepare costing information for different purposes to meet the needs of management.	48%
Section 3			
(a)	D	Apply relevant financial reporting standards and corporate governance, ethical and tax principles.	24%
(b)			20%
(c)			24%
(d)	B	Prepare budget information and assess its use for planning and control purposes.	32%
Section 4			
(a)	B	Prepare budget information and assess its use for planning and control purposes.	48%
(b)	F	Prepare information to manage working capital.	52%

SECTION 1			
Task (a) Explain the decision tree and how we should use it to make our decision about which agent to use.			
Trait			
The decision tree	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains some aspects of what the decision tree represents but makes little attempt to explain how the tree can be used to make the decision. There is little or no reference to the scenario.	1 – 2
	Level 2	Explains most aspects of what the decision tree represents and makes a reasonable attempt to explain how the tree can be used to make the decision. Reference to the scenario or data in the decision tree may be limited.	3 – 5
	Level 3	Explains most aspects of what the decision tree represents and makes a good attempt to explain how the tree can be used to make the decision. The explanation makes reference to the scenario and data in the decision tree.	6 – 7
Task (b) Explain the limitations of using this decision tree to make our decision. Please also explain any non-financial factors that need to be considered.			
Trait			
Limitations	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains at least one limitation, but the explanation may lack clarity or depth.	1 – 2
	Level 2	Explains at least two limitations, but the explanation may lack some clarity or depth or may lack reference to the data in the decision tree.	3 – 4
	Level 3	Explains at least three limitations and makes reference to the data in the decision tree. The explanation is mostly clear and comprehensive.	5 – 6
Non-financial factors	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0

	Level 1	Explains at least one non-financial factor, but the explanation lacks clarity and application to the scenario.	1
	Level 2	Explains at least one non-financial factor, but the explanation may lack some clarity and / or application to the scenario.	2 - 3
	Level 3	Explains clearly at least two non-financial factors and makes good reference to the scenario.	4
Task (c) Suggest and **justify** three KPIs which would be appropriate to assess the performance of the agent for the Asian market.			
Trait			
KPIs	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Identifies at least one KPI which is appropriate for assessing the performance of the Asian agent. The justification / explanation may be missing or lack clarity.	1 – 3
	Level 2	Identifies at least two KPIs which are appropriate for assessing the performance of the Asian agent. The justification / explanation may lack some clarity or depth.	4 – 6
	Level 3	Identifies at least three KPIs which are appropriate for assessing the performance of the Asian agent which are for the most part well justified and explained.	7 - 8

SECTION 2			
Task (a) **Explain** the three fixed production overhead variances and possible reasons why each has occurred. Please also explain the usefulness of these fixed production variances for managing fixed production overhead cost.			
Trait			
The variances	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates technical understanding of at least one of the variances. The explanation may lack clarity and the reasons for the variances may be missing or not related to the scenario.	1 - 3
	Level 2	Demonstrates technical understanding of at least two of the variances, although the explanation may lack some clarity. Reasons for the variances will be given but may not always relate to the correct variance or be drawn from the information given in the scenario.	4 - 6
	Level 3	Demonstrates technical understanding of the three variances. The explanation is mostly clear and the reasons given relate to the specific variance and are drawn from the information presented in the scenario.	7 - 9
Usefulness	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates understanding that the expenditure variance is potentially useful, but explanation lacks clarity. Usefulness of volume related variances might not be addressed, or the explanation is inaccurate or vague. The issues with the fact that this is a factory wide absorption rate are unlikely to be considered.	1
	Level 2	Demonstrates reasonable understanding that the expenditure variance is potentially useful but that the volume related variances are not. The explanation may lack clarity or fail to address the factory wide overhead issues in any depth.	2 – 3
	Level 3	Demonstrates good understanding that the expenditure variance is potentially useful but that the volume related variances are not. The	4

		explanation is clear and addresses the factory wide overhead issues.	
Task (b) Explain how an ABC approach would affect the way that production overheads are allocated and absorbed compared to our current absorption costing system, with specific reference to the injection moulding part of our production process. Please also explain whether implementing an ABC system would be beneficial for cost control.			
Trait			
How ABC differs	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates some understanding of the differences between an ABC and an absorption costing approach with limited or no reference to the specific injection moulding production process.	1 - 2
	Level 2	Demonstrates a reasonable understanding of the differences between an ABC and an absorption costing approach with some reference to the specific injection moulding production process.	3 - 5
	Level 3	Demonstrates good understanding of the differences between an ABC and an absorption costing approach with good reference to the specific injection moulding production process.	6 - 7
Beneficial?	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates some understanding of the benefits of ABC for cost control but with little reference to ChargeIT. Note that this question is specifically focused on cost control and therefore there is no credit for explanation of other benefits of ABC.	1 - 2
	Level 2	Demonstrates reasonable understanding of the benefits of ABC for cost control purposes with a reasonable attempt to explain within the context of ChargeIT.	3 – 4
	Level 3	Demonstrates good understanding of the benefits of ABC for cost control purposes with a good attempt to explain within the context of ChargeIT.	5

SECTION 3			
Task (a) **Explain** how the expenditure on the new finished goods assembly line will be recorded in our statements of financial position and profit or loss for the year ended 31 December 2020.			
Trait			
New equipment	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates some understanding of the rules in IAS 16 regarding capitalisation of expenditure and the need for depreciation. Explanation of how to treat each item of expenditure and deprecation in this year's financial statements may be missing or inaccurate.	1 - 2
	Level 2	Demonstrates reasonable understanding of the rules in IAS 16 regarding capitalisation of expenditure and the need for depreciation. Explanation of how to treat the items of expenditure and deprecation in this year's financial statements may not always be accurate or clearly expressed.	3 - 4
	Level 3	Demonstrates good understanding of the rules in IAS 16 regarding capitalisation of expenditure and the need for depreciation. Explanation of how to treat each item of expenditure and deprecation in this year's financial statements is mostly accurate and clearly expressed.	5 - 6
Task (b) **Explain** how the 100% first-year tax depreciation allowance will impact the amount of tax we pay this year and in future years.			
Trait			
First year allowances	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains what a 100% first year allowance is but explanation lacks clarity. There is little attempt to explain how this will impact the amount of tax paid this year and in future years.	1 – 2
	Level 2	Explains what a 100% first year allowance is but explanation lacks some clarity. There is a reasonable attempt to explain how this will	3 – 4

		impact the amount of tax paid this year, although future years may be missing.	
	Level 3	Explains what a 100% first year allowance is, and the explanation is clear. There is a good attempt to explain how this will impact the amount of tax paid this year and in future years.	5
Task (c) Explain how the old assembly line should be reflected in the financial statements for the year ended 31 December 2020.			
Trait			
Asset held for sale	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates some understanding of the recognition criteria of IFRS 5 in respect of assets held for sale but there is little attempt to apply these to the scenario. The impact of the reclassification to asset held for sale in the financial statements is only partially explained and lacks clarity.	1 – 2
	Level 2	Demonstrates reasonable understanding of the recognition criteria of IFRS 5 in respect of assets held for sale and attempts to apply these to the scenario. The impact of the reclassification to asset held for sale in the financial statements is explained, but the explanation may not be complete or may lack some clarity.	3 - 4
	Level 3	Demonstrates full understanding of the recognition criteria of IFRS 5 in respect of assets held for sale and applies these to the scenario. The impact of the reclassification as an asset held for sale in the financial statements is comprehensively and clearly explained.	5 - 6
Task (d) Explain how a feedforward control approach differs from a feedback control approach and the benefits to our business of using a feedforward control approach.			
Trait			
Feedforward control	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates some understanding of how feedback and feedforward control approaches differ, but the explanation may lack	1 - 3

		clarity. Benefits explained are limited and not applied to the scenario.	
	Level 2	Demonstrates reasonable understanding of how feedback and feedforward control approaches differ, but the explanation may lack some clarity. There is an attempt to explain the benefits in an applied way.	4 - 6
	Level 3	Demonstrates good understanding of how feedback and feedforward control approaches differ, and the explanation is clear. There is a good attempt to explain the benefits in an applied way.	7 - 8

SECTION 4			
Task (a) Explain how ZBB could be used to allocate funds to discretionary support activities. Please use a budget for production machinery maintenance to illustrate your explanation.			
Trait			
ZBB	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates some understanding of how ZBB could be used to allocate funds to discretionary support activities. The explanation is likely to lack clarity and depth.	1 - 2
	Level 2	Demonstrates reasonable understanding of how ZBB could be used to allocate funds to discretionary support activities. The explanation may lack some clarity and / or depth.	3 - 5
	Level 3	Demonstrates good understanding of how ZBB could be used to allocate funds to discretionary support activities. The explanation is mostly clear and comprehensive.	6 - 7
Production machinery maintenance	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains the use of ZBB with only limited reference to the activity of production machinery maintenance.	1 - 2
	Level 2	Explains the use of ZBB with reasonable reference to the activity of production machinery maintenance.	3 - 4
	Level 3	Explains the use of ZBB with good reference to the activity of production machinery maintenance.	5
Task (b) Explain the purpose of the EOQ model and the nature of the ordering and holding costs associated with bought-in component inventory. Please also explain the suitability of using the EOQ model for the purposes of bought-in component inventory management.			
Trait			
EOQ	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0

	Level 1	Demonstrates some understanding of the purpose of the EOQ model and the nature of holding and ordering costs. The explanation may lack clarity, depth and /or application to the scenario.	1 - 2
	Level 2	Demonstrates reasonable understanding of the purpose of the EOQ model and the nature of holding and ordering costs. The explanation may lack some clarity, depth or application to the scenario.	3 - 4
	Level 3	Demonstrates good understanding of the purpose of the EOQ model and the nature of holding and ordering costs. The explanation is mostly clear and well applied to the scenario.	5 - 6
Suitability?	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains at least one aspect of suitability, although the explanation may lack clarity and application to the scenario.	1 - 2
	Level 2	Explains more than one aspect of suitability, although the explanation may lack some clarity and might not be well explained in the context of the scenario.	3 - 5
	Level 3	Explains a range of points about suitability and these are well explained in the context of the scenario.	6 - 7

Operational Level Case Study May–August 2020
Marking Guidance
Variant 6

About this marking scheme

This marking scheme has been prepared for the CIMA 2019 professional qualification Operational Case Study [May–August 2020].

The indicative answers will show the expected or most orthodox approach; however the nature of the case study examination tasks means that a range of responses will be valid. The descriptors within this level-based marking scheme are holistic and can accommodate a range of acceptable responses.

General marking guidance is given below, markers are subject to extensive training and standardisation activities and ongoing monitoring to ensure that judgements are being made correctly and consistently.

Care must be taken not to make too many assumptions about future marking schemes on the basis of this document. While the guiding principles remain constant, details may change depending on the content of a particular case study examination form.

General marking guidance

- Marking schemes should be applied positively, with candidates rewarded for what they have demonstrated and not penalised for omissions.
- All marks on the scheme are designed to be awarded and full marks should be awarded when all level descriptor criteria are met.
- The marking scheme and indicative answers are provided as a guide to markers. They are not intended to be exhaustive and other valid approaches must be rewarded. Equally, students do not have to make all of the points mentioned in the indicative answers to receive the highest level of the marking scheme.
- An answer which does not address the requirements of the task must be awarded no marks.

- Markers should mark according to the marking scheme and not their perception of where the passing standard may lie.
  Where markers are in doubt as to the application of the marking scheme to a particular candidate script, they must contact their lead marker.

How to use this levels-based marking scheme

1. Read the candidate's response in full

2. Select the level

- For each trait in the marking scheme, read each level descriptor and select one, using a best-fit approach.
- The response does not need to meet all of the criteria of the level descriptor – it should be placed at the level when it meets more of the criteria of this level than the criteria of the other levels.
- If the work fits more than one level, judge which one provides the best match.
- If the work is on the borderline between two levels, then it should be placed either at the top of the lower band or the bottom of the higher band, depending on where it fits best.

3. Select a mark within the level

- Once you have selected the level, you will need to choose the mark to apply.
- A small range of marks may be given at each level. You will need to use your professional judgement to decide which mark to allocate.
- If the answer is of high quality and convincingly meets the requirements of the level, then you should award the highest mark available. If not, then you should award a lower mark within the range available, making a judgement on the overall quality of the answer in relation to the level descriptor.

Summary of the core activities tested within each sub task

Sub Task	Core Activity		Sub task Weighting (% section time)
Section 1			
(a)	B	Prepare budget information and assess its use for planning and control purposes.	40%
(b)			28%
(c)	F	Prepare information to manage working capital.	32%
Section 2			
(a)	E	Prepare information to support short-term decision-making.	44%
(b)	A	Prepare costing information for different purposes to meet the needs of management.	56%
Section 3			
(a)	C	Analyse performance using financial and non-financial information.	36%
(b)			36%
(c)	D	Apply relevant financial reporting standards and corporate governance, ethical and tax principles.	28%
Section 4			
(a)	D	Apply relevant financial reporting standards and corporate governance, ethical and tax principles.	28%
(b)			16%
(c)	E	Prepare information to support short-term decision-making.	56%

SECTION 1			
Task (a) **Explain** what the time series information tells us about purchases of cordless vacuum cleaners by the end consumer and the type of retailer we should be targeting.			
Trait			
Time series	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains some of what the trend and seasonal variation data shows about purchases by the end consumer, with little attempt to link this to the scenario.	1 – 2
	Level 2	Explains mostly accurately what the trend and seasonal variation data show about purchases by the end customer and makes an attempt to link this to the scenario.	3 – 4
	Level 3	Explains accurately what the trend and seasonal variations show about purchases by the end consumer with a good attempt to link these to the scenario.	5 – 6
Target retailers	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains briefly or with a lack of clarity the type of retailer that should be targeted, but there is little if any reference to the scenario.	1
	Level 2	Explains the type of retailer that should be targeted with some reference to the scenario, but there is a lack of clarity in parts.	2 - 3
	Level 3	Explains clearly the type of retailer that should be targeted with good reference to the scenario and in particular the pre-seen information about consumer preferences to try before buying.	4
Task (b) **Explain** how we could use the time series information to prepare our sales forecast and how this sales forecast will affect our budgetary planning.			

Trait			
Budgeting	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains how the time series information can be used to create a forecast, but explanation lacks clarity. Little attempt to address how the sales forecast will affect budgetary planning.	1 – 2
	Level 2	Explains how the time series information can be used to create a forecast, but explanation might lack a little clarity. A reasonable attempt made to address how the sales forecast will affect budgetary planning.	3 – 5
	Level 3	Explains clearly how the time series information can be used to create a forecast. A good attempt made to address how the sales forecast will affect budgetary planning.	6 - 7
Task (c) Explain the impact on the management of receivables of taking on new retailers and how we could mitigate any additional risks that arise.			
Trait			
Receivables management	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates some understanding of the impact of taking on new retailers for receivables management. Explains at least one way to mitigate additional risk but does not link this to the risks. Explanation is likely to lack clarity.	1 – 3
	Level 2	Demonstrates reasonable understanding of the impact of taking on new retailers for receivables management. Explains more than one way to mitigate additional risk but may not link these to the risks. Explanation may lack clarity.	4 – 6
	Level 3	Demonstrates good understanding of the impact of taking on new retailers for receivables management. Explains more than one way to mitigate additional risk and does link these to the risks. Explanation is clear.	7 - 8

SECTION 2			
Task (a) Explain what the graph on my schedule shows us about each supplier's price structure, and, using an expected value approach based on demand, explain whether we should accept Supplier A or Supplier B. Please also explain the limitations of using expected value for making this decision.			
Trait			
The graph	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Identifies at least one aspect of the cost structures of each supplier with reference to the graph (fixed costs, variable costs per unit relative to the gradients of the lines and the bulk discount). Attempts to explain the correct decision based on EV of demand.	1 – 2
	Level 2	Identifies some of the different aspects of the cost structures of each supplier with reference to the graph (fixed costs, variable costs per unit relative to the gradients of the lines and the bulk discount). Explains the correct decision based on EV of demand.	3 – 4
	Level 3	Identifies all of the different aspects of the cost structures of each supplier with reference to the graph (fixed costs, variable costs per unit relative to the gradients of the lines and the bulk discount). Explains fully the correct decision based on EV of demand.	5
Limitations	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains at least one limitation associated with using EV for this decision. The explanation lacks clarity or depth and is not applied.	1 – 2
	Level 2	Explains more than one limitation associated with using EV for this decision. The explanation might lack clarity or depth and may not be applied to the scenario.	3 – 4
	Level 3	Explains at least two limitations associated with using EV for this decision. The explanation is clear and is applied to the scenario.	5 - 6
Task (b) Explain how a digital costing system would change the way we gather information for use in costing our products. Please also explain the benefits for our business of using a digital costing system.			
Trait			
	Level	**Descriptor**	**Marks**

Digital costing information		No rewardable material.	0
	Level 1	Demonstrates some understanding of a digital costing system and how it would change the way that information is gathered for costing products. The explanation is likely to lack clarity.	1 - 2
	Level 2	Demonstrates reasonable understanding of a digital costing system and how it would change the way that information is gathered for costing products. The explanation lacks some clarity.	3 - 5
	Level 3	Demonstrates good understanding of a digital costing system and how it would change the way that information is gathered for costing products. The explanation is clear.	6 - 7
Benefits	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains at least one benefit associated with using a digital costing system, but the explanation lacks clarity and application to the scenario.	1 - 2
	Level 2	Explains more than one benefit associated with using a digital costing system, with reasonable clarity of explanation and some application to the scenario.	3 - 5
	Level 3	Explains a range of benefits associated with using a digital costing system in a clear and comprehensive manner with reasonable application to the scenario.	6 - 7

SECTION 3			
Task (a) **Explain** what each of the variances on the attached schedule means and the reasons for their occurrence.			
Trait			
Variances	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains the variances with some technical accuracy but with limited explanation of how these variances have arisen.	1 - 3
	Level 2	Explains the variances with reasonable technical accuracy. There are reasonable explanations of the reasons why these variances have occurred. Reasons given might not relate to the correct variance or might not be drawn from the information presented in the task.	4 - 6
	Level 3	Explains the variances with technical accuracy. There are good explanations of the reasons why these variances have occurred. Reasons given clearly relate to the specific variance and are drawn from the information presented in the task.	7 - 9
Task (b) **Explain** what the KPIs on the attached schedule indicate about the activity level of the Customer Services Department during December and how the department performed.			
Trait			
KPIs	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates some understanding of the KPI measures and what these mean in terms of the activity level and performance of the department. The explanation is likely to lack clarity and focus on perhaps only one aspect of the analysis such as the increase in activity level.	1 - 3
	Level 2	Demonstrates reasonable understanding of the KPI measures and what these mean in terms of the activity level and performance of the department. The explanation might lack some clarity or depth.	4 - 6

	Level 3	Demonstrates good understanding of the KPI measures and what these mean in terms of the activity level and performance of the department. The explanation is full and clear.	7 – 9
Task (c) Explain how the finished good inventory identified by Gavin Mansell will be valued in our financial statements for the year ended 31 December 2020.			
Trait			
Inventory	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates some understanding of the IAS 2 general rule of lower than cost or NRV and what NRV includes but fails to apply this to the two different lines of inventory.	1 – 2
	Level 2	Demonstrates understanding of the IAS 2 general rule of lower than cost or NRV and what NRV includes. Makes a reasonable attempt to apply this to the two different lines of inventory.	3 - 5
	Level 3	Demonstrates good understanding of the IAS 2 general rule of lower than cost or NRV and what NRV includes. Makes a good attempt to apply this to the two different lines of inventory.	6 - 7

SECTION 4			
Task (a) **Explain** how to account for the damage to the warehouse in our accounting records and whether this will be reflected in the financial statements for the year ended 31 December 2020 or 2021.			
Trait			
Damaged warehouse	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates some understanding of how to account for the damage to the warehouse with reference to the information given. There is little or no reference to the rules in IAS 36. Might not address the IAS 10 point.	1 – 2
	Level 2	Demonstrates reasonable understanding of how to account for the damage to the warehouse with reference to the information given. There may not be any reference to the rules in IAS 36. Is likely to address the IAS 10 point but may not do so accurately or explain clearly.	3 – 5
	Level 3	Demonstrates good understanding of how to account for the damage to the warehouse with reference to the information given. There is reasonable reference to the rules in IAS 36. The IAS10 point is accurately dealt with and well explained.	6 – 7
Task (b) **Explain** how the expenditure related to the new warehouse should be initially recorded.			
Trait			
New warehouse	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates some understanding of the rules within IAS 16 about initial recognition but makes little reference to the information in the scenario to apply them. The explanation is likely to lack depth or clarity.	1
	Level 2	Demonstrates understanding of the rules within IAS 16 and attempts to apply these to the information in the scenario. The explanation may lack some depth or clarity.	2 – 3

	Level 3	Demonstrates understanding of the rules within IAS 16 and makes a good attempt to apply these to the information in the scenario. The explanation is comprehensive and clear.	4
Task (c) Explain where the feasible region is on the linear programming graph and what the optimal production plan for the next two weeks is. Please also explain how we could use the graph to determine the maximum quantity we should order and the maximum price we should pay for additional grey plastic pellets from the alternative supplier.			
Trait			
The LP graph	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Explains with some accuracy where the feasible region of the graph is, but explanation lacks clarity. The optimal solution might not have been stated, but if it has, it is likely to have been incorrectly identified based on the explanation of the feasible region.	1 – 2
	Level 2	Explains with reasonable accuracy where the feasible region on the graph is and identifies the optimal solution based on this explanation (that is, not necessarily the correct solution, but consistent with their explanation of the feasible region).	3 – 5
	Level 3	Explains accurately where the feasible region on the graph is and identifies the correct optimal solution.	6 - 7
Grey pellets	**Level**	**Descriptor**	**Marks**
		No rewardable material.	0
	Level 1	Demonstrates some understanding of binding constraints and shadow price but fails to apply this to the scenario.	1 - 2
	Level 2	Demonstrates reasonable understanding of binding constraints and shadow price. Is unlikely to identify the new optimal point but will make an attempt to use the graph to determine how much to buy and how much to pay.	3 - 5
	Level 3	Demonstrates good understanding of binding constraints and shadow price. Will correctly identify the new optimal point and explain this in the context of how much to buy and at what price.	6 - 7