



**CERTIFIED PUBLIC ACCOUNTANTS (CPA)**

**ADVANCED LEVEL**

**ADVANCED MANAGEMENT ACCOUNTING**

**WEDNESDAY: 3 December 2025. Afternoon Paper.**

**Time Allowed: 3 hours.**

**This paper consists of five (5) questions. Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings. Do NOT write anything on this paper.**

**QUESTION ONE**

(a) Explain THREE limitations of just-in-time (JIT) inventory system. (6 marks)

(b) Kisasa Electronics Ltd. manufactures cameras and video equipment for high-end users. The company uses life cycle costing and target costing principles to produce the world's smallest and lightest camcorder with superior recording capabilities.

The following summary of the information has been presented by the management accountant:

1. Projected life cycle sales volume 3,000 units
2. Target selling price per unit Sh.8,000
3. Target profit margin 30%
4. Projected total cost based on linear regression analysis on product life cycle in present value terms are as follows:

<b>Cost object</b>	<b>Cost behaviour</b>
Research and development costs:	$Y = 3,000,000 + 300X$
Design phase costs:	$Y = 2,500,000 + 250X$
Production expenses per unit:	$Y = 1,610X$
Marketing and advertisement expenses:	$Y = 980,000 + 20X$
Distribution and delivery overheads	$Y = 1,000,000 + 100X$
Customer care service costs:	$Y = 1,205,000 + 375X$

**Where:** Y - Total actual cost

X - Projected life cycle sales volume in units

**Required:**

Using target costing approach, compute unit cost gap for the product.

(6 marks)

(c) Junction Cafeteria buys and sells hot take-away food. The cafeteria wants to decide on how many burgers to purchase for sale at a forthcoming outdoor concert. The number of burgers sold will depend on the weather conditions and any unsold burgers will be thrown away at the end of the day.

There is a 30% chance that the weather will be good, a 20% chance that the weather will be normal and a 50% chance that the weather will be bad.

The table below details the profit that would be earned for each possible outcome:

<b>Weather</b>	<b>Number of burgers purchased</b>			
	<b>1,000</b>	<b>2,000</b>	<b>3,000</b>	<b>4,000</b>
	<b>Sh.</b>	<b>Sh.</b>	<b>Sh.</b>	<b>Sh.</b>
Bad	1,000	0	(1,000)	(3,000)
Normal	3,000	6,000	7,000	6,000
Good	3,000	6,000	9,000	12,000

**Required:**

The number of burgers to purchase to satisfy:

(i)	Maximin criterion.	(2 marks)
(ii)	Maximax criterion.	(2 marks)
(iii)	Minimax criterion.	(4 marks)

**(Total: 20 marks)**

**QUESTION TWO**

(a) The Management Accountant should carry out risk assessment and disaster preparedness when accounting for environmental costs. This is as a result of the dynamic environmental changes and government compliance requirements.

**Required:**

Analyse **THREE** interventions to implement and to take to minimise the impact of dynamic environmental risks and internal failure costs. (6 marks)

(b) One of the functions of the Management Accountant is to generate confidential reports for strategic internal decision making. However, most of these reports are flawed with integrity issues such as conflict of interest, creative accounting and lack of credibility.

**Required:**

With reference to Strategic Management Accounting Information, explain the meaning of the following Ethical Standards for Management Accountants:

(i)	Confidentiality.	(1 mark)
(ii)	Integrity.	(1 mark)

(c) Jikoni Ltd. is a manufacturer of edible vegetable oil branded "Soya oil". The company uses three basic ingredients to make Soya oil. The standard data for a litre of "Soya oil" is as follows:

**Standard cost per unit of "Soya oil"**

Ingredients	Standard mix ratio	Standard price per litre (Sh.)
Alpha	50%	70
Beta	30%	50
Zeta	20%	20

A standard loss of 10% is expected in production. During the month of March 2025, the actual output was 92,700 litres of "Soya oil".

The actual quantities mixed and actual cost data were as follows:

Ingredients	Actual quantity used (litres)	Total cost (Sh.)
Alpha	53,000	3,710,000
Beta	28,000	1,484,000
Zeta	19,000	418,000

**Required:**

Calculate the following cost variances:

(i)	Material price variance.	(3 marks)
(ii)	Material usage variance.	(3 marks)
(iii)	Material mix variance.	(3 marks)
(iv)	Material yield variance.	(3 marks)

**(Total: 20 marks)**

### QUESTION THREE

(a) The balanced Scorecard Model is an integrated model that combines both financial and non-financial performance measures of performance as opposed to conventional measures that focus only on quantitative financial performance measures.

With reference to the above statement, discuss **TWO** challenges you might encounter while analysing Public Sector performance using non-financial measures of performance. (4 marks)

(b) Tulia Ltd. is the leading manufacturer and distributor of executive mattresses in the country. The mattresses differ in size, quality and class of customers. The company is in the process of preparing its activity-based budget (ABB) for its main three types of mattresses. These are family, luxury and standard.

The following budgeted information is available for the budget period:

Type of mattress	Family	Luxury	Standard
Current sales-mix	25%	40%	35%
Units produced and sold	1,250 units	2,000 units	1,750 units
	“Sh. per unit”	“Sh. per unit”	“Sh. per unit”
Selling price per mattress	10,000	12,050	8,750
Direct material (Sh.250 per kg)	2,500	4,000	1,750
Direct labour (Sh.500 per labour hour)	1,500	1,750	1,250

The total number of activities for each of the three types of mattresses for the period is as follows:

Type of mattress	Family	Luxury	Standard	Total
Number of purchase requisitions	1,200	1,800	2,000	5,000
Number of setups	240	260	300	800

Fixed overhead costs have been analysed as follows:

Cost pool	Cost driver	“Sh.”
Inspection for quality costs	Number of purchase requisitions	8,000,000
Production scheduling costs	Number of setups	6,217,000
General fixed overheads	Number of units produced and sold	<u>7,500,000</u>
Total fixed costs		<u>21,717,000</u>

#### Additional information:

1. The total budgeted fixed overhead costs for the budget period are Sh.21,717,000.
2. The direct labour force is threatening to go on strike for two weeks out of the coming four weeks. This means that direct labour hours will be limited to 7,975 hours for production rather than the budgeted 15,950 hours.
3. The total overhead costs for the month of January 2026 have only been analysed into three cost drivers. The activity-based budgeting (ABB) will not be affected by the limitation in labour force strike.

#### Required:

- (i) Weighted break-even point in units based on the current sales-mix. (4 marks)
- (ii) If the strike goes ahead, determine which product(s) should be produced if profits are to be maximised. (6 marks)
- (iii) Calculate the budgeted profit per unit for each of the three products using Activity-Based Budgeting (ABB). (6 marks)

**(Total: 20 marks)**

### QUESTION FOUR

(a) Explain **FOUR** perspectives of a balanced scorecard matrix and state one performance measure of each perspective. (8 marks)

(b) Changamka Ltd., a manufacturing company, has been organised into responsibility centres. The following data relate to one of the cost centres of the company for the year ended 30 September 2025.

**Changamka Ltd. statement of profit or loss for the year ended 30 September 2025:**

	Sh.“000”	Sh.“000”
Sales		30,000
<b>Less production cost:</b>		
Direct material	6,500	
Direct labour	5,400	
Variable production overhead	<u>7,000</u>	
Prime cost		<u>(18,900)</u>
		11,100
<b>Less variable overheads:</b>		
Variable selling costs		<u>(2,600)</u>
Contribution		8,500
<b>Less fixed costs:</b>		
Fixed selling costs	1,997	
Administration expenses	<u>2,100</u>	<u>(4,097)</u>
Net profit		<u><u>4,403</u></u>

The following changes are expected to occur during the year ending 30 September 2026:

1. Selling price will be adjusted downward by 3% in order to attract more customers.
2. Adverse material price variance of 2% is expected due to change in the quality of material.
3. There will be a reduction in labour cost of 4% due to learning curve experience.
4. Variable production overheads will escalate by 3% due to overtime premiums paid.
5. Increase in the efficiency of sales persons will ease direct selling costs by 5%.
6. All other factors are expected to remain constant.
7. Marginal costing technique will apply to establish the contribution and net profit.
8. Target net profit is Sh.4.5 million.

**Required:**

For the year ending 30 September 2026, determine the following for the responsibility centre:

- (i) Expected break-even point in sales value. (6 marks)
- (ii) The level of sales to achieve the target profit of Sh.4.5 million. (4 marks)
- (iii) Margin of safety in sales value. (2 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

(a) Beta Ltd. makes and sells executive chairs. They are considering a new design of executive chairs to launch into the competitive market in which they operate.

The estimated cost structure is as follows:

	Sh.
Mainframe bars per chair	50,125
Leather material per metre	10,000
Labour cost per hour	15,000

**Additional information:**

1. Beta Ltd. wants a margin on selling price of 20%.
2. The first chair will take 2 hours to complete.
3. Leather material costs Sh.10,000 per metre and two metres are needed for a complete chair although 20% of all leather is wasted in the process.
4. The whole process will be subjected to a 90% learning curve effect.
5. The learning improvement will stop once 15 chairs have been made and the time for the 15<sup>th</sup> chair will be the time for all subsequent chairs.

**Required:**

- (i) The average cost for the first 15 chairs. (8 marks)
- (ii) The selling price per completed chair. (2 marks)

(b) JKZ retailers deal in a perishable commodity branded "XT". The daily demand and supply are uncertain. The data for the past 500 days shows the following demand and supply:

Supply		Demand	
Availability (kg)	Number of days	Demand (kg)	Number of days
10	40	10	50
20	50	20	110
30	190	30	200
40	150	40	100
50	70	50	40

**Additional information:**

1. The retailer buys XT at Sh. 200 per kg and sells it at Sh. 300 per kg.
2. Any amount of XT that remains at the end of the day has no saleable value.
3. An opportunity cost of unsatisfied demand is Sh. 80 per kg.
4. Random numbers for supply and demand are given as:

(31,18); (63,84); (15,79); (07,32); (43,75); (81,27)

**Required:**

Using the above random numbers, simulate 6 days sales, demand and estimate the expected profit. (10 marks)  
**(Total: 20 marks)**

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## CPA ADVANCED LEVEL

### ADVANCED MANAGEMENT ACCOUNTING

**WEDNESDAY: 20 August 2025. Afternoon Paper.**

**Time Allowed: 3 hours.**

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings. Do NOT write anything on this paper.**

#### QUESTION ONE

(a) Evaluate **FOUR** roles of management accounting in identifying and allocating environmental costs. (8 marks)

(b) Uwese Ltd. is a company that specialises in the production of umbrellas. For the year ending 31 December 2026, the company is planning to produce special promotional umbrellas branded "Jumbo". Uwese Ltd. wishes to determine the optimal number of umbrellas that should be produced.

#### Additional information:

1. If all the umbrellas are sold within the year 2026, they would be sold at Sh.900 each.
2. If the company is unable to sell all the umbrellas within the year 2026, then they would be sold in the following year at Sh.300 per umbrella.
3. The production cost per umbrella amounts to Sh.400.
4. The demand for the umbrellas depends on the performance of the economy which is highly unpredictable.
5. The following are the possible states of the economy:

Economy	Probability	Demand (Number of umbrellas)
Good	0.30	500,000
Average	0.46	350,000
Poor	0.24	300,000

6. Uwese Ltd. has to decide to produce the umbrellas at one of the states of the economy in order to match forecast demand.
7. The opportunity cost of not selling an umbrella that is demanded is Sh.100.

#### Required:

(i) Construct a payoff table showing all the possible outcomes. (8 marks)

(ii) Advise the management of Uwese Ltd. on the optimal level of production based on the expected value, maximax and maximin criteria. (4 marks)

**(Total: 20 marks)**

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#### QUESTION TWO

(a) Jaribio Ltd. operates a conventional stock control system based on re-order levels and economic order quantities (EOQ). The various control levels were set originally based on estimates which did not allow for any uncertainty and this has caused difficulties because in practice, lead times, demands and other factors vary.

As part of a review of the system typical stock item, part No. H24, has been studied in detail as follows:

Data for Part No. H 24	
Lead times (Days)	Probability
15	0.2
20	0.5
25	0.3

Daily demand (units)	Probability
5,000	0.4
7,000	0.6

**Additional information:**

1. It costs Sh.1,000 to place an order.
2. The holding cost is estimated at Sh.0.025 for storage plus 10% opportunity cost of capital.
3. Each unit is purchased at Sh.2.
4. The re-order level for this part is currently 150,000 units.
5. The company works for 360 days per year.
6. Assume that the demands would apply for the whole of the appropriate lead-time.

**Required:**

- (i) Calculate the level of buffer stock implicit in a re-order level of 150,000 units. (4 marks)
- (ii) Calculate the probability of stock-outs. (2 marks)
- (iii) Calculate the expected annual stock-outs in units. (3 marks)
- (iv) Compute the stock-out costs per unit at which it would be worthwhile raising the re-order level to 175,000 units. (3 marks)

(b) Mambo Bakery bakes croissants. The management accountant of the bakery is in the process of estimating the cost function for the next month. The following data was gathered on the total cost of monthly production for the last 12 months:

Month	Number of croissants (units “000”)	Production cost Sh.“000”
1	60	1,350
2	180	2,100
3	60	900
4	30	900
5	180	2,700
6	150	2,250
7	30	1,050
8	150	1,950
9	90	1,350
10	120	1,950
11	120	1,800
12	90	1,500

The cumulative monthly total and monthly average figures for the last 12 months were as follows:

	Number of croissants	Production cost (Sh.)
Monthly total	1,260,000	19,800,000
Monthly average	105,000	1,650,000

**Required:**

- (i) Devise an ordinary least squares regression equation in the form  $Y = a + bx$ . (6 marks)
- (ii) If each croissant is sold at Sh.20, determine the break-even number of croissants. (2 marks)

**(Total: 20 marks)**

**QUESTION THREE**

(a) Explain **FOUR** stages involved in each of the following management accounting concepts:

- (i) Throughput accounting. (4 marks)
- (ii) Target costing. (4 marks)

(b) Meromax Ltd. is evaluating the viability of a new product it intends to launch on the market based on three uncertain factors which are determined probabilistically. The three uncertain factors are market demand in units, contribution per unit and the fixed costs. These three factors are statistically independent of each other.

In analysing the auto-correlated factors, Meromax Ltd. estimated the following probability distributions:

Market demand		Contribution per unit		Fixed cost	
Probability	Units	Probability	Sh.	Probability	Sh.
0.15	2,600	0.10	600	0.30	1,600,000
0.20	2,700	0.30	650	0.40	1,800,000
0.30	2,800	0.60	700	0.30	1,700,000
0.20	2,900				
0.15	3,000				

The random numbers for annual market demand, contribution per unit and the fixed cost are provided as follows:

<b>Market demand</b>	28	14	27	30	90	38	58	67
<b>Contribution per unit</b>	60	20	31	07	57	83	18	01
<b>Fixed costs</b>	57	30	69	19	02	29	71	00

**Required:**

(i) Calculate the expected net profit using the expected monetary value (EMV) approach. (4 marks)

(ii) Using Monte Carlo simulation analysis, compute the average expected net profit (ENP) using the above random numbers for 8 trials. (8 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

(a) Management Accounting performance measures have evolved from purely financial performance evaluations to incorporating broader non-financial performance measures with frameworks like the balanced scorecard model (BSCM) gaining prominence.

However, the BSCM has faced criticism for failing to address key dimensions of modern performance measurement.

**Required:**

(i) Explain the rationale behind the balanced scorecard model in contemporary management accounting. (2 marks)

(i) Discuss **THREE** criticisms labelled against balanced scorecard model (BSCM). (6 marks)

(b) Zitamol is a pharmaceutical company that produces a cough syrup by blending three different material compounds namely: D, N and M.

The standard material compounds usage and costs per unit of a cough syrup are as follows:

Compound material		Sh.
D	0.51 kg at Sh.800 per kg	408
N	0.28 kg at Sh.600 per kg	168
M	0.21 kg at Sh.1,400 per kg	294
	<u>1.00</u>	<u>870</u>

**Additional information:**

- Actual units produced were 5,200 units of a cough syrup using 2,500kg of D, 1,500kg of N and 1,000kg of M.
- Zitamol uses activity-based costing (ABC) to allocate its overheads. One of its main overheads for ABC is machine-setup costs. The following information is available for the period ended 31 July 2025:

Activity	Budget	Actual
Number of units produced	250,000	300,000
Number of set-ups	1,700	1,830
Fixed set-up costs	Sh.476,000	Sh.550,000

**Required:**

Calculate the following variances for material compounds and set-up costs used to make the cough syrup:

- (i) Material mix variance. (4 marks)
- (ii) Material yield variance. (4 marks)
- (iii) Fixed set-up cost expenditure variance using activity-based costing (ABC). (4 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

(a) Describe the following types of business data analytics as used in strategic management accounting:

- (i) Pricing analytics. (2 marks)
- (ii) Forecasting analytics. (2 marks)

(b) Davetec Ltd., is a micro and small medium-sized enterprise that makes three types of computers which require the same production facilities. Information about the production cost for one unit of its computers is as follows:

Product	Cost per unit		
	Tablet Sh.	Laptop Sh.	Desktop Sh.
Direct material	3,600	7,500	4,200
Labour: Skilled	1,800	2,700	900
Unskilled	600	1,200	3,000
Variable overhead costs	900	2,100	2,100

**Additional information:**

1. All grades of labour and direct material costs are variable costs.
2. Product "Tablet" is sold in regulated market and the regulators have set a price of Sh.9,000 per unit.
3. Product "Laptop" has a contribution to sales ratio of 25%.
4. The total fixed costs of Davetec Ltd. are Sh.86.4 million and the management has set a target net profit of Sh.3 million next year.
5. The budgeted sales demand for next year are as follows:

Product	Tablet	Laptop	Desktop
Budgeted demand units	11,000	6,000	13,100

**Required:**

Compute the transfer prices to be charged for products "Laptop" and "Desktop" for the company to achieve its target net profit. (6 marks)

(c) Alumax Ltd. produces a single product branded "Salfa". The machine used to make Salfa is obsolete and Alumax Ltd. is contemplating replacing it.

**Additional information:**

1. The replacement cost of a new machine is Sh.1 million with expected useful life of five years.
2. The machine will have no salvage value after decommissioning it.
3. It is expected that the 20,000 units of Salfa will be produced and sold at a transfer price of Sh.300 per unit over a five-year period as follows:

Year	1	2	3	4	5
Units sold "000"	6	5	4	3	2

4. Variable costs are expected to be Sh.165 per unit produced and sold.
5. The incremental fixed costs, mainly the wages of a maintenance engineer, are expected to be Sh.200,000 per year.
6. Alumax Ltd. uses an imputed interest cost of capital of 13% for the investment appraisal purposes.
7. Depreciation on this machine is calculated on initial cost of the investment at the start of the year.

**Required:**

(i) The residual income (RI) for each of the five years. (5 marks)

(ii) The return on investment (ROI) for each of the five years. (5 marks)

**(Total: 20 marks)**



## CPA ADVANCED LEVEL

### ADVANCED MANAGEMENT ACCOUNTING

THURSDAY: 24 April 2025. Afternoon Paper.

Time Allowed: 3 hours.

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings. Do NOT write anything on this paper.**

#### QUESTION ONE

(a) With reference to responsibility accounting, examine **FOUR** types of responsibility centres. (8 marks)

(b) Zeko Television Ltd. is considering launching a new television set branded “mega” to complement its existing product line. Currently it makes “viva” television set which it intends to retain. The company has the following options:

**Option 1:** Continue making product “viva”. In this case, the number of customers would be expected to remain at Sh.6,000 per annum. Operational costs would stay at current level of Sh.16,000 per television set per annum. The selling price per television set is Sh.38,000. This profit margin is expected to continue.

**Option 2:** Zeko Television Ltd. can acquire perfect information from consultants at a cost of Sh.50 million before launching “mega”. The expected profits are as follows under the three states of nature:

States of nature	Probability	Profit/(loss) (Sh.“000”)
Optimistic	0.6	200,000
Most likely	0.3	150,000
Pessimistic	0.1	100,000

**Option 3:** Zeko Television Ltd. can launch “mega” television without market survey. If this occurs, there is a 75% chance that there is competition from rival firms. The company aims to achieve a target profit of Sh.180 million per annum from this option. The management accountant estimates annual profits in this situation would be as follows:

State of nature	Probability	With competitors	Without competitors	
		Profit/(loss) (Sh.“000”)	Profit/(loss) (Sh.“000”)	
Optimistic	0.3	220,000	0.5	200,000
Most likely	0.4	200,000	0.3	150,000
Pessimistic	0.3	(80,000)	0.2	100,000

#### Required:

Using decision tree approach and ignoring time value of money, determine the:

(i) Expected value (EV) and recommend the optimal option to choose. (8 marks)

(ii) Probability of failing to break-even for option 3 only. (2 marks)

(iii) Probability that the company will at least achieve the target profit for option 3 only. (2 marks)

**(Total: 20 marks)**

**QUESTION TWO**

(a) Discuss **FOUR** salient features of just-in-time (JIT) inventory system. (8 marks)

(b) Maziwa Sacco Ltd. is a company that buys and processes milk and milk products. Maziwa Sacco Ltd. also sells these milk and milk products internationally. The company has two divisions: Local Branch Division is located in Country Kei where it buys milk from local farmers and processes it. The processed milk is exported to Overseas Branch Division and external customers. Overseas Branch Division is located in country Tee. Overseas Branch Division is where the milk is further processed into powdered milk and rebranded. The powdered milk is then sold to external customers.

The functional currency of country Kei is Shillings (Ksh.) while that of country Tee is Shillings (Tsh.). The two countries use different taxation rates but double taxation relief applies to both countries to eliminate double taxation effect.

**The budgeted information for the month of April 2025 is as follows:**

	Division	Local Branch "Ksh."	Overseas Branch "Tsh."
Market selling price of powder milk per litre			4,000
External selling price of processed milk per litre	70		2,100
Cost of rebranding processed milk per litre			40
Variable cost per litre	1,500,000		24,000,000
External demand for processed milk		320,000 litres	
Demand from Overseas Branch Division		250,000 litres	
Production capacity		400,000 litres	
Sales of rebranded powdered milk			200,000 litres

**Additional information:**

1. The currency of country Tee will be translated into the functional currency of country Kei for external reporting purposes.
2. The prevailing exchange rate applicable between the two countries is Ksh.1 = Tsh.20.
3. The production of one litre of powdered milk requires an input of one-and-a-quarter ( $1\frac{1}{4}$ ) litres of processed milk.
4. Transfer pricing policy of Maziwa Sacco Ltd. is that Local Branch Division must satisfy demand from Overseas Branch Division for processed milk before selling any to external customers.
5. Local Branch Division transfer price for the processed milk is at marginal cost plus 10% mark-up per litre.
6. The corporation rate of taxation on company net profits is 30% in country Kei and 28% in country Tee.

**Required:**

In columnar format, prepare a profit statement that shows the budgeted post tax net profit in Ksh. if marginal cost-plus mark-up transfer pricing policy is adopted.

Your profit statement should show sales and costs split into external sales and internal transfer where appropriate. (12 marks)

**(Total: 20 marks)**

**QUESTION THREE**

(a) Distinguish between "sunk costs" and "opportunity costs" as used in decision making. (4 marks)

(b) Trendy Enterprise is a manufacturer of hand made beaded bangles. The firm is currently operating at 80% of its capacity of 7,500 direct labour hours per month.

The firm's production cost per bangle is as follows:

	Sh.
Materials	25
Direct labour (30 minutes)	30
Manufacturing overheads	20
Total cost	<u>75</u>

**Additional information:**

1. Variable manufacturing overhead cost is Sh.15 per direct labour hour and the firm allocates fixed manufacturing overhead to units produced based on their direct labour time.
2. The selling price of each bangle is Sh.105.
3. The firm has enough demand to run at the current operating level for the next six months.
4. The company's current policy does not allow for overtime and therefore any special orders whose labour time extends the current capacity will either be rejected or would affect normal production.

**Required:**

(i) Trendy Enterprise has received a special order of 10,000 bangles to be delivered within two months at Sh.75 per unit.

Advise the management of Trendy Enterprise on whether the order should be accepted. (12 marks)

(ii) Based on your answer in (b) (i) above at what price per unit should Trendy Enterprise be indifferent as to whether to accept or reject the order? (4 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

(a) Explain **TWO** benefits of product life cycle costing. (4 marks)

(b) Global Logistics Ltd. has two operating segments; Longonot Division and Nzoia Division. Longonot Division orders most of its consignment of intermediate product from Nzoia Division using economic order quantity (EOQ) model. The managers of each division are given considerable autonomy in transfer pricing policies. Longonot Division managers want to use multiple linear regression analysis to evaluate the significance of independent variables on material handling cost of its consignment.

The finance director of Global Logistics Ltd. has availed the following data for Longonot Division for the past 10 months.

Month	Material handling cost (Y) “Sh.000”	Number of orders (X <sub>1</sub> )	Number of kilograms ordered (X <sub>2</sub> )
June 2024	2,000	100	6,000
July 2024	3,090	125	15,000
August 2024	2,780	175	7,800
September 2024	1,990	200	600
October 2024	7,500	500	29,000
November 2024	5,300	300	23,000
December 2024	4,300	250	17,000
January 2025	6,300	400	25,000
February 2025	5,600	475	12,000
March 2025	6,240	425	22,400

**The computer output is as follows:**

1. Summary output of regression statistics:

Multiple R	0.999420
R Square	0.998841
Adjusted R Square	0.998509
Standard Error	75.76272
Observations	10

2. The analysis of variance (ANOVA) table:

	df	SS	MS	F-statistics
Regression	2	34613020	17306510	3015.076722
Residual	7	W	5739.99	
Total	9	34653200		

3. The parameter estimate table is as follows:

Variable	Coefficients	Standard error	t-ratio value
Intercept	507.3097	57.3225	8.850098
X variable 1	7.835162	Z	33.47672
X variable 2	0.107181	0.003742	28.6464286

**Required:**

(i) Write down the multiple linear regression function;  $Y = a + b_1x_1 + b_2x_2$  (2 marks)

(ii) Suppose in the month of April 2025, Longonot Division expected to have 350 orders with 17,000 kilograms of material ordered, predict the total material handling cost for April 2025. (2 marks)

(iii) Compute the values of missing letters W and Z. (2 marks)

(iv) Explain the significance of regression statistic output of R Square of 0.998841. (2 marks)

(v) Based on t-ratio value, explain whether the number of orders or number of kilograms ordered is more significant in predicting the total material handling cost. (2 marks)

(c) Matrix Motors Ltd. is a leading producer of high-quality executive motor cars. The company is developing a new model branded “zillion” that is expected to be very advanced.

**Additional information:**

1. Matrix motors Ltd. expects the manufacture of the first car to take 72 assembly hours.
2. It is anticipated there will be a 90% learning curve that will continue until all 110 cars have been produced.
3. Direct labour is paid at a rate of Sh.30,000 per hour.
4. Direct material costs are expected to be Sh.3,750,000 per car. This will apply to all 110 cars produced.
5. There are no product-specific fixed costs associated with this new car.
6. Matrix Motors Ltd. is going to use a target costing approach for the new car model. Based on the market research it has undertaken, Matrix Motors Ltd. plans to sell each car for Sh.6,400,000.
7. Matrix Motors Ltd. requires a target profit margin of 25% of the selling price over the life of this new car model.
8. The learning curve index for a 90% learning curve is -0.152.

**Required:**

Calculate the value of any cost gap between the target cost of 110 cars and the expected cost of 110 cars. (6 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

(a) Usafi Council has been awarded a street cleaning contract against other competing private firms. The contract price is Sh.6,200 per kilometre of road and the budget and actual results are as follows:

For the year ended 31 March 2025		
Budget	Sh.“000”	Sh.“000”
12,500 kilometres of cleaning each at Sh.6,200		77,500
Direct labour (3,200 hours each at Sh.7,000)	22,400	
Direct materials (1,250Kgs each at Sh.5,000)	6,250	
Variable overheads (3,200 hours each at Sh.4,500)	14,400	
Fixed overheads (3,200 hours each at Sh.8,000)	<u>25,600</u>	(68,650)
Budget surplus		<u>8,850</u>
Actual	Sh.“000”	Sh.“000”
11,750 kilometres cleaned each at Sh.6,200		72,850
Direct labour (3,050 hours each at Sh.7,100)	21,655	
Direct materials, (1,160Kgs each at Sh.5,000)	5,800	
Variables overheads	13,945	
Fixed overheads	<u>25,100</u>	(66,500)
Actual surplus		<u>6,350</u>

**Required:**

Reconcile the budget and actual surpluses. (12 marks)

(b) The Board of Directors of Roadways Coaches Ltd. is considering two mutually exclusive models of buses to purchase for its booming business; Diesel-driven bus and Electric-driven bus. Both bus models necessitate buying new buses and both buses are expected to have a useful life of 5 years.

**Diesel-driven bus model:**

This model has already been appraised. Details of the model are:

- Initial investment needed is Sh.4.5 million.
- Average return on investment (ROI) is 12.5%.

**Electric-driven bus model:**

Expected revenue and operating costs of Electric-driven bus model are:

Year	2025 Sh.“000”	2026 Sh.“000”	2027 Sh.“000”	2028 Sh.“000”	2029 Sh.“000”
Revenue per year	3,900	4,900	5,400	5,350	5,950
Operating expenses	3,200	3,700	3,900	4,100	4,250
Depreciation expenses	1,100	1,100	1,100	1,100	1,100

**Additional information:**

1. The initial cost of purchase of the Electric driven bus is Sh.5,500,000.
2. Depreciation is calculated on straight-line basis over useful life of the asset of 5 years. Both buses have no salvage values.
3. When computing the financial measures, the company uses operating profits only and not cashflows.
4. In calculating divisional return on investment, divisional written down values (WDVs) are valued at net book values at the beginning of each year.
5. Operating expenses and depreciation expenses are written off in determination of annual profits.
6. The expected values are in present values. Ignore inflation and tax.

**Required:**

(i) Evaluate the average return on investment (ROI) on the Electric-driven bus model. (6 marks)

(ii) Advise the Board of Directors of Roadways Coaches Ltd. on the model of the bus to purchase based on the ROI. (2 marks)

**(Total: 20 marks)**

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## CPA ADVANCED LEVEL

### ADVANCED MANAGEMENT ACCOUNTING

WEDNESDAY: 4 December 2024. Afternoon Paper.

Time Allowed: 3 hours.

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings. Do NOT write anything on this paper.**

#### QUESTION ONE

(a) Discuss **FOUR** benefits of using rolling budgets in an organisation. (8 marks)

(b) The management of Mario Processing Company Ltd. wishes to obtain a better cost estimate to evaluate the company's operations more effectively.

The following information is provided to you for analysis:

Year 2023 Month	Equivalent production Units “000”	Overheads Sh.“000”
January	1,425	12,185
February	950	9,875
March	1,130	10,450
April	1,690	15,280
May	1,006	9,915
June	834	9,150
July	982	10,133
August	1,259	11,981
September	1,385	12,045
October	1,420	13,180
November	1,125	11,910
December	980	10,431

**Required:**

(i) Using high-low method, formulate the overhead cost function in the form  $Y = a + bx$ . (4 marks)

(ii) Using the regression method, estimate the overhead cost function. (6 marks)

(iii) The coefficient of determination ( $r^2$ ) has been determined to be 0.913. Interpret this result. (2 marks)

**(Total: 20 marks)**

#### QUESTION TWO

(a) Simtel Ltd. is a small and medium-sized enterprise (SME) seeking opportunity in emerging business in mobile telephone innovation and digital marketing platform. However, the company is experiencing challenges in navigating the regulatory requirements such as compliance with Electronic Waste (e-waste) Management and Disposal Act. The project manager has proposed to the Management Accountant that they should implement e-waste management and disposal policy when disposing of its electronic waste for sustainable waste management.

**Required:**

Explain **THREE** sustainability issues that Simtel Ltd. could leverage on when implementing e-waste disposal policy. (6 marks)

(b) With reference to international transfer pricing, explain the meaning of the following transfer pricing methods:

(i) The “comparable uncontrolled price” method. (2 marks)

(ii) The “resale price” method. (2 marks)

(c) Skyview Technologies Ltd. has two divisions; Motherboard Division and Smart TV Division. Motherboard Division is a profit centre which manufactures three intermediate components that are used to make smart televisions. The three components are U, S and B. Each component has an external market, but also transfers to Smart TV Division. Pertinent data about the three components is as follows:

Component	U Sh.	S Sh.	B Sh.
External market price per unit	2,400	2,300	2,000
Unit variable production cost in motherboard division	1,650	1,200	1,400
Fixed production cost per unit	3,500	2,800	1,900
Labour hours required per unit in motherboard division	3	4	2
Maximum external sales demand (units)	8,000	5,000	3,000

**Additional information:**

1. Motherboard Division has received a special order to transfer 3,000 units of Component "S" to Smart TV Division. Smart TV Division has then sought the management of Motherboard Division to quote the transfer price for the supply of the 3,000 units.
2. Instead of receiving transfers of Component "S" from Motherboard Division, Smart TV Division could outsource similar component in the open market at a slightly cheaper price of Sh.2,200 per unit.
3. The total labour hours in the current period for Motherboard Division are limited to 56,000 labour hours.
4. Motherboard Division transfers the special order at a marginal cost plus opportunity cost.
5. Divisional managers are autonomous and will sacrifice the component that has the lowest priority ranking.

**Required:**

- (i) The optimum production mix units under limiting factor analysis. (4 marks)
- (ii) The transfer price to be set by Motherboard Division for the special order in order to maximise profits at the optimum production mix. (6 marks)

**(Total: 20 marks)**

**QUESTION THREE**

- (a) Explain **THREE** reasons why firms hold inventory. (6 marks)
- (b) Nehema Ltd. Stores', Chief Executive Officer believes that the company is holding excessive inventory. He has requested you, the Management Accountant, to carry out an investigation. Information on the two items held by Nehema Ltd. Stores is given below:

Inventory item	Purchase price per unit	Cost of administration per order	Annual demand (units)	Holding cost per year as a percentage (%) of purchase price
F	200	80	15,000	13.33
G	25	28	2,800	8.0

The company's stock ordering policy is based on the economic order quantity (EOQ).

**Required:**

- (i) Determine the number of orders per year that the company will place for inventory item F. (3 marks)
- (ii) Determine the annual holding cost of the inventory item G. (3 marks)
- (c) Southend Ltd. has two divisions namely; A and B, whose respective performances are under review. Division A is currently earning a profit of Sh.35 million and has net assets of Sh.150 million. Division B currently earns a profit of Sh.70 million with net assets of Sh.325 million. Southend Ltd. has a current cost of capital of 15%.

**Required:**

- (i) Using the information above, determine return on investment (ROI) and residual income for the two divisions. (4 marks)
- (ii) State which of the two performance evaluation methods used in (c) (i) above would be more useful when comparing divisional performance and why. (2 marks)
- (iii) Outline **TWO** general aspects of performance measures, that would be appropriate for a service sector company. (2 marks)

**(Total: 20 marks)**

#### QUESTION FOUR

(a) Agrovet Group is a multidivisional agrochemical firm that deals in multiple products. Delta Division, one of its subsidiaries makes three products branded Betax, Zetay and Alphaz. The management is contemplating changing the sales mix in scenario I to a new sales mix in scenario II in order to maximise the net profit.

The two scenarios are envisaged as below:

##### Scenario I

The sales, cost and output data for original sales mix for the year 2024 for three products are as follows:

Product	Betax	Zetay	Alphaz	Total
Sales mix	40%	30%	30%	
	Sh.“per unit”	Sh.“per unit”	Sh.“per unit”	Sh.
Selling price	2,000	3,000	2,500	
Variable cost	1,000	1,800	1,500	
Total fixed costs				15,664,000
Total sales revenue				45,000,000

##### Scenario II

Agrovet Group's estimated sales, costs and new sales mix are as follows:

Product	Betax	Zetay	Alphaz	Total
Sales mix	50%	20%	30%	
	Sh.“per unit”	Sh.“per unit”	Sh.“per unit”	Sh.
Selling price	2,000	2,800	2,500	
Variable cost	1,000	1,680	1,500	
Total fixed costs				15,664,000
Total sales revenue				45,000,000

##### Additional information:

- Management performance measures are based on cost volume profit (CVP) analysis.
- The weighted average contribution margin ratio of each scenario is determined based on its sales mix.

##### Required:

- Compute both the break-even point in sales value and the net profit for each scenario. (8 marks)
- By comparing the break-even point and net profit, advise the management of Agrovet Group whether it is worthwhile to change the sales mix. (2 marks)

(b) Lambda Investment Ltd. is a real estate firm. Recently, the company acquired a piece of land in a metropolitan area with prospective investment opportunities to develop. The investment centre manager is to make a decision on which of the three mutually exclusive projects to invest in the next year. Each project is considered to be an investment centre. The three investment centres are; corporate offices, shopping malls and residential estate.

The projected annual payoffs per project under the three economic states of nature are as follows:

Economic state	Probability	Decision alternatives		
		Corporate offices	Shopping mall	Residential estate
		Sh.	Sh.	Sh.
Optimistic	30%	100,000,000	110,000,000	90,000,000
Most likely	40%	70,000,000	90,000,000	120,000,000
Pessimistic	30%	130,000,000	90,000,000	70,000,000

##### Required:

The investment centre to invest in so as to:

- Satisfy the maximax criterion. (2 marks)
- Minimise the expected opportunity loss (EOL). (4 marks)

(c) Lambda Investment Ltd. is contemplating acquiring perfect information from an investment research firm about the viability of the investment opportunities. The investment research firm is willing to provide perfect information about the investment project at a cost of Sh.30 million.

##### Required:

Using suitable computations, advise Lambda Investment Ltd. on whether or not to acquire the perfect information from the investment research firm. (4 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

(a) Explain **FOUR** internal transfer pricing methods. (8 marks)

(b) Plasmaz TV Ltd., makes smart television sets. The company operates a standard absorption costing system.

The following data has been collected for the year ended 30 November 2024:

<b>Actual cost incurred:</b>	<b>Sh.</b>
Direct material used (165,000 kilograms)	15,675,000
Direct labour (80,000 hours)	5,800,000
Variable production overheads	16,800,000
Fixed production overheads	6,750,000

The variance reconciliation statement was prepared to investigate the main cause of difference between budgeted profit and actual profit. The following planning and operating variances were disclosed from the analysis:

	<b>Favourable</b>	<b>Adverse</b>
	<b>Sh.</b>	<b>Sh.</b>
<b>Planning and operating variances</b>		
Direct material price variance	825,000	
Direct material usage variance		1,500,000
Direct labour rate variance		200,000
Direct labour efficiency variance		350,000
<b>Variable production overhead:</b>		
Expenditure variance		800,000
Efficiency variance		1,000,000
<b>Fixed production overhead:</b>		
Expenditure variance	1,250,000	
Volume variance	6,250,000	

**Additional information:**

1. Variable production overheads are absorbed based on actual hours worked.
2. There was no significant difference in opening and closing work-in-progress.
3. Actual production was 1,500 television set units for the year ended 30 November 2024.

**Required:**

Calculate the following:

- (i) Standard material cost per unit. (3 marks)
- (ii) Standard labour cost per unit. (3 marks)
- (iii) Standard variable overhead absorption rate per unit. (3 marks)
- (iv) Standard fixed overhead absorption rate per unit. (3 marks)

**(Total: 20 marks)**

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## CPA ADVANCED LEVEL

### ADVANCED MANAGEMENT ACCOUNTING

WEDNESDAY: 21 August 2024. Afternoon Paper.

Time Allowed: 3 hours.

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings. Do NOT write anything on this paper.**

#### QUESTION ONE

(a) “Resilience” describes the capacity or ability of an organisation to anticipate and mitigate environmental risks and costs and recover from their adverse effects in a timely and efficient manner. This is because the external environment has a significant impact on the business activities and financial performance of an organisation.

With reference to environmental management accounting (EMA), identify **THREE** countermeasures that each of the following techniques could provide to build resilience and adaptation to environmental cost identification and allocation:

(i) Environmental life cycle costing. (3 marks)  
(ii) Environmental inflow-outflow analysis. (3 marks)

(b) With reference to decision making criteria under uncertainty, explain the meaning of the following decision criteria:

(i) Minimax criterion. (2 marks)  
(ii) Maximin criterion. (2 marks)

(c) Optima Gas Limited has two divisions; Beta division and Optima division which operate as profit centres. Beta division makes a component known as “token metre” which is a prepaid “pay as you use” token device used by Optima division to make “Optima Gas Cylinder” to optimise digital payment. Prior to Beta division being established, Optima division outsourced the component on the external market at a price of Sh.1,600 per token metre.

Beta division has an external market for the “token metre” and also transfers to Optima division. Optima division uses one “token metre” to produce a gas cylinder which is sold externally. There are no other products produced and sold by these divisions. The forecast annual sales, associated costs and capacity level for the divisions are as follows:

Division	Beta division	Optima division
	Sh.	Sh.
Market price per “token metre”	1,500	
Transfer price per token metre to Optima division	900	
Market price per gas cylinder		6,500
Variable costs per gas cylinder		2,500
Direct labour cost per labour hour	150	
Direct material cost per token metre	250	
Variable overheads per labour hour	100	
Fixed cost per annum	150,000,000	392,000,000

#### Additional information:

1. The variable cost for a gas cylinder excludes the cost of the “token metre”.
2. The first unit of a token metre will take 20 labour hours to produce. However, it is known that the work of direct labour is subject to an 85% learning curve rate. This will apply to all 260,000 “token meter” production capacity.
3. Optima division will continue to outsource 40,000 token metres from an external supplier at a price of Sh.1,600 to eliminate the deficiency from internal transfer.
4. Optima division has a target profit of Sh.180 million.

5. The forecast external sales and production capacity level for the division are as follows:

	External sales	Production capacity
Beta division	100,000 token metres	260,000 token metres
Optima division	200,000 cylinders	300,000 cylinders

**Required:**

(i) The learning curve coefficient. (2 marks)

(ii) In a columnar format, prepare profit statement showing the operating net profit for Beta division and Optima division and indicate whether Optima division target profit will be achieved. (8 marks)

**(Total: 20 marks)**

**QUESTION TWO**

(a) A zero base budgeting (ZBB) emerged in an attempt to overcome the limitations encountered by managers under incremental budgeting approach. It entails preparing the budgets of each cost centre from “scratch or zero”.

**Required:**

With reference to the above statement, outline **SIX** benefits of ZBB to an organisation. (6 marks)

(b) Plasma Electronics Ltd. supplies digital decoders and Liquid Electronic Display (LED) television sets for high end users. Customers contract Plasma Electronics Ltd. with requests for maintenance of their terrestrial signal frequency. To estimate the service cost, Plasma Electronic Ltd. wish to predict their installation time in hours (the dependent variable) necessary for each maintenance request.

Installation time is believed to be related to two factors; the number of months since the last maintenance services and the type of maintenance problem, whether digital or analogue.

The following is a summary of data analysis for time versus months and type:

**Regression Analysis: Time versus months, Type**

Predictor	Coefficient	SE Coef	t
Constant	0.93050	0.3670	X <sub>a</sub>
Months	0.38762	X <sub>b</sub>	6.20
Type	X <sub>c</sub>	0.3141	4.02

S = 0.459048

R - Sq = 85.94%

R Sq (adj) = 81.9%

**Analysis of variance (ANOVA)**

Source	DF	SS	MS	F
Regression	2	9.0009	X <sub>d</sub>	21.36
Residual error	7	X <sub>e</sub>	0.2107	
Total	9	<u>10.4760</u>		

**Required:**

(i) Write down the linear regression equation model. (2 marks)

(ii) Find the missing values for X<sub>a</sub>, X<sub>b</sub>, X<sub>d</sub> and X<sub>e</sub>. (4 marks)

(iii) Explain the statistical meaning of the standard error of estimate, R squared and F statistic ratio. (6 marks)

(iv) Using the economic plausibility tests, is the regression model significant as a predictor model? (2 marks)

**(Total: 20 marks)**

**QUESTION THREE**

(a) Rahisi Supermarket uses different ordering policies to acquire its inventory. Due to uncertainty of supply of product "X", the management accountant is evaluating the optimal order size for this product to set for the coming year 2025.

The relevant data on the ordering policy is provided as follows:

<b>Order policy</b>	<b>Units of product "X" ordered</b>
Order twice monthly	500 units per order
Order monthly	1,000 units per order
Order quarterly	3,000 units per order
Order semi-annually	6,000 units per order
Order annually	12,000 units per order

**Additional information:**

1. It is ascertained that the purchase price per unit of product "X" is Sh.500 for deliveries up to 2,500 units.
2. A 5% discount is offered by the supplier of product "X" on the whole order where deliveries are 2,501 up to 5,000 units.
3. A 10% discount on total order for deliveries in excess of 5,000 units is guaranteed.
4. Each purchase order incurs fixed requisition costs of Sh.1,200 per order.
5. The carrying cost is Sh.20 per unit per year plus 12% opportunity cost of the purchase price.
6. The purchasing lead time is 3 weeks. Rahisi Supermarket is open 48 weeks per annum. Each year has 12 months.

**Required:**

(i) Economic order quantity (EOQ) for product "X". (2 marks)

(ii) Advise the management of Rahisi Supermarket on the optimum order size of product "X". (6 marks)

(iii) The optimal reorder level of product "X". (2 marks)

(b) Mavazi Ltd. is a clothes making firm that makes men's attire. Mavazi Ltd. makes three main products using the same resources, but in different amounts of material. The three types of clothes made are shirts, suits and jeans.

Budgeted information per unit for the month of September 2024 is as follows:

<b>Type of clothes made</b>	<b>Shirts</b>	<b>Suits</b>	<b>Jeans</b>
	<b>"Sh. Per unit"</b>	<b>"Sh. Per unit"</b>	<b>"Sh. Per unit"</b>
Selling price	1,600	10,000	4,000
Direct material (Sh.800 per m <sup>2</sup> )	400	4,000	1,200
Direct labour (Sh.480 per hour)	480	1,440	1,080
Variable overheads (Sh.120 per machine hour)	120	360	280
Budgeted demand in September 2024 (units)	6,000	2,000	4,000

**Additional information:**

1. The budgeted total fixed costs amount to Sh.13,700,000 per month.
2. Mavazi Ltd. has received a special order from Fashion Ltd. who has ordered 1,000 units each of shirts, suits and jeans for delivery in September 2024.
3. The budgeted demand above does not include this special order from Fashion Ltd.
4. In September 2024, there will be limited resources available. Direct material will be limited to 14,500 square meters (m<sup>2</sup>).
5. There will be no opening inventory of material, work-in-progress and finished goods in September 2024.
6. The special order from Fashion Ltd. must be supplied in full.

**Required:**

(i) Prepare a statement that shows the optimal production mix and the resultant profit or loss for September 2024. (8 marks)

(ii) Advise the management on whether or not to accept the special offer. (2 marks)

**(Total: 20 marks)**

#### QUESTION FOUR

(a) One of the roles of management accounting is to provide information that is useful for managers of an organisation of various departments, in decision making.

In line with this statement, explain **THREE** types of accounting information a management accountant could communicate to a human resource manager. (6 marks)

(b) The finance director of Lengo Training Institute is considering a proposal by the board of directors to launch a new course nationwide. The potential enrollment of the course is classified as either being high, medium or low. The net present value under each of the three conditions is estimated to be; Sh.50 million, Sh.10 million and (Sh.20 million) respectively. The marketing director of the institute estimates that there is a 0.40 probability that the enrollment will be high, 0.25 probability that it will be medium and 0.35 probability that it will be low. The objective of the institute is to maximise the expected net present value.

**Required:**

(i) Evaluate whether or not the new course should be launched. (4 marks)

(ii) Determine the expected value of perfect information. (2 marks)

(c) The finance director of Lengo Training Institute proposed an alternative option, that is, instead of proceeding directly with the nationwide launch, the institute could test the market. This would delay the nationwide launch and together with other outlays associated with testing the market, would lead to costs having a net present value of Sh.0.5 million. The test marketing would yield information indicating whether the nationwide launch is likely to be successful or unsuccessful. The following table shows the reliability of each of the possible indications:

Test marketing		Probability	High	Medium	Low
	Successful launch	0.60	0.60	0.15	0.25
	Unsuccessful launch	0.40	0.10	0.40	0.50

**Required:**

Represent the information in (b) and (c) above in a decision tree and calculate:

(i) Value of imperfect information. (6 marks)

(ii) Advise the finance director as to whether or not Lengo Training Institute should test the market. (2 marks)

**(Total: 20 marks)**

#### QUESTION FIVE

(a) Greenlight Ltd. is a government energy generating company. The company is segmented into subunits. The following is the selected divisional annual information for its two targets subunits. These are subunit X and subunit Y.

Division	Subunit X Sh.“000”	Subunit Y Sh.“000”
Sales turnover	875,000	1,368,000
<b>Less cost of sales:</b>		
Variable costs	<u>(342,500)</u>	<u>(454,000)</u>
Contribution	532,500	914,000
Controllable fixed cost	<u>(450,000)</u>	<u>(800,000)</u>
Operating income	<u>82,500</u>	<u>114,000</u>
	Sh.“000”	Sh.“000”
Average total assets	250,000	456,000
Current liabilities	<u>(62,000)</u>	<u>(268,000)</u>
Capital employed	<u>188,000</u>	<u>188,000</u>
Cost of capital	12%	12%
Target rate of return	16%	16%
Tax rate	30%	30%

Four measures are used to evaluate the performance of the subunit managers. Based on the data above, the budgeted performance measures for the subunits are as follows:

Division	Subunit X	Subunit Y
Residual income	Sh.30 million	Sh.30 million
Return on investment	25%	20%
Economic value added	Sh.33 million	Sh.55 million
Asset turnover ratio	2.36	4.12

**Required:**

Calculate and comment on each of the following financial performance measures for each subunit:

- (i) Return on investment (ROI). (3 marks)
- (ii) Residual income (RI). (3 marks)
- (iii) Economic value added (EVA). (3 marks)
- (iv) Assets turnover ratio. (3 marks)

(b) Trans Africa Airline Company is a manufacturing company of the world's biggest air buses. By the end of the year 2023, the environmental manager indicated that the company had made significant improvement in its environmental performance by reducing the carbon emissions of contaminating residues of all types.

The following is the environmental cost report for the years 2022 and 2023:

	2022 Sh.“000”	2023 Sh.“000”
Sales revenue	13,000,000	20,000,000
Evaluating and selecting suppliers	154,000	600,000
Treating and disposing of toxic materials	500,000	800,000
Inspecting process for regulatory conformance	450,000	300,000
Restoration cost of carbon emissions	1,350,000	1,200,000
Recycling scrap cost	550,000	300,000
Testing for contaminants	88,000	100,000

**Required:**

- (i) Classify the above costs as: prevention, detection, internal failure and external failure costs. (4 marks)
- (ii) Prepare an environmental cost of quality report for the year 2023 where costs are expressed as a percentage of sales revenue. (4 marks)

**(Total: 20 marks)**

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## CPA ADVANCED LEVEL

### ADVANCED MANAGEMENT ACCOUNTING

WEDNESDAY: 24 April 2024. Afternoon Paper.

Time Allowed: 3 hours.

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings. Do NOT write anything on this paper.**

#### QUESTION ONE

(a) Describe **THREE** non-financial key performance index (KPI) of the following perspectives of a balanced scorecard model:

- (i) Customer perspective. (3 marks)
- (ii) Internal business perspective. (3 marks)

(b) With reference to linear regression analysis, explain the following cost estimation concepts:

- (i) Analysis of variance (ANOVA). (2 marks)
- (ii) Goodness of fit tests. (2 marks)

(c) Aerosky Holdings Ltd. manufactures and sells sky drones and their accessories. Aerosky Holdings Ltd. operates two divisions; Camera division and Sky division. Camera division manufactures a component branded “HD Camera” that is used by Sky division. Sky division is a manual assembly and final product division that assembles various components to make a product branded “mid-level drones”.

Both divisions produce one type of output only.

Sky division needs the HD camera component from Camera division for every “drone” produced. Camera division transfers to Sky division all of the HD camera components needed to produce a drone. Camera division also sells HD camera components to the external market. Sky division outsources its other components in the market from an external supplier.

The following budgeted information is available for each division:

Division	Camera division	Sky division
	Sh.	Sh.
Market price per HD camera	19,000	
Market price per drone		160,000
Production cost per HD camera	10,000	
Assembly cost per hour		35,500
Total outsourcing cost of other components		1,686,670,000
Fixed non-manufacturing overheads	10,560,000	33,000,000
External demand	10,000 HD cameras	
Production capacity	22,000 HD cameras	

#### Additional information:

1. The production cost per HD camera is 60% variable.
2. Camera division sets a transfer price at 70% of the marginal cost.
3. The fixed manufacturing overheads are absorbed based on the budgeted output.
4. Assembly cost per hour is basically a manual job which is subjected to an 80% learning curve rate. The first drone will take 2 hours to assemble.
5. The learning curve coefficient at 80% level is  $-0.3219$ . This will apply to all 12,000 drones assembled.
6. Assume that the learning curve model is in the form of  $Y = ax^b$
7. The tax rate applicable for both divisions is 30%.

**Required:**

In columnar format, compute the post-tax net profit generated by Camera division, Sky division and Aerosky Holdings Ltd. as a whole.

(10 marks)

**(Total: 20 marks)****QUESTION TWO**

(a) Joe Mwinzi, the Management Accountant of Vera Enterprise that makes and sells product “Aloe” has made the following estimates:

<b>Sales demand</b>			<b>Variable cost per unit</b>		
<b>Condition</b>	<b>Units</b>	<b>Probability</b>	<b>Condition</b>	<b>Sh.</b>	<b>Probability</b>
Worst	45,000	0.30	Worst	350	0.30
Most likely	50,000	0.60	Most likely	400	0.55
Best	55,000	0.10	Best	550	0.15

**Additional information:**

1. The selling price of Aloe product is Sh.1,000 per unit.
2. Fixed costs attributable to Aloe product is Sh.24,000,000.
3. Vera Enterprise intends to achieve a target profit of Sh.6,000,000.

**Required:**

- (i) Using a probability tree, compute the expected profit of Vera Enterprise. (6 marks)
- (ii) Compute the probability that Vera Enterprise will fail to break-even. (2 marks)
- (iii) Determine the probability that Vera Enterprise will not achieve the target profit. (2 marks)

(b) The Management Accountant of Lengo Ltd. has noted that the management and control of inventories has become very uncertain. He has contracted you to devise an inventory system that allows for uncertainties to be applied to the current stock item branded “Safi”.

The following are the details of stock item “Safi”:

<b>Daily demand (units)</b>	<b>Probability</b>	<b>Lead time days</b>	<b>Probability</b>
3,000	0.2	20	0.4
5,000	0.5	25	0.6
6,000	0.3		

**Additional information:**

1. The daily demand applies for the whole lead-time.
2. Inventory carrying cost is 12.5% of inventory value.
3. The purchase cost and order cost are Sh.100 per unit and Sh.15,950 per order respectively.
4. The current re-order point is 120,000 units.
5. One year has 300 working days.

**Required:**

- (i) Economic order quantity. (3 marks)
- (ii) The relevant inventory cost for the year. (2 marks)
- (iii) The current level of safety stock implicit in the current reorder period. (2 marks)
- (iv) The probability of stock out. (3 marks)

**(Total: 20 marks)****QUESTION THREE**

(a) “Management Accounting is an invaluable tool to any organisation at both the operational level and the strategic management level”.

Discuss **THREE** reasons to support the claim. (6 marks)

(b) Solamax Ltd. makes small assembled solar panels for the domestic local market. The marketing manager believes that in the short run their sales can improve by launching a massive marketing campaign strategy.

The following marketing strategies have been proposed based on the demand for the product:

**Strategy A:** Advertise locally

**Strategy B:** Online marketing

**Strategy C:** Mass media advertisement with the local television media house

The company uses expected value to make this type of decision. The estimated annual profit or (loss) under the three states of market reaction for each market strategy is as follows:

Marketing strategy	Market reaction (Demand)		
	High Sh.“000”	Medium Sh.“000”	Low Sh.“000”
Market locally	1,300,000	500,000	350,000
Online marketing	1,500,000	850,000	410,000
Mass media advertisement	1,700,000	905,000	(105,000)

**Additional information:**

1. Strategy A has low fixed costs and high variable costs; strategy B has average fixed costs and average variable costs while strategy C has high fixed costs and low variable costs.
2. There is a 30% chance that demand will be high, a 40% chance that demand will be medium and a 30% chance that demand will be low.
3. A market research company believes it can provide perfect information at a cost of Sh.100,000,000.

**Required:**

- (i) Calculate the maximum amount payable to acquire perfect information. (5 marks)
- (ii) Advise the management of Solamax Ltd. whether it is viable to acquire the perfect information from the market research company. (1 mark)

(c) Olympix Motors Ltd. assembles and sells a single brand of luxurious vehicles branded “Viva”. The following data has been extracted from the current year’s budget:

Contribution per unit	Sh.800,000
Total weekly fixed costs	Sh.100 million
Weekly profit	Sh.220 million
Contribution to sales ratio	40%

**Additional information:**

1. The company’s production capacity is not being fully utilised in the current year and three possible scenarios are under consideration.
2. Each scenario involves reducing the unit selling price on all units sold with an expected consequential effect on the budgeted volume of sales.
3. Details of each scenario are as follows:

Scenario	S1	S2	S3
Reduction in unit weekly selling price	2%	5%	7%
Expected increase in sales volume over budget	10%	18%	25%

4. The company operates just-in-time (JIT) system and holds no inventory of finished goods.

**Required:**

- (i) Calculate for the current year, the weekly sales in units. (3 marks)
- (ii) Determine (with supporting calculations) which one of the three scenario should be adopted by the company in order to maximise weekly profits. (5 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

- (a) Discuss **FOUR** performance measures in the service industry. (8 marks)
- (b) Baby Com Ltd. compiled the following report for its toy division for the year ended 31 December 2023:

	Sh.“000”
Sales	3,200,000
Non-interest bearing current liabilities	64,000
Interest expense	41,000
Interest-bearing current liabilities	55,000
Assets	1,210,000
Net income	98,930

The tax rate is 33% and the company’s cost of capital is 8%. The required rate of return is 9%.

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**Required:**

(i) Calculate the two components of return on investment (ROI) and show how the two components can be used to calculate the ROI. (4 marks)

(ii) Prove your ROI in (b) (i) above using the straight forward approach to calculating ROI. (3 marks)

(iii) Calculate residual income (RI) and interpret your answer. (5 marks)

**(Total: 20 marks)****QUESTION FIVE**

(a) Explain **THREE** roles of accountants in environmental management. (6 marks)

(b) Afya Bora Manufacturers adopts absorption costing system in variance analysis and investigation. The following profit reconciliation statement analyses the performance of Afya Bora's main product "Y" for the month of March 2024.

	<b>Adverse</b> Sh.“000”	<b>Favourable</b> Sh.“000”	<b>Total</b> Sh.“000”
Budgeted profit			30,000
<b>Sales variances:</b>			
Volume variances		6,000	
Price variances		3,600	
<b>Material cost variances:</b>			
Price variances	37,500		
Usage variances	4,500		
<b>Labour cost variances:</b>			
Rate variances	10,200		
Efficiency variances		1,200	
<b>Variable overhead variances:</b>			
Expenditure variances		3,900	
Efficiency variances		600	
<b>Fixed overhead variances:</b>			
Efficiency variances		300	
Expenditure variances	1,500		
Capacity variance		2,700	
Total variances	(53,700)	18,300	(35,400)
Actual profit/(loss)			<u>(5,400)</u>

Product "Y" is made from a single product mix with a standard cost of Sh.130,000 made up as follows:

	<b>Sh.“000”</b>
Direct material (15 kilograms at Sh.5,000 per kilogram)	75
Direct labour (5 hours at Sh.6,000 per hour)	30
Variable overheads (5 hours at Sh.3,000 per hour)	15
Fixed overheads (5 hours at Sh.2,000 per hour)	10
Standard cost	130
Standard margin	20
Standard selling price	<u>150</u>

**Additional information:**

1. The monthly budget projects production and sales of 1,500 units.
2. During the month, the actual number of units produced was 2,100 units.
3. The actual direct material purchased were 37,500 kilograms.
4. The actual selling price per unit was Sh.152,000.
5. The budgeted fixed overhead cost was Sh.15,000,000 while budgeted variable overhead cost was Sh.31,500,000.

**Required:**

(i) Actual direct material cost. (3 marks)

(ii) Actual quantity of material used. (3 marks)

(iii) Actual labour cost. (3 marks)

(iv) Actual labour hours. (3 marks)

(v) Actual variable overhead cost. (2 marks)

**(Total: 20 marks)**



## CPA ADVANCED LEVEL

### ADVANCED MANAGEMENT ACCOUNTING

WEDNESDAY: 6 December 2023. Afternoon Paper.

Time Allowed: 3 hours.

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings. Do NOT write anything on this paper.**

#### QUESTION ONE

(a) With reference to strategic management accounting, evaluate **THREE** underpinnings of each of the following concepts:

- (i) Balanced scorecard model. (3 marks)
- (ii) Responsibility accounting. (3 marks)

(b) “Carbon credits” and “carbon credit tax” are increasingly being applied in environmental management accounting (EMA) as transparent measurable and result oriented activities aimed at protecting and preventing environmental degradation by adopting environmental management strategies, policies and compliance requirements. Carbon credit tax (CCT) is aimed at enhancing compliance. CCT is levied on pollution caused by carbon emission to the environment. One of the aims of the tax is to discharge organisations from operating with excessive carbon emission and instead encourage a transition to more sustainable alternatives by detecting and preventing external costs of environmental management.

**Required:**

With reference to the above statement, identify **THREE** benefits that might accrue to an organisation as a result of implementation of carbon credit strategies and policies towards:

- (i) Environmental detection costs. (3 marks)
- (ii) Environmental external failure costs. (3 marks)

(c) TL Ltd. sells three types of mosquito nets branded Zerofly, Whyfly and Nofly. Product Whyfly is currently generating profits below target net profit of Sh. 750,000.

The following table shows selected data for the three products for the previous year ended 30 June 2023:

Product	Zerofly	Whyfly	Nofly	Total
Selling price per unit (Sh.)	80	20	30	
Contribution margin ratio	20%	10%	60%	
Sales demand in units	50,000	150,000	60,000	
Net profit (Sh.)				490,000

**Additional information:**

1. The above data is expected to remain unchanged if Tsavo Ltd. continues producing all the three products.
2. The sales manager believes that profits can be increased by dropping Whyfly due to its low contribution margin ratio and concentrate on the sales of Zerofly and Nofly.
3. The entire workforce used to produce Whyfly will be utilised in the production of Nofly. The labour mobility is such that 3 units of Whyfly equal 1 unit of Nofly. To increase demand for Nofly, a 10% price reduction will be allowed next year after dropping Whyfly.
4. Unit fixed cost is Sh.6.5.
5. TL Ltd. prepares statements on marginal costing basis.

**Required:**

- (i) Prepare a comparative statement of profit or loss before and after dropping Whyfly. (6 marks)
- (ii) Advise the management of TL Ltd. on whether to continue or drop product Whyfly. (2 marks)

**(Total: 20 marks)**

## QUESTION TWO

(a) Chane Ltd. is considering whether to develop and market a new product. The development cost of the new product will be Sh.360,000,000.

### Additional information:

- There is a 75% chance that the product development exercise will be successful.
- The following matrix relates to the new product:

Market state	Probability	Profit (Sh.“000”)
Very successful	0.4	1,080,000
Moderately successful	0.3	200,000
Failure	0.3	(800,000)

- The development cost of Sh.360,000,000 has been accounted for in the calculation of the above profits and losses.

### Required:

As the Management Accountant of Chane Ltd., advise the management of the company on whether or not to develop the new product. (10 marks)

(b) Scotts Ltd. has experienced stock outs occasioned by the company's poor inventory estimation techniques. The company has therefore engaged you to estimate its demand for the year 2024.

The company's accountant had started using regression analysis and availed the following information to you:

- The demand for the company's product is dependent on disposable income and price of the products.
- The analysis of variances table:

Source	Degrees of freedom	Sum of squares
Model	3	187
Error	9	4
Total	12	191

- The parameter estimates and their errors:

Variable	Estimate	Standard error
Constant	1.5	2.000
Price	-1.4	0.1934
Income	5	0.2700

### Required:

- Develop a regression equation that will be used for prediction. (2 marks)
- Determine the coefficient of determination. Interpret your result. (4 marks)

- Test the adequacy of the model for prediction (F tables value 11.56). (4 marks)

**(Total: 20 marks)**

## QUESTION THREE

(a) Evaluate **THREE** advantages of using simulation analysis in inventory control. (6 marks)

(b) Kaza Joy is a small manufacturing enterprise that makes only three products X, Y and Z. Data for the month ended 30 November 2023 is as follows:

Units produced and sold	X	Y	Z
	12,000	16,000	8,000
Sales price per unit	Sh. 50	Sh. 70	Sh. 60
Direct material cost per unit	16	24	20
Direct labour cost per unit	8	12	8

Product overhead costs	Total Sh.	Cost drivers
Machining costs	102,000	Machine hours
Production scheduling	84,000	Number of production runs
Set up costs	54,000	Number of production runs
Quality control	49,200	Number of production runs
Receiving materials	64,800	Number of components receipts
Packaging materials	36,000	Number of customer orders

Information on the cost drivers is given as follows:

	X	Y	Z
Direct labour hours per unit	1	1.5	1
Machine hours per unit	0.5	1	1.5
Number of components per unit	3	5	8
Number of component receipts	18	80	64
Number of customers orders	6	20	10
Number of production runs	6	16	8

**Required:**

Using activity based budgeting (ABB), compute the cost and gross profit per unit for each products during the month. (14 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

(a) Highlight **FOUR** roles of a management accountant in accounting for environmental costs. (4 marks)

(b) Discuss the meaning of the following concepts as used in cost estimation:

- (i) Economic plausibility tests. (2 marks)
- (ii) Learning curve phenomenon. (2 marks)

(c) Alumax Ltd. produces a single product branded "Salfa". The machine used to make Salfa is obsolete and Alumax Ltd. is contemplating replacing it.

**Additional information:**

1. The replacement cost of a new machine is Sh.1 million with expected useful life of five years.
2. The machine will have no salvage value after decommissioning it.
3. It is expected that 20,000 units of Salfa will be produced and sold at a transfer price of Sh.300 per unit over the five year period as follows:

Year	1	2	3	4	5
Units sold ("000")	6	5	4	3	2

4. Variable costs are expected to be Sh.165 per unit produced and sold.
5. The incremental fixed costs, mainly the wages of a maintenance engineer are expected to be Sh.200,000 per year.
6. Alumax Ltd. uses an imputed interest cost of capital of 13% for the investment appraisal purposes.
7. Depreciation on this machine is calculated on initial cost of the investment at the start of the year.

**Required:**

- (i) The residual income (RI) for each of the five years. (6 marks)
- (ii) The return on investment (ROI) for each of the five years. (6 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

Simplex Group Ltd., manufacturers new patented electric motorcycles.

The group has two divisions, Robox Division and Safari Division. Robox Division manufactures a "dual electric battery" which is the key component for Safari Division. Safari Division is an assembly and distribution division for electric motorcycles. Robox Division sells the dual electric batteries to Safari Division and to external customers.

The following budgeted data is provided for both Robox Division and Safari Division:

**Budgeted data:**

	Robox Division	Safari Division
	Sh.	Sh.
Selling price per electricity battery	65,000	
Selling price per motorcycle		300,000
<b>Variable costs per unit:</b>		
Manufacturing cost per electric battery	47,000	
Assembly cost per motor cycle		105,000
<b>Fixed cost per annum:</b>		
Fixed manufacturing cost	750,000,000	1,050,000,000

	Units	Units
Production capacity	220,000 electric batteries	
Internal transfers to Safari Division	120,000 electric batteries	
External sales demand	180,000 electric batteries	60,000 motorcycles

**Additional information:**

1. Safari Division uses two electric batteries manufactured by Robox Division to assemble one motorcycle and sells motorcycles directly to external customers.
2. Internal transfer price is set at opportunity costs.
3. Robox Division must satisfy the demand of Safari Division before selling the dual electric batteries externally.
4. Safari Division is allowed to purchase dual electric batteries from Robox Division or from external supplies.
5. Safari Division is considering two purchasing options:

**Option 1:** Buy all the electric batteries it requires from Robox Division

**Option 2:** Outsource from a cheaper external supplier who has offered to supply all 120,000 electric batteries at a price of Sh.45,000 electric batteries each to Safari Division.

**Required:**

(a) In columnar format, prepare operating statement showing the:

- (i) Net profit for each division if **Option 1** is adopted. (6 marks)
- (ii) Net profit for each division and Simplex Group Ltd. as a whole if **Option 2** is adopted. (6 marks)

(b) Robox Division has received a special order from a new customer for the production of 40,000 electric batteries. The manager of Robox Division requires an annual target profit for the division amounting to Sh.6,410,000,000. This order will have no effect on the divisional fixed costs and no impact on the 180,000 electric batteries Robox Division sells to its existing customers.

Calculate the minimum transfer price per electric battery to sell the 40,000 electric batteries to the new customer that would enable the manager of Robox Division to achieve the target profit. (4 marks)

(c) Evaluate **FOUR** non-financial environmental impact overriding factors to consider before accepting **Option 2**. (4 marks)

**(Total: 20 marks)**

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## CPA ADVANCED LEVEL

### ADVANCED MANAGEMENT ACCOUNTING

WEDNESDAY: 23 August 2023. Afternoon Paper.

Time Allowed: 3 hours.

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings. Do NOT write anything on this paper.**

#### QUESTION ONE

(a) Explain **TWO** benefits of each of the following concepts as used in environmental management accounting:

- (i) Environment life cycle costing. (4 marks)
- (ii) Environmental activity-based costing (EABC). (4 marks)

(b) Motorcar Repairs Ltd is in the process of estimating the fixed cost and variable cost components associated with the company's repair activity using the cost estimation equation in the form  $Y = a + bx$ , where  $Y$  is the total repair cost,  $a$  is the fixed component,  $b$  is the variable component and  $x$  is the level of repair activity in hours.

#### Additional information:

1. Regression analysis performed using MS Excel in a computer yielded the following results:

Summary of output Regression statistics	
Parameter	Output
Multiple R	0.984523
R square	0.969285
Adjusted R square	0.961607
Standard Error	32.196570
Observations	6

2. The analysis of variance (ANOVA) output was as follows:

Predictor	df	SS	MS	F	Significance F
Regression	1	130853.5	130853.5	126.2311	0.000357
Residual	4	4146.476	X		
Total	5	135000			

Variable	Coefficients	Standard error	t-statistic	P-value	Lower 95%	Upper 95%
Intercept	509.9119	45.55789	Y	0.000363	383.4227	636.4011
Variable X	29.40529	2.617232	11.23526	0.000357	22.13867	36.6719

#### Required:

- (i) The linear regression equation in the form  $Y = a + bx$ . (2 marks)
- (ii) Predict the total cost of repair if 14 hours are used. (2 marks)
- (iii) Compute the values of the missing letters X and Y. (4 marks)
- (iv) Explain the explanatory power of the model using the coefficient of determination. (2 marks)
- (v) Explain if the independent variable is economically plausible as a predictor variable. (2 marks)

**(Total: 20 marks)**

**QUESTION TWO**

(a) Summarise **FOUR** limitations of the Just-In-Time (JIT) inventory system. (4 marks)

(b) Identify **FOUR** applications of learning curve model. (4 marks)

(c) Aloe Vera Group has two operating divisions; Aloe division and Vera division. Aloe division produces a high quality fabric that is used in making curtains. The budgeted cost per unit of the fabric is made up as follows:

<b>Variable costs:</b>	<b>Sh.</b>
Direct labour	33
Direct material	<u>77</u>
<b>Marginal cost</b>	<b>110</b>
<b>Fixed costs:</b>	
Production overheads	<u>100</u>
<b>Full cost</b>	<b><u>210</u></b>

**Additional information:**

1. The budgeted output for Aloe division is 450,000 units each year and the market price for the fabric is Sh.250 per unit.
2. Vera division makes curtains and uses 1.1 metres of this fabric to make one curtain. The budgeted output for Vera division is 200,000 units of curtains.
3. The management of Aloe Vera Group insists that Aloe division must sell to Vera division as much of the fabric as is required to meet its needs and any surplus output can then be sold to external customers.
4. The management of Aloe Vera Group also insists that Vera Division must buy all its requirements for this fabric from Aloe division.
5. Vera division sells its output at Sh.310 per unit. In addition to the cost of fabric, it incurs fixed costs at the rate of Sh.40 per unit of the budgeted output.

**Required:**

The budgeted profit for both Aloe division and Vera division, assuming a transfer pricing policy is based on:

(i) Marginal costing transfer pricing. (6 marks)

(ii) Market based transfer pricing. (6 marks)

**(Total: 20 marks)**

**QUESTION THREE**

(a) Zeta Ltd. manufactures one standard product branded “Boma” and operates a system of variance analysis using a fixed budget. As the assistant management accountant, you are responsible for preparing the monthly operating statements.

The budgeted information of product “Boma” for the month ended 31 July 2023 was as follows:

		<b>Sh.</b>
Selling price per unit		880
<b>Cost per unit:</b>		
Direct material:	A (2 kgs at Sh.100 per kg)	200
	B (1 litre at Sh.150 per litre)	150
Direct labour	(3 hours at Sh.90 per hour)	270
Variable overhead	(3 hours at Sh.20 per direct labour hour)	60

**Additional information:**

1. Zeta Ltd. budgeted sales and production for the month of July 2023 was 10,000 units.
2. Annual budgeted fixed overheads were Sh.14,400,000 which are assumed to be incurred evenly throughout the year.
3. The company uses marginal costing system for internal profit measurement purposes.
4. The actual data for the month of July 2023 were as follows:

Actual production and units sold	9,000 units.
Selling price	Sh.900

**Direct materials consumed:**

A: 19,000 kgs consumed at a cost of Sh.2,090,000

B: 10,100 litres consumed at a cost of Sh.1,414,000

Direct labour incurred 28,500 hours at a cost of Sh.2,736,000

Variable overheads incurred Sh.520,000

Fixed overheads incurred Sh.1,160,000

**Required:**

(i) A budgeted profit statement. (2 marks)

(ii) Actual profit statement. (2 marks)

(iii) A reconciliation statement of actual profit and budgeted profit. (Show all planning and operating variances). (8 marks)

(b) Oreq Ltd. is a small-scale company selling take-away sandwiches in a metropolitan town. The company would like to make a decision on the number of sandwiches to sell at the forthcoming graduation ceremony at County University. The number of sandwiches sold will depend on three market conditions; poor, fair or good condition.

The table below details the net profit/(loss) that would be earned for each possible number of the sandwiches sold:

<b>Market conditions</b>	<b>Net profit/(loss)</b>		
	<b>Poor</b>	<b>Fair</b>	<b>Good</b>
Probability of market states	30%	40%	30%
<b>Number of sandwiches sold:</b>	<b>Sh.</b>	<b>Sh.</b>	<b>Sh.</b>
1,000	100,000	300,000	300,000
2,000	0	600,000	600,000
3,000	(100,000)	700,000	900,000
4,000	(300,000)	600,000	1,200,000

**Required:**

(i) The number of sandwiches to sell to satisfy maximin criterion. (2 marks)

(ii) The number of sandwiches to sell to satisfy maximax criterion. (2 marks)

(iii) The number of sandwiches to sell to maximise the expected monetary value (EMV). (2 marks)

(iv) The maximum amount payable by Oreq Ltd. to acquire perfect information. (2 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

Green Coaches Ltd. is an electric-bus assembly company. The company has received a special order from Transland Bus Company to supply 15 executive electric buses for bus rapid transport (BRT) project at a target price of Sh.8 million per bus.

Due to the novelty of the project and challenges of learning curve effect, the company wants to analyse three scenarios available before accepting the special order. These scenarios are:

**Scenario 1:**

To work overtime and deliver the 15 buses within stipulated period.

**Scenario 2:**

To complete 14 buses using overtime and deliver 1 bus late.

**Scenario 3:**

To assemble and deliver the 13 buses without overtime and deliver 2 buses late.

**Additional information:**

1. The target profit margin is 20% of the target price per bus.
2. The contract allows for 92 working days without overtime for the assembly and delivery of buses and stipulates a penalty of Sh.1.5 million for each bus delivered late.
3. The time taken to complete the first bus is 10 days.
4. Direct labour cost is Sh.180,000 per day for the normal working days per month and overtime premium rate is double the normal rate.
5. Overheads will be allocated to the special order at a rate of Sh.30,000 per normal working day and no overheads will be allocated for overtime working.
6. The management accountant's estimate of direct material cost per bus is Sh.2,500,000.
7. The learning curve index at 90% learning rate is -0.152.
8. The learning curve model is in the form of  $Y = ax^b$ .

**Required:**

(a) Evaluating each scenario, advise the management on the most economical scenario using learning curve analysis. (12 marks)

(b) Using target costing approach, compute the cost savings of the most economical scenario identified in (a) above. (4 marks)

(c) Explain **FOUR** non-financial factors that may have a bearing on the decision for the special order by the management of Green Coaches Ltd. (4 marks)

**(Total: 20 marks)****QUESTION FIVE**

(a) Sanitiza Ltd. sells sanitiser bottles. The company finds that it runs out of stock on occasions and thus loses the contribution on missed sales. Sanitiza Ltd. works a five-day week for 48 weeks a year. The demand figures have been analysed for the last 20 weeks.

**Additional information:**

1. The estimated demand is 60,000 bottles per year.
2. The opportunity cost of running out of stock is Sh.55.
3. The lead-time is 5 days guaranteed.
4. The cost of holding a bottle is Sh.50 per year.
5. The number of orders per annum are 10 orders.
6. The demand figures for the last 20 weeks are as follows:

Sanitiser bottles sold	Number of days the level of sales occurred
150	7
200	14
250	35
300	35
350	28
400	14
450	7

7. At present, Sanitiza Ltd. uses a re-order level of 250 sanitiser bottles and does not carry any safety stock because of the guaranteed delivery time.

**Required:**

(i) The optimal safety stock in units. (8 marks)

(ii) The probability of being out of stock. (2 marks)

(b) Rona Enterprise manufactures three products namely; A, B and C. The current sales, cost and selling price details and processing time requirements are as follows:

The standard selling price and standard cost per unit for each product for the period ending 31 August 2023 are as follows:

	Product A	Product B	Product C
Annual sales (units)	6,000	6,000	1,000
Selling price (Sh.)	200	320	400
Unit cost (Sh.)	180	240	300
Processing time required per unit (hours)	1	1.5	2

**Additional information:**

1. The firm is working at full capacity of 17,000 processing hours per year.
2. Fixed costs are absorbed into unit cost by a charge of 200% of variable cost.
3. Processing can be switched from one product line to another.
4. The selling prices are not to be altered.
5. Information in respect to the maximum demand for each product which Rona Enterprise could alternatively outsource from an independent supplier, for the same quality, is given below at current selling prices:

Product	Expected maximum demand (Units)	Quoted price (Sh.)
A	11,000	175
B	8,000	240
C	2,000	320

6. In the period commencing 1 September 2022 and ending 31 August 2023, the company budgeted for production fixed overheads of Sh.2,000,000.

**Required:**

(i) Compute the shortfall of the limiting factor. (2 marks)

(ii) Determine the optimal production mix indicating the products and quantity to outsource from external supplier. (5 marks)

(iii) Based on your recommendations in (b) (ii) above, determine the net profit for the period 31 August 2023. (3 marks)

**(Total: 20 marks)**

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## CPA ADVANCED LEVEL

### ADVANCED MANAGEMENT ACCOUNTING

WEDNESDAY: 26 April 2023. Afternoon Paper.

Time Allowed: 3 hours.

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings. Do NOT write anything on this paper.**

#### QUESTION ONE

(a) Explain **TWO** advantages of each of the following policies as used in management accounting:

- (i) Transfer pricing policy. (4 marks)
- (ii) Economic value added (EVA). (4 marks)

(b) The following information applies to the planned operations of Venus Division of Planet Group for the next financial year:

	<b>Sh. “000”</b>
Sales revenue (100,000 units at Sh.120)	12,000
Variable costs (100,000 units at Sh.80)	<u>(8,000)</u>
Contribution	4,000
Fixed costs including depreciation	<u>(2,500)</u>
Net operating profit	<u>1,500</u>
Venus Division investment (at initial cost)	5,000

#### Additional information:

1. The target rate of return on investment is expected to be 20% per year on written down values (WDVs).
2. Planet Group is organised into profit centres and each centre manager is delegated substantial autonomy to review its operations.
3. As part of planned review operations, two scenarios are being considered for Venus division as follows:

#### Scenario A:

Venus Division to accept a special order of 20,000 units at Sh.100 from Simba Ltd, an external customer. Variable costs per unit will be the same as budgeted, but to enable capacity to increase by 20,000 units, additional investment in an extra special purpose equipment will be acquired at a cost of Sh.800,000. The equipment will have a four-year life and the Planet Group depreciates assets on a straight-line basis. No extra fixed cost will be incurred.

#### Scenario B:

Included in the current plan of operations of Venus Division is the sale of 20,000 units to Pluto Division of Planet Group. A competitor of Venus Division from external market has offered to supply Pluto Division at Sh.110 per unit. Venus Division intends to adopt a strategy of matching the price quoted from outside Planet Group in order to retain the order.

#### Required:

Calculate the annual residual income of Venus Division based on:

- (i) The original planned operation. (4 marks)
- (ii) Only scenario A added to the original plan. (4 marks)
- (iii) Only scenario B added to the original plan. (4 marks)

**(Total: 20 marks)**

## QUESTION TWO

(a) The Management Accountant of Floratec Ltd. has attended a brainstorming seminar on Environmental Management Accounting (EMA) organised to sensitise the management team on strategic goals and policies to put in place to address various environmental costs.

### Required:

For each of the environmental costs below, identify **THREE** costs to be addressed by the management team:

(i) Environmental internal failure costs. (3 marks)

(ii) Environmental external failure costs. (3 marks)

(b) Wangwana Growers Ltd., is a large-scale maize growing firm in Western region growing maize for both domestic and export market. Fred Juma, the Management Accountant, has established that there is a probability of getting a high, medium or low harvest. Fred Juma has to decide on the optimum selling price for one bag of maize and three prices are under consideration.

The selling price per bag of 90 kilograms for different types of customers is as follows:

	<b>Sh.</b>
Wholesale price	5,000
Retail price	5,500
Export price	6,000

The expected number of bags of maize to sell at three price levels for each of the above states of harvest is as shown below:

<b>Conditions</b>	<b>Decision alternative</b>		
	<b>Selling price per bag</b>	<b>Sh.5,000</b>	<b>Sh.5,500</b>
High harvest	13,000	12,500	8,500
Medium harvest	10,000	9,000	8,500
Low harvest	6,000	6,000	3,500

### Additional information:

- From past experience, there is a 10% probability that the harvest will be low, a 30% probability that the harvest will be medium and a 60 % probability that the harvest will be high.
- The estimated variable cost is Sh.3,000 per bag of 90 kilograms of maize.
- The fixed cost at each selling price level is Sh.15 million.
- Fred Juma can engage an agricultural expert to carry out a survey on the productivity of the land, which will cost him Sh.1 million.

### Required:

(i) A payoff matrix table showing the net profit. (8 marks)

(ii) The price to set to maximise the expected monetary value. (2 marks)

(iii) Advise Fred Juma whether it is worthwhile to acquire the perfect information from the agricultural expert. (4 marks)

**(Total: 20 marks)**

## QUESTION THREE

(a) Evaluate **THREE** objectives of internalised transfer pricing mechanism. (6 marks)

(b) Rapsy Stores Ltd. is open 300 days each year. The store outsources and sells a single product branded “Sola”. There is variability in lead time of each new order placed with the manufacturer, which sometimes lead to stock outs.

### The following data about Sola is available:

- Annual demand is 15,000 pairs of Sola.
- The cost price of Sola averages Sh.200 per pair.
- The fixed ordering cost of requisition is estimated to be Sh.80.
- For each pair of Sola, annual inventory holding opportunity cost of capital is 13.33% of its cost price.
- The management has determined economic order quantity based on data given above which should be used as reorder quantity.

6. The initial inventory available is 180 pairs of Sola while the reorder level is set at 50 pairs of Sola.
7. The out of stock costs amount to Sh.100 per pair of Sola units that are out of stock.
8. The customer demand is unknown. However, the total usage of Sola over the four days lead time is expected to be as follows:

Annual demand (Pairs of Sola)	Probability	Lead time (days)	Probability
30	0.2	1	0.15
60	0.3	2	0.30
90	0.4	3	0.45
120	0.1	4	0.10

9. The random numbers generated by the computer software are as follows:

**Annual demand:** 4    8    6    1    7    1    9    0    3    8  
**Lead time:**    28    10    56

**Required:**

- (i) The economic order quantity (EOQ). (2 marks)
- (ii) Simulate the inventory operation for a period of 10 days. (10 marks)
- (iii) Using the information in (b) (ii) above, estimate the average daily stockholding costs. (2 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

- (a) Explain how each of the following objectives of a balanced scorecard could be measured:

- (i) Competitive performance. (2 marks)
- (ii) Flexibility. (2 marks)
- (iii) Innovation. (2 marks)

- (b) Fixit Fabricators Ltd. has been facing a lean financial spell for the past two years. The profit has been declining steadily and the results of the preceding year showed a loss of Sh.2,000,000. This is the first time the company has reported a loss in its 10-year history.

The chairman and the board of directors have been deliberating on the remedial steps to implement to arrest the situation. Three competing proposals have been suggested by a taskforce set up some months back aimed at boosting sales and improving efficiency of operations in the current year. As a member of the taskforce, you have been invited to attend the next board meeting to deliberate on the proposals.

**The following information is available:**

1. The target profit for the current year is Sh.4,000,000 regardless of the proposal that will be adopted.
2. The company's fixed costs currently amount to Sh.20,000,000 per year.
3. The company can sell up to a maximum of 12,000 units of its product in the local market and unlimited quantities in a neighbouring country. For the sales in the local market, unit variable costs amount to Sh.5,000, while for the sales in the neighbouring country, an extra Sh.500 per unit is incurred in transportation expenses.
4. The same transfer price of Sh.10,000 normally prevails both in the local market and neighbouring country.
5. Sales for the past year amounted to 9,000 units, all in the local market.

The main requirements of the three competing proposals are as follows:

**Proposal A:** The Company should improve the quality of packaging of its products at a cost of Sh.500 per unit.

**Proposal B:** The company should spend Sh.2,000,000 on an advertising campaign.

**Proposal C:** The Company should reduce the selling price by Sh.500 per unit.

**Required:**

- (i) For proposals A, B, and C, determine the break-even point in the neighbouring country in order to achieve the target profit. (9 marks)
- (ii) Summarise **FIVE** financial factors to consider for proposal C. (5 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

(a) Orion Ltd. manufactures three products namely; P, Q and R using broadly the same production methods. A conventional product costing system is used at present to allocate all overhead costs using total direct labour hours, although an activity-based budgeting (ABB) system is being considered.

1. Details of the three products for the period is as follows:

Product	P	Q	R
Annual output (units)	2,000	1,600	400
Annual direct labour hours	200,000	220,000	80,000
Selling price per unit (Sh.)	4,000	6,000	8,000
Raw material cost per unit (Sh.)	400	600	900

2. The annual cost driver volumes relating to each activity and for each type of product are as follows:

Product	Number of deliveries to retailers	Number of set-ups	Number of purchase orders
P	100	35	400
Q	80	40	300
R	<u>70</u>	<u>25</u>	<u>100</u>
	<u>250</u>	<u>100</u>	<u>800</u>

3. The annual costs relating to these activities and their cost drivers are as follows:

	Sh.	Cost driver
Deliveries to retailers	2,400,000	Number of deliveries to retailers
Set-up costs	6,000,000	Number of set-ups
Purchase orders	3,600,000	Number of orders

4. All direct labour is paid at a rate of Sh.5 per hour. The company operates on a just in time (JIT) production policy.

**Required:**

(i) Prepare activity based budget statement for the period. (6 marks)

(ii) Compute the profit or loss per unit for each product. (4 marks)

(b) Sofaset Ltd. makes and sells executive leather chairs. The production manager is considering a new design of sofa set chair to launch into the competitive market in which they operate:

**Additional information:**

1. The production manager has carried out investigation in the market and using target costing system, he has targeted a competitive selling price of Sh.120,000 for the chair.
2. Sofaset Ltd. targets a profit margin on selling price of 20%.
3. The design frame will be bought for Sh.51,000 per chair and Sofaset Ltd. will beautify it in leather and assemble it ready for dispatch.
4. Leather costs Sh.10,000 per meter and two metres are needed for a complete chair although 20% of all leather is wasted in the beautification process.
5. The beautification and assembly process will be subjected to a learning effect as the workers get used to the new design. Sofaset Ltd. estimates that the first chair will take two hours to prepare but this will be subject to learning curve rate of 95%.
6. The learning improvement will stop once 128 chairs have been made and the time for the 128<sup>th</sup> chair will be the time for all subsequent chairs. The production manager believes that the target cost will be achieved from 128 chairs.
7. The cost of labour is Sh.15,000 per direct labour hour.
8. The learning curve index for 95% is -0.074.

**Required:**

(i) The average cost for the first 128 chairs made and identify any cost gap that may be present at that stage. (5 marks)

(ii) The cost of the 128<sup>th</sup> chair made and state whether the target cost is being achieved on the 128<sup>th</sup> chair. (5 marks)

**(Total: 20 marks)**

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## CPA ADVANCED LEVEL

### ADVANCED MANAGEMENT ACCOUNTING

**WEDNESDAY: 7 December 2022. Afternoon Paper.**

**Time Allowed: 3 hours.**

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings. Do NOT write anything on this paper.**

#### **QUESTION ONE**

(a) In the context of environmental management accounting, explain **FOUR** types of environmental costs. (8 marks)

(b) Trans Ltd. has provided the following operating statement, which represents an attempt to compare the actual performance for the quarter which has just ended with the budget:

	<b>Budget</b>	<b>Actual</b>	<b>Variance</b>
Number of units sold ("000")	<u>640</u>	<u>720</u>	<u>80</u>
	<b>Sh.“000”</b>	<b>Sh.“000”</b>	<b>Sh.“000”</b>
Sales	<u>1,024</u>	<u>1,071</u>	<u>47</u>
Cost of sales:			
Direct materials	168	144	24
Direct labour	240	288	(48)
Overheads	<u>32</u>	<u>36</u>	<u>(4)</u>
	<u>440</u>	<u>468</u>	<u>(28)</u>
Fixed labour cost	100	94	6
Selling and distribution costs:			
Fixed	72	83	(11)
Variable	144	153	(9)
Administrative costs:			
Fixed	184	176	8
Variables	<u>48</u>	<u>54</u>	<u>(6)</u>
	<u>548</u>	<u>560</u>	<u>(12)</u>
Net profit margin	<u>36</u>	<u>43</u>	<u>7</u>

#### **Required:**

(i) Using flexible budgeting approach, redraft the operating statements so as to provide a more realistic indication of the variances. (8 marks)

(ii) Discuss **TWO** problems associated with the forecasting of figures which are to be used in flexible budgeting. (4 marks)

**(Total: 20 marks)**

#### **QUESTION TWO**

(a) Lengo Ltd. is considering marketing a new product. The fixed cost of this product will amount to Sh.5,000,000. There are three uncertain factors namely; selling price, variable cost and annual sales volume.

The product has a life of only one year and the various possible levels of these factors together with estimated probabilities are given below:

<b>Selling Price</b> Sh.	<b>Probability</b>	<b>Variable cost</b> Sh.	<b>Probability</b>	<b>Annual Sales volume</b> (units)	<b>Probability</b>
400	0.3	200	0.1	40,000	0.4
450	0.5	250	0.6	50,000	0.5
500	0.2	300	0.3	60,000	0.1

**Additional information:**

1. Assume that the three factors are statistically independent.
2. The company uses cost-volume-profit (CVP) analysis to make decisions.
3. The following random numbers are provided:

• Selling price:	8	0	6	1	3	5	1	3	9	1
• Variable costs:	0	4	3	4	6	7	2	8	5	9
• Sales volume:	6	3	9	4	0	9	7	6	8	5

**Required**

Using CVP analysis criteria, simulate the problem and determine the average profits.

(10 marks)

(b) Jikaze Ltd. is organised into divisions. Divisional managers are rewarded through a remuneration package which is linked to accounting rate of return (ARR) performance measures. Venus Division of Jikaze Ltd. is currently investigating two mutually exclusive investment proposals namely MX and JX. If the proposals are viable, Venus Division wishes to assign priority in the event that funds may not be available to cover both proposals.

Details of the two mutually exclusive proposals are:

	Investment proposal	
	MX Sh. "000"	JX Sh. "000"
Initial cash outlay on non-current assets	192,000	192,000
<b>Net cash inflow:</b>		
Year 1	67,200	32,000
Year 2	67,200	64,000
Year 3	67,200	96,000
Year 4	67,200	128,000

**Additional information:**

1. The management assesses the cost of capital to the company at 16%.
2. The Accounting Rate of Return (ARR) calculation is based on the accounting profit which is computed by adding back depreciation to net cash inflow of each year.
3. Depreciation is on straight-line basis over the assets' useful life.
4. Net present value (NPV) method is used to estimate the most viable project when using project life cycle costing.
5. Ignore tax and residual value.
6. The present value interest factor (PVIF) of the proposal is as follows:

Year	1	2	3	4
Present value at 16%	0.8621	0.7432	0.6407	0.5523

**Required:**

Advise the management of Jikaze Ltd. on the most viable investment proposal using the following performance appraisal measures:

(i) Product life cycle costing. (5 marks)

(ii) Accounting rate of return (ARR). (5 marks)

**(Total: 20 marks)**

**QUESTION THREE**

(a) The complex environment in which most businesses operate today makes it virtually impossible for most firms to be controlled centrally. This is because it is not possible for central management to have all the relevant information and time to determine the detailed plans for all the organisation. Some degree of decentralisation is essential for all but the smallest firms. Organisations decentralise by creating responsibility centres.

**Required:**

In the context of the above statement, identify **FOUR** responsibility centres.

(8 marks)

(b) Maono Ltd. is investigating the financial viability of a new product branded "Zem". Product Zem is a short life product of six months.

The following estimated information is available in respect of product Zem:

1. Sales should be 10,000 units per month in batches of 100 units on a just-in-time production basis.
2. An average selling price of Sh.120,000 per batch of 100 units is expected for a six-month life cycle.
3. An 80% learning curve will apply for the six months' life-cycle period.

4. The labour requirement for the first batch in month 1 will be 500 hours at Sh.500 per hour.
5. Variable overhead will be absorbed at a rate of Sh.200 per labour hour.
6. Direct material input will be Sh.50,000 per batch of product Zem for the first 200 batches. The next 200 batches are expected to cost 90% of the initial batch cost. All batches thereafter will cost 90% of the batch cost for each of the second 200 batches.
7. Product Zem will incur directly attributable fixed costs of Sh.1,500,000 per month.
8. The initial investment for the new product will be Sh.7,500,000 with no residual value irrespective of the life of the product.
9. A target cash flow required over the life of the product must be sufficient to provide for a  $33\frac{1}{3}\%$  target return for a six-month life cycle.
10. The learning curve formula is  $Y = ax^b$

Where:  $Y$  = Cumulative average time per batch  
 $a$  = time taken to produce initial batch  
 $x$  = cumulative units of batches  
 $b$  = learning curve index

**Required:**

- (i) The learning curve index and model. (4 marks)
- (ii) Compute the cost gap or cost savings in the target cash flow of product Zem over its six-month life cycle. (8 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

Huruma Ltd. is a client of ABX National Bank. The Managing Director of Huruma Ltd. visited the bank's offices to seek for an additional line of credit. In the ensuing discussions, the bank credit officer noticed that Huruma Ltd. could save a substantial amount of money by improving on its inventory management.

The credit officer invited the Management Accountant of the company for further consultation. From the conversation, it emerged that the company holds a substantial quantity of a particular raw material in its warehouse. The Management Accountant provided the following information on the raw material:

Invoice cost per unit	Sh.1,200
Shipping charges	Sh.25 per unit plus Sh.140,000 per shipment
Inventory insurance	Sh.10 per unit per year
<b>Annual handling and inspection cost of the raw material:</b>	
Warehouse utilities	Sh.26 per unit plus Sh.150,000 per year
Warehouse rental	Sh.9,800 per month
Unloading costs for units received (paid to shipper)	Sh.115,000 per month
<b>Receiving supervisor's salary:</b>	
Processing invoices and other purchase documents	Sh.8 per unit Sh.176,000 per month Sh.1,860 per order.

The company's policy is to order 5,000 units each time and maintain a safety stock of 3,000 units. The annual demand for the raw material is 45,000 units. The lead time for an order is 10 working days.

The Management Accountant has also indicated that if there is a stock-out, it would be necessary to obtain the raw material by a special courier service at an additional cost of Sh.81,000 per stock-out.

The probabilities of a stock-out at various safety stock levels were given as follows:

Safety stock (units)	Probability for stock-out
500	0.25
1,000	0.08
1,500	0.02
2,000	0.01

**Additional information:**

1. The company's cost of capital is 10%.
2. You are advised that there are 250 working days in a year.
3. The raw material is ordered in multiples of 250 units.
4. For analysis purposes, a stock-out probability of 0.02 would be reasonable for order cost determination in an optimal inventory policy.

**Required:**

- (a) The annual cost of the company's present inventory policy. (5 marks)
- (b) Recommend an optimal order quantity for the company based on the information provided. (5 marks)

(c) Recommend an optimal safety stock level. (5 marks)

(d) Advise the management of the firm on the savings to be realised from the optimal order quantity and optimal safety stock level in (b) and (c) above. (3 marks)

(e) The reorder level for the company. (2 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

(a) Explain **THREE** conceptual differences between the following concepts as applied in strategic management for short term decision making:

- (i) Throughput accounting. (3 marks)
- (ii) Limiting factor analysis. (3 marks)

(b) Timiza Ltd. makes spectacles for a variety of customers. The spectacles pass through several production processes. The first process is fitting and the standard costs for fitting lenses on spectacles are as follows:

	<b>Standard cost per unit</b>	<b>Sh.</b>
Direct material Q	7 kilograms at Sh.70 per kilogram	490
Direct labour	5 hours at Sh.50 per hour	250
Overheads (fixed and variable)	5 hours at Sh.66 per hour	<u>330</u>
		<u>1,070</u>

**Additional information:**

1. The overhead allocation rate is based on direct labour hours and comprises an allowance for both fixed and variable overhead costs.
2. With the aid of regression analysis, the fixed element of overhead cost has been estimated at Sh.90,000 per week and the variable overhead costs have been estimated at Sh.6 per direct labour hour.
3. The fitting department comprises its own premises, and all of the department's overhead costs can be regarded as being the responsibility of divisional managers.
4. In week 5, the division casted 294 spectacles and actual costs incurred were:

	<b>Sh.</b>
Direct material Q (2,030 kilogram used)	141,250
Direct labour (1,520 hours worked)	78,540
Overhead expenditure	102,000

5. The 1,520 hours worked by direct labour included 40 hours overtime, which is paid at a rate of 50% above the normal pay rates.

**Required:**

A reconciliation statement of actual cost and the standard cost. (Show all planning and operating variances).

(14 marks)

**(Total: 20 marks)**



## CPA ADVANCED LEVEL

### ADVANCED MANAGEMENT ACCOUNTING

WEDNESDAY: 3 August 2022. Afternoon paper.

Time Allowed: 3 hours.

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings. Do NOT write anything on this paper.**

#### QUESTION ONE

(a) The effective use of the control information provided by the management accounting department of an organisation to the operating managers depends on various factors.

Explain four actions that the management accounting department might take to enhance the effective use of the above information by the operating managers. (4 marks)

(b) Describe three negative side effects which might arise from the imposition of budgets by senior management and propose ways to deal with them. (6 marks)

(c) Many key business performance measures are not effective for most not-for-profit organisations (NPOs). For instance, the “bottom line” measurement of profit or loss indicates how effective a business is at achieving its goals of generating profit for the owners.

However, generating profit is not a goal for NPOs. These organisations have no owners, often provide goods and services to constituents free of charge and typically seek resources from people and organisations that do not expect economic benefit in return. Thus, the bottom line does not work for NPOs.

#### Required:

In the context of the above statement, evaluate four factors that make planning for NPOs complex. (8 marks)

(d) Explain the following measures of divisional performance:

(i) Return on capital employed. (1 mark)

(ii) Residual income. (1 mark)

**(Total: 20 marks)**

#### QUESTION TWO

(a) The Diamond division of a retailing group has five years remaining on a lease for premises in which it sells self-assembly furniture. The management is considering the investment of Sh.600,000 on immediate improvements to the interior of the premises in order to stimulate sales by creating a more fascinating selling environment.

The following information is available:

1. The forecast of the increase in sales revenue per annum from the premises is as follows:

Year	Sales revenue Sh.“000”
2022	700
2023	600
2024	500
2025	400
2026	300

2. The average contribution to sales ratio is expected to be 40%.

3. The cost of capital is 16% on the net book values of the investment at the beginning of the year.

4. At the end of the five-year period, the premises improvements will have nil residual value.

5. Depreciation is charged on straight line basis.

6. The Diamond division has a target return on capital employed of 20%.

**Required:**

Prepare summary performance statement for the years 2022 to 2026 showing:

(i) Residual income (RI). (7 marks)

(ii) Return on investment (ROI). (7 marks)

(b) A manufacturing company produces Ball Pens that are printed with logos of various companies. Each pen is priced at Sh.50. Production costs are as follows:

Cost driver	Variable cost per unit	Level of cost driver
	Sh.	
Units sold	25	-
Set ups	225	40
Engineering hours	10	250
Other data:		
Total fixed costs (conventional costing)	Sh.48,000	
Total fixed costs (activity based costing)	Sh.36,500	

**Required:**

Compute the break-even point using Activity Based Analysis.

(6 marks)

**(Total: 20 marks)**

**QUESTION THREE**

(a) Division X is a profit centre which produces four products namely; A, B, C and D. Each product is also sold in the external market.

The data for the period ended 30 June 2022 is as follows:

	Product			
	A	B	C	D
Market price per unit (Sh.)	150	146	140	130
Variable cost of production per unit (Sh.)	130	100	90	85
Labour hours required per unit	3	4	2	3

**Additional information:**

- Product D can be transferred to Division Y, but the maximum quantity that may be required for transfer is 2,500 units only.
- The maximum sales in the external market are as follows:

	Units
A	2,800
B	2,500
C	2,300
D	1,600

- Division Y can purchase the same product at a price of Sh.125 per unit from external suppliers instead of receiving transfer of product D from Division X.

**Required:**

The transfer price for each of the 2,500 units of product D, if the total labour hours available in Division X are 20,000 hours. (10 marks)

(b) A hotel with 50 single rooms is recording 80% occupancy in normal season (8 months) and 50% occupancy in off-season (4 months) in a year.

The following information is provided:

Annual fixed expenses:	Sh.
Staff salaries (excluding room attendants)	7,500,000
Repairs and maintenance	2,600,000
Depreciation on buildings and furniture	2,400,000
Other fixed expenses like dusting and sweeping	3,250,000
Total	<u>15,750,000</u>

Variable expenses (per guest per day):	Sh.
Linen and laundry	300
Electricity and other facilities	200
Miscellaneous expenses	250

The management wishes to realise a profit of 25% on total cost.

Assume a 30 day month in all cases.

**For Solutions/Answers WhatsApp: 0724 962 477**

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**Required:**

(i) The required tariff rate per room. (4 marks)

(ii) The break-even occupancy in normal season assuming 50% occupancy in off-season. (3 marks)

(iii) The management is proposing a 20% decrease in tariff to improve occupancy at 100% and 70% in normal season and off-season respectively.

Advise on the appropriateness or otherwise of the above proposal. (3 marks)

**(Total: 20 marks)****QUESTION FOUR**

(a) Explain three areas where environmental management accounting (EMA) might be applied. (3 marks)

(b) Mwamba County water-treatment plant purchases 100 kgs of lime bags for use in the water treatment process. The number of bags used per day varies on the basis of water consumption. Examination of past records discloses the following data:

Usage during past re-order period	Number of times this quantity was used
-----------------------------------	--

Number of bags
----------------

225	9
300	15
375	20
450	3
525	2
600	1

The economic order quantity (EOQ) has been established at 2,500 units with an average daily usage of 25 bags and a lead time of 15 days for its single product X.

**Additional information:**

- Stock-out cost is Sh.300 per bag.
- The optimum number of orders based on the EOQ model is 6 times per annum.
- The normal carrying cost is Sh.50 per bag.

**Required:**

Advise the management accountant of Mwamba County on the desired level of safety stock in order to minimise the total inventory cost. (6 marks)

(c) Ukunda Ltd. operates a standard marginal cost accounting system. Information relating to product Jipe, which is made in one of the company's departments, is given below:

Product Jipe	Standard marginal cost per unit
	Sh.
Direct materials: 6 kgs at Sh.40 per kg	240
Direct labour: 1 hour at Sh.70 per hour	70
Variable production overhead	<u>30</u>
	<u>340</u>

**Additional information:**

- Variable production overheads vary with units produced.
- Budgeted fixed production overhead per month amount to Sh.1,000,000.
- The budgeted production for product Jipe amounted to 20,000 units per month.
- Actual production and costs for the month of June 2022 were as follows:

Number of units of product Jipe produced	18,500
	Sh.
Direct materials purchased and used (113,500 kgs)	4,426,500
Direct labour (17,800 hours)	1,299,400
Variable production overheads incurred	588,000
Fixed production overhead incurred	<u>1,040,000</u>
Actual production cost	<u>7,353,900</u>

**Required:**

Prepare in columnar form a statement showing:

- (i) Original budget by element of cost. (2 marks)
- (ii) Flexed budget by element of cost. (2 marks)
- (iii) Actual production statement by element of cost. (2 marks)
- (iv) A reconciliation of the actual production cost with the budgeted production cost. (5 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

(a) The table below shows Safaris Airline Ltd.'s framework to lay out its balanced scorecard model:

Balanced scorecard perspective	Objectives	Measurements	Target	Initiative
S1	<ul style="list-style-type: none"> <li>• Profitability</li> <li>• More customers</li> </ul>	<b>M1</b> Seat revenue	30% profit margin	<b>J</b>
	<ul style="list-style-type: none"> <li>• Fewer planes</li> </ul>	Plane lease cost	20% customer retention 5% drop in cost	
S2	<ul style="list-style-type: none"> <li>• Flight is on time</li> <li>• Lowest prices</li> </ul>	Arrival on time <b>M2</b>	Best ranked	Quality management customer loyalty programme
S3	<ul style="list-style-type: none"> <li>• Fast ground turnaround</li> </ul>	On ground time On time departure	30 minutes	<b>K</b>
S4	<ul style="list-style-type: none"> <li>• Ground crew alignment</li> </ul>	% Ground crew trained	Year 1: 70% Year 2: 90% Year 5: 100%	- ESOPS - Ground crew training

**Required:**

- (i) Identify the balanced scorecard perspectives S1, S2, S3 and S4 above. (4 marks)
- (ii) For the mentioned perspectives, state one performance measure labelled M1 and M2. (2 marks)
- (iii) Explain initiatives J and K that Safaris Airlines Ltd. should excel in, in order to meet objectives and create value. (2 marks)

(b) Moran Ltd. has established the following standard mix of producing 9 litres of product "MRN":

	Sh.
5 litres of material M at Sh.7 per litre	35
3 litres of material R at Sh.5 per litre	15
2 litres of material N at Sh.2 per litre	4

Actual input was as follows:

	Sh.
53,000 litres of material M at Sh.7 per litre	371,000
28,000 litres of material R at Sh.5.30 per litre	148,400
19,000 litres of material N at Sh.2.20 per litre	41,800

**Additional information:**

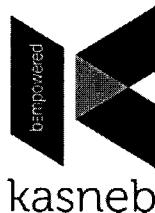
1. A standard loss of 10% of the input is expected to occur.
2. Actual output for the period was 92,700 litres of product MRN.

**Required:**

Compute and interpret the following variances:

- (i) Material price variance. (3 marks)
- (ii) Material mix variance. (3 marks)
- (iii) Material yield variance. (3 marks)
- (iv) Material usage variance. (3 marks)

**(Total: 20 marks)**



## CPA ADVANCED LEVEL

### ADVANCED MANAGEMENT ACCOUNTING

**WEDNESDAY: 6 April 2022. Afternoon paper.**

**Time Allowed: 3 hours.**

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings. Do NOT write anything on this paper.**

**QUESTION ONE**

(a) In control theory, a “feedback control” mechanism is the one which supplies information to determine whether corrective action should be taken to re-establish control of a system.

In the context of the above statement, distinguish between “feedforward” and “feedback” controls giving an example of each as used in management accounting. (4 marks)

(b) Jumbo Ltd. is proposing to introduce to the market a home security appliance system. It has three different possible models; Micro, Basic and Macro which vary in sophistication and complexity, but currently the company has capacity to manufacture only one model. An analysis of the probable acceptance of the models has been carried out and the resulting profit estimated. The results are as follows:

Model acceptance	Acceptance Probability	Profits (Sh.“000”)		
		Micro	Basic	Macro
Excellent	20%	60	100	120
Moderate	50%	40	60	80
Poor	30%	20	0	-40

The Finance Director of Jumbo Ltd. estimates the utilities for various sums of money from Sh.-40,000 to Sh.120,000 as follows:

Monetary value (Sh. “000”)	-40	-20	0	20	40	60	80	100	120
Utility	0	0.20	0.37	0.52	0.65	0.78	0.89	0.96	1.00

**Required:**

Using scenario analysis, determine which model should be introduced to the market under:

(i) Maximisation of expected monetary value. (3 marks)

(ii) The criterion of maximisation of expected utility. (3 marks)

(c) Compute the maximisation value payable to acquire perfect information under (b) above. (3 marks)

(d) BB Ltd. sells two types of products branded “D” and “A”. The Financial Controller has prepared the following information based on the sales forecast for the period:

Product	D	A	Total
Sales volume (units)	1,200	600	
	Sh.	Sh.	Sh.
Unit selling price	300	200	
Unit variable cost	150	110	
Unit contribution	150	90	
Total sales revenue	360,000	120,000	480,000
Less: Total variable costs	180,000	66,000	246,000

Product	D Sh.	A Sh.	Total Sh.
Contribution to direct and common fixed costs	180,000	54,000	234,000
Less: Direct avoidable fixed costs	<u>90,000</u>	<u>27,000</u>	<u>117,000</u>
Operating profit	<u>90,000</u>	<u>27,000</u>	117,000
Less: Common indirect fixed costs			<u>39,000</u>
Operating profit			<u>78,000</u>

The common fixed costs relate to the costs of common facilities and can only be avoided if neither of the products is sold. The Managing Director is concerned that the sales may be less than forecast and has requested information relating to the break-even point for the period.

**Required:**

The break-even point of the two products in units and sales value if they are sold in the:

(i) Original sales mix. (4 marks)

(ii) Sales mix of 1:1 (3 marks)

**(Total: 20 marks)**

**QUESTION TWO**

(a) Zinc Ltd. is a local manufacturer of three products namely; Exe, Wye and Zed.

The management of the company is unhappy with the current production mix and is seeking advice on the most optimal arrangement. The current production is 10,000 units of Exe, 5,000 units of Wye and 6,000 units of Zed.

The Management Accountant has provided the following information relating to the three products:

Details	Product		
	Exe Sh.	Wye Sh.	Zed Sh.
Selling price per unit	1,200	2,000	2,250
<b>Production costs per unit:</b>			
Direct materials	300	900	600
Variable overheads	150	400	450

**Additional information:**

1. Each type of product passes through three departments in which a different type of labour is used. The labour requirements in each department are given below:

Department	Rate per hour Sh.	Labour requirements per unit (hours)		
		Exe	Wye	Zed
1	20	3	4	6
2	40	1	2.5	4
3	30	5	7	9

2. There is a shortage of labour in department 2 and it is not possible to increase labour input hours beyond the level currently utilised.

3. Fixed overheads are budgeted at Sh.5,000,000 per annum and are expected to remain constant.

4. A recent market survey disclosed that the maximum sales potential for the company is 12,500 units of Exe, 7,500 units of Wye and 8,000 units of Zed.

**Required:**

Advise the management of Zinc Ltd. on the most profitable production mix and optimal profit using:

(i) Limiting factor analysis. (8 marks)

(ii) Throughput accounting. (6 marks)

(b) Describe three assumptions of the learning curve theory. (3 marks)

(c) Explain three characteristics of the Just-in-Time (JIT) inventory system. (3 marks)

**(Total: 20 marks)**

### QUESTION THREE

(a) Majimbo Ltd. has two Divisions; A and B whose respective performance is under review. Division A is currently earning a profit of Sh.35 million and has net assets of Sh.150 million. Division B currently earns a profit of Sh.70 million with net assets of Sh.325 million. Majimbo Ltd. has a current cost of capital of 15%.

**Required:**

(i) Using the information above, calculate the return on investment and residual income for each of the two divisions under review and comment on your results. (8 marks)

(ii) State which method of performance evaluation (Return on investment or Residual income) would be more useful when comparing divisional performance and why. (2 marks)

(b) Dominion Beverages Ltd. makes and sells two beverage products branded "Bingo" and "Boost".

The budgeted sales and profits for the year 2021 were as follows:

Product	Sales quantity (Units)	Revenue (Sh.)	Costs (Sh.)	Profit (Sh.)
Bingo	400	8,000	6,000	2,000
Boost	300	12,000	11,100	<u>900</u>
				<u>2,900</u>

Actual sales were as follows:

Bingo 280 units with a profit of Sh.5.30 per unit.  
Boost 630 units with a profit of Sh.2.80 per unit.

The company management is able to control the relative sales of each product through the allocation of sales effort, advertising and sales promotion expenses.

**Required:**

Calculate and interpret the following variances:

(i) Sales margin price variance. (2 marks)

(ii) Sales margin volume variance. (2 marks)

(iii) Sales margin mix variance. (2 marks)

(iv) Sales margin quantity variance. (2 marks)

(v) Sales margin total variance. (2 marks)

**(Total: 20 marks)**

### QUESTION FOUR

(a) Evaluate three benefits of life cycle costing. (6 marks)

(b) Magunga Ltd. has two divisions, namely; division A and division B. Division A produces Product X which it sells to external market and also to Division B. Divisions in Magunga Ltd. are treated as profit centres and they are given autonomy to set transfer prices and choose their suppliers. The performance of each division is measured on the basis of the target profit given for each period.

Division A can produce 100,000 units of Product X at full capacity. Demand for Product X in the external market is 70,000 units only at a selling price of Sh.250 per unit. To produce Product X, division A incurs Sh.160 as variable cost per unit and total fixed overheads of Sh.4,000,000. Division A has employed Sh.12,000,000 as working capital which is financed by a cash credit facility provided by its lender bank at the rate of 11.5% per annum. Division A has been given a profit target of Sh.2,500,000 for the year. Division B has found two other suppliers; C Ltd. and H Ltd. who agreed to supply Product X. Division B has requested a quotation for 40,000 units of Product X from Division A.

**Required:**

(i) Determine the transfer price per unit of Product X that Division A should quote in order to meet the target profit for the year. (8 marks)

(ii) Calculate the price that Division A should quote to Division B if Magunga Ltd.'s policy was to quote transfer prices based on opportunity cost. (6 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

(a) Kitchen Masters Ltd. (KML) is a grocery and general merchandise retail group. KML has supermarkets located in most towns and cities in its home country. Over the last few years, profits have fallen and KML has recognised that it has paid insufficient attention to customer care.

KML has now realised the importance of the customer experience at its supermarkets. In an attempt to earn the loyalty of its customers, KML has introduced a loyalty card scheme that rewards customers with discount vouchers based on their spending and buying patterns at supermarkets.

The management of KML is considering the introduction of a balanced scorecard approach to manage the performance of its stores.

**Required:**

Recommend an objective and suitable performance measure for each of the three non-financial perspectives of a balanced score card that KML could use to support its new strategy of improving customer experience.

Note: In your answer, you should state the three perspectives and then recommend with reasons, an objective and a performance measure for each one of the three perspectives. (9 marks)

(b) Rigid Ltd. prepared fixed and flexible budgets for the financial year 2020/2021 as provided below:

	<b>Fixed budget for full capacity</b>	<b>Flexible budget for 75% level</b>
	Sh.	Sh.
Sales	1,350,000	1,012,500
Direct materials	425,000	318,750
Direct labour	185,000	138,750
Variable overheads	215,000	161,250
Semi variable overheads	<u>365,000</u>	<u>323,750</u>
Profit	<u>160,000</u>	<u>70,000</u>
Profit		

After the closing of the financial year 2020/2021, the total actual sales stood at Sh.1,107,000 and there was a favourable sales price variance of Sh. 27,000.

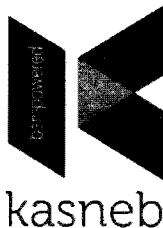
**Required:**

Prepare a flexible budget for the actual level of sales.

(11 marks)

**(Total: 20 marks)**

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## CPA ADVANCED LEVEL

### ADVANCED MANAGEMENT ACCOUNTING

**FRIDAY: 17 December 2021.**

**Time Allowed: 3 hours.**

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.**

#### **QUESTION ONE**

(a) A company expects to sell 1,000 units per month of a newly launched product but there is uncertainty as to both the unit selling price and the unit variable cost. The company has set a target minimum profit of Sh.85,000 per month. The following estimates of selling price, variable cost and their related probabilities are provided:

Selling price per unit Sh.	Probability	Variable cost per unit Sh.	Probability
200	0.25	80	0.20
250	0.40	100	0.50
300	0.35	120	0.30

There are specific fixed costs of Sh.50,000 per month expected for the new product.

**Required:**

(i) Expected monthly profit from the new product. (2 marks)

(ii) Probability of the company achieving its profit target. (6 marks)

(b) Babycom Ltd. produces and sells four types of dolls for children. The company also produces and sells a set of dress kit for the dolls.

The following estimates for the next financial year have been provided:

Doll type	Estimated demand Units	Standard material cost Sh.	Standard labour cost Sh.	Estimated sale price per unit Sh.
A	50,000	20	15	60
B	40,000	25	15	80
C	35,000	32	18	100
D	30,000	50	20	120
Dress kit	200,000	15	5	50

**Additional information:**

1. To encourage the sale of dress kits, a discount of 20% in its price is offered if it were to be purchased along with the doll. It is expected that all the customers buying the dolls will also buy the dress kit.
2. The company's factory has effective capacity of 200,000 labour hours per annum on a single shift basis and it provides all the products on that basis.
3. The labour hour rate is Sh.15 while overtime of labour has to be paid at double the normal rate.
4. Variable costs are at 40% of direct labour cost.
5. Fixed costs are estimated at Sh.3,000,000.

**Required:**

(i) Expected contribution from the four types of dolls and the dress kit. (8 marks)

(ii) The net profit for the organisation as a whole. (4 marks)

**(Total: 20 marks)**

**QUESTION TWO**

(a) Explain the following terms as used in strategic management accounting:

- (i) Life-cycle costing. (3 marks)
- (ii) Target costing. (3 marks)

(b) A plastic moulding company recycles plastic waste to produce plastic chairs. The company has received a three-year contract for the supply of a new model of chairs to be sold by Tumani Supermarket Ltd. through a chain of retail shops.

The following data relate to the cost estimates for the new model of chairs.

	<b>Sh.</b>
Plastic waste cost per chair	300
Labour cost per hour	200
Fixed overheads per year	1,250,000
Capital investment	1,600,000

**Additional information:**

1. The estimated time to produce the first chair is 10 hours.
2. It is estimated that a learning curve effect of 90% on labour to produce the chairs will be experienced.
3. The contract requires skilled labour that cannot be increased above the currently available hours. The available hours will produce 5,000 chairs for the first year.
4. Assume that an equilibrium of labour hours in the first year will be available in both year 2 and year 3.
5. The selling price per chair is set at Sh.900.
6. All cash flows occur at the year end while the initial investment is incurred at the start of year 1.
7. The capital investment has a nil salvage value at the end of the contract period.
8. The company has a cost of capital of 12%.

**Required:**

- (i) Using the Net Present Value (NPV) of the contract, advise the management of the company on whether to accept or reject the contract. (10 marks)
- (ii) State four other factors that the management of the company should consider before making the decision in (b) (i) above. (4 marks)

**(Total: 20 marks)**

**QUESTION THREE**

(a) Summarise the components of time series. (4 marks)

(b) BZK Ltd. is a manufacturing company based in Africa.

The company has presented the following data relating to its production in the last two years for each quarter:

Year	Quarter	Quarter number	Units produced
2019	1	1	2,000
	2	2	2,500
	3	3	3,000
	4	4	6,000
2020	1	5	5,000
	2	6	4,000
	3	7	6,000
	4	8	10,000

The trend equation for the number of units produced has been estimated as follows:

$$X = 3,800 + 1,000Q$$

Where; X represents units produced per quarter.  
Q represents the quarter number

The company's Management Accountant has established the following relationships between the quarterly costs and output based on the data collected in the last two years.

Cost item	Relationship
Office rent	$TC = 500,000$
Office salaries	$TC = 200,000 + 2x$
Fuel cost	$TC = 45,000 + 6x$
Transport wages	$TC = 62,000 + 8x$
Sundry costs	$TC = 29,965 + x$

Where; TC represents the total cost per quarter

x represents the number of units produced per quarter

**Required:**

- (i) Using multiplicative time series model and least squares method for the trend, forecast the number of units to be produced in each of the quarters of the year 2021. (10 marks)
- (ii) Using your answer in (b) (i) above and the cost relationship equations, determine the expected cost for each item of cost and the total cost to be incurred in the fourth quarter of the year 2021. (3 marks)
- (iii) Establish the 95% confidence interval for the total cost obtained in (b) (ii) above given that the standard error of estimate is Sh.122,599 and t - value is 2.447. (3 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

(a) Discuss the following types of inventory models:

- (i) Deterministic models. (3 marks)
- (ii) Stochastic models. (3 marks)

(b) A wholesaler is worried about the uncertainty of demand and lead time of the following stock items:

1. **Stock item X**  
The weekly demand for the item is 200 units, with a normally distributed demand with a standard deviation of 30 units and a lead time of 16 weeks.
2. **Stock item Y**  
It has a daily demand of 50 units with a lead time that is normally distributed with a mean of 20 days and a standard deviation of 2 days. The re-order level of the stock item has been set at 1,100 units.
3. **Stock item Z**  
The item is ordered every 6 months. The lead time is 3 months and demand is normally distributed with a mean of 1,000 units per month and a standard deviation of 80 units. The cost of stock-out is Sh.80 and the cost of holding one unit of buffer stock is Sh.20 per annum.

**Required:**

- (i) The re-order level of stock item X that would restrict the probability of a stock out at 5% during a single re-order period. (4 marks)
- (ii) The probability of a stock out of item Y during a single re-order period. (4 marks)
- (iii) The total annual cost of holding safety stock and stock out cost if re-order level is set at 3,600 units. (6 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

(a) Business organisations especially the manufacturing firms are required to factor in environmental concerns in their decision making.

**Required:**

Analyse four ways of aligning business operations with environmental issues. (8 marks)

(b) You are the management accountant of Zeta Ltd.

The following computer printout shows details relating to budgeted and actual production for the month of July 2021:

	<b>Actual</b>	<b>Budgeted</b>
Sales volume (units)	4,900	5,000
Selling price per unit (Sh.)	150	140
Production volume (units)	5,400	5,000
Direct materials (kilograms)	10,600	10,000
Direct materials price per kilogram (Sh.)	6	5
Direct labour hours per unit	5.5	5.0
Direct labour rate per hour (Sh.)	11.4	12
Fixed production overheads (Sh.)	103,000	100,000
Variable production overheads at Sh.8 per direct labour hour (Sh.)	215,000	200,000

**Additional information:**

1. Zeta Ltd. uses a standard absorption costing system.
2. There was no opening or closing work in progress.

**Required:**

Prepare a statement which reconciles the budgeted profit with actual profit for the month of July 2021. (12 marks)

**(Total: 20 marks)**



## CPA ADVANCED LEVEL

### PILOT PAPER

#### ADVANCED MANAGEMENT ACCOUNTING

December 2021.

**Time Allowed: 3 hours.**

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.**

#### QUESTION ONE

(a) The following regression equation depicting the cost behavior of factory overheads and machine hours was developed from 15 pairs of observations using the least – squares method of regression.

$$F = 12,000 + 40M$$

Where: F = Total monthly factory costs, and

M = Machine hour per month.

Regression sum of squares = 41,437,500

Residual sum of squares = 7,312,500

**Required:**

- (i) List the assumptions made in regression analysis to validate inference made on the population. (4 marks)
- (ii) Calculate both the coefficients of determination and correlation and interpret your results. (4 marks)
- (iii) Determine the 95% confidence interval for the true factory overheads given that 900 machine hours are to be used during the month. (t value = 2.1604). (4 marks)

(b) Waka Ltd. reported a pre-tax operating income of Sh.21,000,000 for the year 2019. This was after charging Sh.4,000,000 for development and launch cost of a new product that is expected to generate profits for 4 years. Corporation tax is paid at the rate of 30% of the operating profit. The company has a risk-adjusted Weighted Average Cost of Capital (WACC) of 12% p.a and is paying interest at 9% p.a on a substantial long term loan (not charged as an expense in the operating income above).

The company's non-current assets value is Sh. 50,000,000 and the net current assets have a value of Sh. 22,000,000. The replacement cost of the non-current assets is estimated to be Sh. 64,000,000

**Required:**

- (i) Calculate the company's economic value added for the period. (4 marks)
- (ii) Calculate the company's residual income. (4 marks)

**(Total: 20 marks)**

#### QUESTION TWO

(a) Evaluate how balanced scorecard may assist in the performance management process. (6 marks)

(b) Kenpoly Plastic Recyclers Ltd. has won a 3-year contract to supply a new model of chairs to Minimart Supermarket for sale.

The following data relate to the cost estimates for the new model of chairs.

Details	Sh.
Material cast per chair	250
Labour cost per hour	80
Fixed overheads per annum	300,000
Capital investment	830,000

**Additional information:**

1. The contract requires skilled labour that cannot be increased above the currently available hours. It is estimated that the available labour time will allow 5,000 chairs to be produced in the first year.
2. The estimated time to produce the first chair is 10 hours.
3. It is estimated that a learning curve effect for labour to produce the chairs will be 85%.
4. The selling price per chair is fixed at Sh.430.
5. Assume that an equilibrium of labour hours in year one will be available in each of the years two and three.
6. All cash flows occur at the end of the year apart from capital investment which occurs at the beginning of year one.
7. The capital investment has a nil salvage value at the end of the period and the cost of capital is 12%.

**Required:**

- (i) The net present value of the contract. Advise the management of Minimart Supermarket on whether to accept or reject the contract. (10 marks)
- (ii) State other factors that the management of Minimart Supermarket should consider before making the decision in (i) above. (4 marks)

**(Total: 20 marks)**

**QUESTION THREE**

- (a) Explain the role of strategic planning in performance management. (3 marks)
- (b) Amadi hospital is organised into separate medical units offering specialized nursing care services such as maternity and pediatric services. Information for pediatric unit for 2020 has just been availed. Revenue earned was Sh. 4,400,000 and patients were charged a fee of Sh.2,000 per patient day for nursing care. The cost of running the unit consists of variable costs on catering and laundry services. These are based on the number of patient days spent in the hospital, direct staffing costs established from personnel requirements applicable to particular levels of patient days and allocated fixed costs such as security and administration that are based on bed capacity. The bed capacity currently stands at 80 beds.

The number of beds available for occupation is regarded as bed capacity and which is agreed and held constant for the whole year. There was an agreement that a bed capacity of 80 would apply to the pediatric for the 365 days of the year.

The table below shows the variable cost information in the pediatric unit based on patient days in 2020:

	Sh.
Catering	4,500,000
Laundry	1,500,000
Pharmacy	<u>5,000,000</u>
	<u>11,000,000</u>

Staffing cost: Each specialty recruits its own nurses, supervisors and assistants. The staffing requirements for the pediatric unit is on the actual patient days.

Patient days p.a	Supervisors	Nurses	Assistants
Upto 20,500	4	10	20
20,501 – 23,000	4	13	24
Over 23,000	4	15	28

The annual costs of employment per employee are:

Sh.

Supervisors	220,000
Nurses	160,000
Assistants	120,000

Fixed costs based on bed capacity are:

	<b>Sh.</b>
Administration	8,500,000
Security	800,000
Rent and property	<u>7,200,000</u>
	<u>16,500,000</u>

During the year 2020, the pediatric unit operated at 100% bed capacity for 100 days. In fact, the demand was at least 20 beds more than the capacity during these days. As a consequence, in the 2021 budget, an increase in bed capacity has been agreed. 20 extra beds will be contracted for the whole year. It is assumed that the 100 beds will be fully occupied for the 100 days. An increase of 10% in employment costs due to a rise in wage rate is expected to occur in 2021 for all personnel. The revenue per patient day, all other cost factors and the remaining occupancy will remain the same as 2020.

**Required:**

- (i) Determine the actual number of patient days, bed occupancy percentage, net profit or loss and break even number of patient days for the year 2021. (7 marks)
- (ii) Prepare the budget for 2021 showing the revised number of patient days, bed occupancy percentage, net profit or loss and the number of patient days required to achieve the same profit or loss in 2019. (8 marks)
- (iii) Advice the unit manager based on your findings in b(i) and (ii) above. (2 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

Ornella distributors are specialists in the distribution of a detergent manufactured by SP Chemicals Ltd. The company buys the detergent from SP Chemicals Ltd. at Sh.160 per litre for distribution purposes. However, this has been a controversial issue and the management of the company has sought your expert advice on the following stock control policies:

- (a) There is a recommendation by the Managing Director (MD) that applying the economic order quantity (EOQ) model is the only optimal way of improving the stock holding policy. The company's annual demand is estimated to be 432,000 litres which the MD assumes to be evenly distributed over 330 working days in a year. The cost of delivery is estimated to be Sh. 6,000 per order and the annual variable holding cost per litre at Sh. 2.4 plus 1% of the purchase price. The company's policy is to order 20,000 litres each time and the lead time for an order is 3 working days.

**Required:**

- (i) Calculate the EOQ, frequency of ordering and any annual cost savings if the company abandons the present inventory policy for the EOQ model. (6 marks)
- (ii) The supplier has intimated that he will offer quantity discounts on purchases of quantities above 20,000 as follows:

20,001 – 37,000 litres	Sh.150 per liter
37,001 litres and above	Sh.140 per litre

Advice the distributor on the most optimal inventory policy. (4 marks)

- (b) The company's finance director (FD) points out that demand within the ten days' lead time has not been entirely even over the past year causing stock outs. In case of a stock-out, it would be necessary to obtain the detergent by a special courier service at an additional cost of Sh.10 per litre. In this regard, he has given the frequency of the lead time demand over the last year as follows:

Lead time demand per day (No. of litres)	Frequency	Probability
---	-----------	-------------

1,700	2	0.02
1,500	10	0.10
1,400	20	0.20
1,300	30	0.30
1,100	25	0.25
1,000	13	0.13

**Required:**

- (i) Assuming that the stock out cost is reliable and that the order quantity will be constant for all the orders in a year, calculate the safety stock level the company should maintain throughout. (6 marks)
- (ii) Assuming that stock out cost is unreliable but the management have established a service level of 90% that stock will always be available, calculate the optimal safety stock level. (4 marks)

**NB: Ignore the supplier's quantity discount offer.**

**(Total: 20 marks)**

**QUESTION FIVE**

Holiday Tours sells tours packages to Dubai through newspaper advertisements. Tourists are flown each week of the holiday season to Dubai where they take a 10-days touring holiday. The company uses the least squares regression to forecast the demand for holidays by locals.

As the newly employed management accountant of the company, you just found the following regression model to estimate the holiday demand per year;  $Y = 640 + 40t$

Where, Y represents the annual holiday demand and t represents the year.

The data started with 2011 as year 1. To obtain the weekly holiday demand, the results are divided by 25 holiday weeks in a year.

**Required:**

- (a) Using the least squares regression model above, estimate the weekly holiday demand for 2019. (2 marks)
- (b) Identify three weaknesses of the least square regression. (3 marks)
- (c) The fixed budget and actual cost for the 10-day happy holiday for the year ended 31<sup>st</sup> December 2021 is given below:

Details	Fixed budget	Actual	Variance
Air tickets	2,800,000	2,920,000	120,000 A
Coach bus hire	100,000	80,000	20,000 F
Room charges	1,000,000	1,020,000	20,000 A
Meals	480,000	440,000	40,000 F
Tour guide charges	360,000	330,000	30,000 F
Advertising	400,000	350,000	50,000 F
Total cost	<u>5,140,000</u>	<u>5,140,000</u>	0

Key: A represents adverse while F represents favorable results.

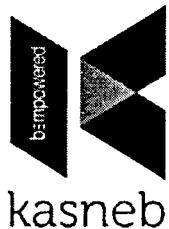
The finance manager availed the following additional information:

1. Each holiday lasts for 10 days with full accommodation.
2. The return air ticket is Sh.70,000 per passenger on condition that booking is done in batches of 20 seats.
3. The hiring charges for coach bus, tour guide and advertisement are fixed.
4. Meal cost was budgeted at Sh.1,200 per guest per day.
5. Charges for single room was budgeted at Sh.3,500 while for double room at Sh.5,000 per guest per day. Out of the 38 guests who travelled for the holiday, 4 booked single rooms while 17 booked double rooms.
6. The price of a holiday is Sh.10,000 more if one books a single room.

**Required:**

- (i) Prepare a flexible budget and identify any resulting variances. (10 marks)
- (ii) Explain which one between the fixed and flexible budgets is more useful for cost management. (2 marks)
- (iii) Identify three factors to consider in deciding whether or not to investigate individual variances. (3 marks)

**(Total: 20 marks)**



## CPA PART III SECTION 5

### ADVANCED MANAGEMENT ACCOUNTING

**WEDNESDAY: 1 September 2021.**

**Time Allowed: 3 hours.**

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.**

#### **QUESTION ONE**

(a) Explain the term "responsibility accounting". (2 marks)

(b) Examine four advantages of responsibility accounting. (8 marks)

(c) The divisional managers of Lenga Juu Ltd., a medium-sized company are usually evaluated and those with outstanding performance rewarded on an annual basis. The divisional manager of KT division is faced with the following mutually exclusive investments:

	<b>Project A</b>	<b>Project B</b>
	Sh.	Sh.
Initial capital outlay	8,000,000	8,120,000
Net cash flows:		
<b>Year</b>		
2022	3,620,000	4,260,000
2023	3,620,000	3,580,000
2024	3,620,000	2,640,000
2025	3,620,000	2,100,000

#### **Additional information:**

1. The initial capital outlay is to be amortised evenly over the projects' lives.
2. The initial outlay is to be made on 1 January 2022.
3. The company's required rate of return is 18%.
4. All cash flows accrue evenly throughout the year.
5. Assets are valued at the net book value at the beginning of each year in determining the divisional returns.
6. Both projects A and B are expected to have nil residual value.
7. Ignore taxation.

#### **Required:**

(i) Using the average residual income method of project evaluation, advise the management on the project to select. (5 marks)

(ii) Determining the average return on investment, advise the management on which project to select. (5 marks)

**(Total: 20 marks)**

#### **QUESTION TWO**

(a) Highlight four limitations of the learning curve theory as a tool for cost estimation and forecasting. (4 marks)

(b) Safi Ltd. manufactures and markets automatic dish-washing machines. Among the components which it purchases each year from external suppliers for assembly into finished article are new window units, of which it uses 20,000 units per annum. It is considering buying in bulk in order to claim quantity discounts. This will lower the number of orders placed but raise the administrative and other costs of placing and receiving orders. The details of actual and expected ordering costs and carrying costs are given below:

	<b>Actual</b>	<b>Proposed</b>
Ordering costs per order (O)	Sh.31.25	Sh.120
Purchase cost per item (P)	Sh.6.25	Sh.6.0
Annual Inventory holding cost as a percentage of purchase cost (I)	20%	20%

**Additional information:**

1. To implement the new arrangements, re-organisation will be required of which estimated costs amount to Sh.10,000.
2. These costs can be wholly claimed as a business expense for tax purposes in the year before the system comes into operation.
3. The corporate tax rate is 30%.

**Required:**

(i) Determine the change in the economic order quantity (EOQ) caused by the new system. (6 marks)

(ii) Calculate the payback period for the proposal and comment on your results. (8 marks)

(iii) Outline any two limitations of the payback period method applied in (b) (ii) above. (2 marks)

**(Total: 20 marks)****QUESTION THREE**

Sori Ltd. is a company engaged solely in the manufacture of jumpers which are bought mainly for sporting activities. The current sales are direct to retailers, but in recent years there has been a steady decline in output because of increased competition. In the last trading year (2020), the accounting report indicated that the company reported the lowest profit for the last 10 years.

The forecast for 2021 indicates that the present deterioration in profits is likely to continue. The company considers that a profit of Sh.8 million should be achieved to provide an adequate return on capital.

The managing director has asked that a review be made of the present pricing and marketing policies. The marketing director has completed this review and passes the proposals to you for evaluation and recommendation, together with the profit and loss account for the year ended 31 December 2020.

**Sori Ltd. profit and loss account for the year ended 31 December 2020**

	Sh.“000”	Sh.“000”	Sh.“000”
Sales revenue (100,000 jumpers at Sh.1,000 per jumper)			100,000
Factory cost of goods sold:			
Direct materials	10,000		
Direct labour	35,000		
Variable factory overheads	6,000		
Fixed factory overheads	<u>22,000</u>	73,000	
Administrative overheads		14,000	
Selling and distribution overheads:			
• Sales commission (2% of sales)	2,000		
Delivery costs:			
• Variable	5,000		
• Fixed	<u>4,000</u>	<u>11,000</u>	<u>(98,000)</u>
Profit			<u>2,000</u>

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The information to be submitted to the managing director includes the following three proposals:

1. To proceed on the basis of analysis of market research studies which indicate that demand for the jumpers is such that a 10% reduction in selling price would increase demand by 40%.
2. To proceed with an inquiry that the marketing director has had from a mail order company about the possibility of purchasing 50,000 units annually if the selling price is right. The mail order company would transport the jumpers from Sori Ltd. to its own warehouse and no sales commission would be paid on these sales by Sori Ltd. However, if an acceptable price can be negotiated, Sori Ltd. would be expected to contribute Sh.6 million per annum towards the cost of producing the mail order catalogue. It would also be necessary for Sori Ltd. to provide special additional packaging at a cost of Sh.50 per jumper. The marketing director considers that in 2021, the sales from existing business would remain unchanged at 100,000 jumpers based on a selling price of Sh.1,000 per jumper if the mail order contract is undertaken.
3. To proceed on the basis of a view by the marketing director that a 10% price reduction, together with national advertising campaign costing Sh.3 million may increase sales to the maximum capacity of 160,000 jumpers.

**Required:**

(a) Determine the break-even sales value based on the 2020 accounts. (4 marks)

(b) A financial evaluation of proposal (1) above and computation of the number of units Sori Ltd. would require to sell to earn a target profit of Sh.8 million. (6 marks)

(c) Advise the management of Sori Ltd. on the minimum prices that would have to be quoted to the mail order company to ensure that Sori Ltd. would at least break-even on the mail order contract. (6 marks)

(d) A financial evaluation of proposal 3. (4 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

(a) Explain three differences between "standard costing" and "target costing". (6 marks)

(b) Describe three challenges encountered in environmental management accounting. (6 marks)

(c) The following details show the direct labour requirements for the first six batches of a new product that were manufactured in the month of August 2021:

	<b>Budget</b>	<b>Actual</b>
Output (batches)	6	6
Labour hours	2,400	1,950
Total labour cost (Sh.)	1,680,000	1,365,000

The management accountant reported the following variances.

Total labour cost variance	- Sh.315,000
Labour rate variance	- Nil
Labour efficiency variance	- Sh.315,000

The production manager has now said that he forgot to inform the management accountant that he expected a 90% learning curve to apply for at least the first 10 batches.

**Required:**

The planning and operational variances that analyse the actual performance taking into account the anticipated learning effect. (Learning index for 90% learning curve is – 0.1520). (8 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

(a) PM Ltd. operates two divisions namely X and Y. Division X produces an intermediate product M that has no external market. The product is then transferred to Division Y where it is used as an input in the production of product N.

The following relates to the demand schedule of product N:

<b>Quantity sold (units)</b>	<b>Selling price (Sh.)</b>
1,000	150
2,000	140
3,000	130
4,000	120
5,000	110
6,000	100

Divisional costs are as shown in the table below:

	<b>Division</b>	
	<b>X</b>	<b>Y</b>
	<b>Sh.</b>	<b>Sh.</b>
Variable cost per unit	13	7
Fixed costs attributable to the product	50,000	70,000

**Additional information:**

1. Product N is transferred to Division Y at Sh.25 per unit.
2. Assume that production of both M and N is in batches of 1,000 units.

**Required:**

- (i) The profit maximising output level for Division X at the current transfer price. (4 marks)
- (ii) The optimal output level for the overall company given that the variable cost of Division X is Sh.5 per unit. (4 marks)

(b) The standard cost of a certain chemical mixture is:  
40% material A at Sh.20 per kg.  
60% material B at Sh.30 per kg.

Standard loss of 10% is expected during production.

During the month of July 2021, the actual data was as follows:

Materials used:

Material A: 90 kgs at a cost of Sh.18 per kg.  
Material B: 110 kgs at a cost of Sh.34 per kg.

The weight produced was 182 kgs of good production.

**Required:**

Compute:

(i) Material price variance. (3 marks)

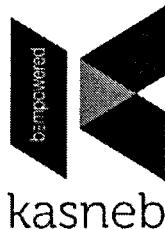
(ii) Material mix variance. (3 marks)

(iii) Material yield variance. (3 marks)

(iv) Material cost variance. (3 marks)

**(Total: 20 marks)**

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## CPA PART III SECTION 5

### ADVANCED MANAGEMENT ACCOUNTING

**WEDNESDAY: 19 May 2021.**

**Time Allowed: 3 hours.**

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.**

#### **QUESTION ONE**

(a) Non-financial performance measurement is deemed to be more important than financial performance measurement.

Discuss the position you would take with regard to the above assertion. (8 marks)

(b) Primers Ltd. has two Divisions namely; A and B. Division A has been given a budgeted target of selling 200,000 units of a component branded X001. It manufactures the component and sells it in the open market at a price which fetches a return of 25% on the average assets employed by the Division.

The following figures are relevant for Division A:

Fixed overheads	Sh.400 million
Variable costs	Sh.1,000 per unit
<b>Average Assets:</b>	
Debtors	Sh.200 million
Inventory	Sh.600 million
Plant and other assets	Sh.400 million

#### **Additional information:**

1. The Marketing Department of Primers Ltd. has however conducted a survey and found that the maximum number of X001 that the market could take at the proposed price is 140,000 units.
2. Fortunately, Division B is willing to purchase the balance of 60,000 units. The Manager of Division A is willing to sell to Division B at a concessional price of Sh.4,000 per unit, but the Manager of Division B is ready to pay Sh.2,250 only per unit as he feels he could manufacture X001 in his Division at that price.
3. Rather than sell to Division B at Sh.2,250, the Manager of Division A feels he would rather restrict the activities of his Division to the manufacture and sale of 140,000 units of the component only for sale in the open market. By this, he could reduce his investment by Sh.80 million in inventories, Sh.120 million of plant and other assets and Sh. 40 million in selling and administrative expenses.

#### **Required:**

Present a persuasive case showing that selling 60,000 units of X001 to Division B at Sh.2,250 per unit is in the best interest of the whole company. (12 marks)

**(Total: 20 marks)**

#### **QUESTION TWO**

(a) Actross Ltd., a packaging company is preparing its budget for the year to 30 June 2021. In respect of fuel oil consumption, it is desired to estimate an equation in the form  $Y = a + bx$ , where  $Y$  is the total expense at an activity level  $x$ ,  $a$  is the fixed expense and  $b$  is the variable cost per unit.

The following data relates to the year ending 30 June 2021:

Month	Machine hours "000"	Fuel oil expense Sh."000"	Month	Machine hours "000"	Fuel oil expense Sh."000"
July 2020	34	640	January 2021	26	500
August 2020	30	620	February 2021	26	500
September 2020	34	620	March 2021	31	530
October 2020	39	590	April 2021	35	550
November 2020	42	500	May 2021	43	580
December 2020	32	530	June 2021	48	680

The annual total and monthly average figures for the year ending 30 June 2021 were as follows:

	Machine hours “000”	Fuel oil expense “000”
Annual total	420	6,840
Monthly average	35	570

**Required:**

Estimate the cost equation for the company for budgeting purposes using the following methods:

(i) High low method. (2 marks)

(ii) Least squares regression analysis. (8 marks)

(b) A company has determined that the Economic Order Quantity for its only raw material is 2,000 units every 30 days. The company knows with certainty that a four-day lead time is required for ordering.

The following is the probability distribution of estimated usage of raw materials for the month of September 2020:

Usage in units	1,800	1,900	2,000	2,100	2,200	2,300	2,400	2,500
Probability	0.06	0.14	0.30	0.16	0.13	0.10	0.07	0.04

Stock outs will cost the company Sh.10 per unit and monthly holding cost is Sh.10 per unit.

**Required:**

(i) The optimal safety stock. (8 marks)

(ii) The probability of being out of stock. (2 marks)

(Total: 20 marks)

**QUESTION THREE**

(a) Ulanda Ltd. is a manufacturing company based in the western part of the country. It has two divisions. One of the divisions within Ulanda Ltd. is currently negotiating with another supplier regarding outsourcing Component A that it manufactures.

The division currently manufactures 10,000 units of the component per annum.

	Total cost of producing 10,000 components Sh.“000”	Unit cost Sh.
Direct material “Zed”	1,200	120
Direct labour	1,000	100
Variable manufacturing overhead costs (Power and utilities)	100	10
Fixed manufacturing overhead costs	800	80
Share of non-manufacturing overheads	500	50
	<u>3,600</u>	<u>360</u>

**Additional information:**

1. The above costs are expected to remain unchanged in the foreseeable future if Ulanda Ltd.’s division continues to manufacture the components.
2. The supplier has offered to supply 10,000 components per annum at a price of Sh.300 per unit guaranteed for a minimum of three years.
3. If Ulanda Ltd. outsources Component A, the direct labour force currently employed in producing the components will be made redundant. No redundancy costs will be incurred.
4. Direct materials and variable overheads are avoidable if component A is outsourced.
5. Fixed manufacturing overheads would be reduced by Sh.100,000 per annum but non-manufacturing costs would remain unchanged.
6. Assume initially that the capacity that is required for component A has no alternative use.

**Required:**

(i) Advise the management of Ulanda Ltd. on whether the component should be bought or made. (6 marks)

(ii) Assume now that the extra capacity that will be made available from outsourcing Component A can be used to manufacture and sell 10,000 units of Component B at a price of Sh.340 per unit. All of the labour force required to manufacture Component A will be used to make Component B. The variable manufacturing overheads, fixed manufacturing overheads and non-manufacturing overheads will be the same as the costs incurred for manufacturing Component A. Material Zed required to manufacture Component A would not be required but additional material Wye required for making Component B would cost Sh.130 per unit.

**Required:**

Assess whether the division of Ulanda Ltd. should outsource Component A.

(6 marks)

(b) The Digital Electronics Company manufactures cameras and video equipment. It is in the process of introducing the world's smallest and lightest camcorder with 3D, HD and SD recording modes.

The company has undertaken market research to ascertain the customers' perceived value of the product. The product's special features and a comparison with competitors' products and market prices have been used to establish a target selling price and projected life time volume.

In addition, cost estimates have been prepared based on proposed product specification. The company has set a target profit margin of 30% on the proposed selling price and this has been deducted from the target selling price to get the target cost.

The following is a summary of the information that has been presented to the management:

Project lifetime sales volume (units)	300,000
	Sh.
Target selling price	8,000
Target profit margin (30%)	(2,400)
Target cost	<u>5,600</u>
Projected cost	7,000

Before target costing exercise, the projected cost was estimated as follows:

	Sh.	Sh.
<b>Manufacturing costs:</b>		
Direct materials (bought in parts)	3,900	
Direct labour	1,000	
Direct machining costs	200	
Ordering and receiving	80	
Quality assurance	600	
Rework	150	
Engineering and design	<u>100</u>	6,030
<b>Non-manufacturing costs:</b>		
Marketing	400	
Distribution	300	
After sales service and warranty costs	<u>270</u>	<u>970</u>
Total cost		<u>7,000</u>

The company then engaged a team to carry out a functional analysis on the product manufacture. After a careful analysis of the different elements, functions and attributes of the camcorder and potential customers interviewed to ascertain the values that may place on each of the functions, the following report was given to management.

1. Direct material cost (bought in parts to be reduced by 1/6).
2. Direct labour should be reduced to 80%.
3. Machining costs would remain the same as the projection.
4. Ordering and receiving costs to reduce by 75%.
5. Quality assurance to reduce to 5% of the original estimate.
6. Rework and engineering costs to reduce by Sh.90 and Sh.20 respectively.
7. Marketing, distribution and after sales service and warranty costs to reduce by 37.5%, 33 1/3 % and by Sh.80 respectively.

**Required:**

(i) Revised target cost. (7 marks)

(ii) The cost gap. (1 mark)

**(Total: 20 marks)****QUESTION FOUR**

(a) Picky Ltd. is a large public company in the telecommunications sector. One of its main planning and control tools is the preparation and use of traditional annual budgets.

Whilst this might be appropriate for the sales and manufacturing divisions, it draws criticisms from the directors of divisions such as Training and Education, Advertising and Publicity, and Research and Development who are responsible for large amounts of discretionary expenditure.

These directors have submitted a joint report to the Finance Director which suggests that Zero-Based Budgeting (ZBB) should be used for their respective divisions.

The Finance Director has agreed to use the Research and Development Division as a pilot for ZBB for the next financial year.

**Required:**

(i) Explain the meaning of the term “Zero-Based Budgeting (ZBB)”. (2 marks)

(ii) Discuss the main stages that would need to be undertaken to introduce ZBB into the Research and Development Division. (6 marks)

(b) Klepotmine Ltd. manufactures a single product K20 whose standard cost is Sh.7,500 made up as follows:

	Sh.
Direct material (20 square metres at Sh.200 per metre)	4,000
Direct labour (5 hours at Sh.400 per hour)	2,000
Variable overheads (5 hours at Sh.200 per hour)	1,000
Fixed overheads (5 hours at Sh.100 per direct labour hour)	500
	<u>7,500</u>

**Additional information:**

1. The standard unit selling price of product K20 is Sh.9,800.
2. Monthly budget production and sales is set at 1,000 units.
3. The following figures relate to the month of October 2020:

Sales	150 units at Sh.10,400
Production	1,200 units (there was no opening stock)
Direct material	18,800 square metres at Sh.400 per square metre
Direct wages	5,800 hours at Sh.500 per hour.
Total variable overheads	Sh. 942,000
Total fixed overheads	Sh. 600,000

**Required:**

(i) Actual profit or loss statement. (4 marks)

(ii) Flexible profit or loss statement. (4 marks)

(iii) A reconciliation statement for the reported variances. (4 marks)

**(Total: 20 marks)****QUESTION FIVE**

(a) Discuss the scope and breadth of environmental management accounting. (10 marks)

(b) The following information has been provided relating to the performance of XYZ Ltd.

	Division			Head Office	Total
	X Sh. “million”	Y Sh. “million”	Z Sh. “million”	Sh. “million”	Sh. “million”
Sales	610	330	1,125	-	2,065
Profit before tax and interest	32	24	25	(9)	72
Total assets less current liabilities	140.5	121.5	118.5	12	392.5

**Additional information:**

1. Head office liabilities and net assets are to be shared equally between all the divisions.
2. Division X spent Sh.8,200,000 on research and development.
3. Advertising expenditure amounting to Sh.9,250,000 was spent by Division Y.
4. Goodwill amounting to Sh.65,000,000 and Sh.97,500,000 was amortised during the year from Division Y and Division Z reserves respectively.
5. Cost of capital of XYZ Ltd. is 14%.
6. A summary of the borrowings, interest received and interest paid on borrowings is as follows:

	Division			Head Office	Total
	X	Y	Z	Sh. "million"	Sh. "million"
Borrowings	-	37	38	7.5	82.5
Interest received	1.5	-	-	-	1.5
Interest paid	-	2.2	4.3	3.1	9.6

**Required:**

Evaluate the divisional performance of XYZ Ltd. using the Economic Value Added (EVA) approach. (10 marks)  
**(Total: 20 marks)**

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## CPA PART III SECTION 5

### ADVANCED MANAGEMENT ACCOUNTING

THURSDAY: 26 November 2020

Time Allowed: 3 hours.

Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.

#### QUESTION ONE

(a) Explain three factors to consider before investigating variances in a profit driven organisation. (6 marks)

(b) Examine two shortcomings of financial performance measurements. (4 marks)

(c) Blue Beach Hotel is a 5-star hotel based in Naivasha Town, Kenya. In the onset to the Kenya Athletic Federation's cross - country championship for the year 2020 due to be held in Naivasha later in the year, the hotel management has reviewed the hotel's operations with a view to streamlining activities so as to take full advantage of the event. The management has decided to package the booking options into three as follows:

- Bed only
- Bed and breakfast
- Full board

The management is aware that the outcome could take any of the following possibilities for each of the booking options above:

- Full booking
- Moderate booking
- Low booking

They have worked the likely payoff amounts for the booking options under each possible outcome as per the table given below:

Events	Probability	Decision alternatives		
		Bed only Sh.“000”	Bed and Breakfast Sh.“000”	Full board Sh.“000”
Full booking	0.30	24,000	90,000	16,000
Moderate booking	0.50	48,000	44,000	28,000
Low booking	0.20	6,000	8,000	18,000

#### Required:

Advise the management of the hotel on the best booking option using the following decision theory techniques:

- (i) Expected monetary value (EMV). (3 marks)
- (ii) Expected opportunity loss (EOL). (3 marks)
- (iii) A research company has offered to give more insight to the hotel management on the likely booking situations that might arise.

Determine the maximum amount the hotel should pay to the research company.

(4 marks)

**(Total: 20 marks)**

**QUESTION TWO**

(a) (i) Describe four benefits of product life cycle costing. (4 marks)

(ii) JAES Ltd. is considering the purchase of a new machine for Sh.3,500,000. The company feels quite confident that it could sell the goods produced by the machine so as to yield annual cash surplus of Sh.1,000,000. There is however some uncertainty as to the machines working life.

A recently published trade association survey shows that in total the members of the association own 250 of such machines and have found the lives of the machines to vary as provided below:

Machine useful life (years)	3	4	5	6	7
Number of machines	20	50	100	70	10

Assuming a discount rate of 10%, the net present value (NPV) for each different machine life is as follows:

Machine useful life (years)	3	4	5	6	7
Net Present Value (Sh.)	(1,010,000)	(330,000)	290,000	860,000	1,370,000

**Required:**

Advise the management of JAES Ltd. whether they should buy the machine. (8 marks)

(b) Lenga Ltd. has a production capacity of 80,000 units and currently sells 20,000 units at Sh.1,000 each. The demand for the company's product is sensitive to the selling price and it has been observed that with every reduction of Sh.100 in the selling price, the demand is doubled.

**Required:**

(i) Evaluate the target cost at full capacity assuming profit margin on sales is taken as 25%. (4 marks)

(ii) Ascertain the cost reduction scheme if at present 40% of total cost is variable with the same margin of profit assumed in (b) (i) above. (4 marks)

**(Total: 20 marks)**

**QUESTION THREE**

(a) Discuss the following concepts as applied in management accounting:

(i) Throughput accounting. (3 marks)

(ii) Environmental management accounting. (3 marks)

(b) ABC Ltd. intends to review the selling price of one of its products branded "Reno". In the recent past, the monthly average sales of "Reno" has been 50,000 units at a standard selling price of Sh.60 per unit.

An analysis of the expected monthly demand with a price increase of either Sh.5 or Sh.10 per unit of this product is given below:

Market condition	Probability	Estimated demand with price increase of:	
		Sh.5	Sh.10
Optimistic	0.30	55,000	40,000
Most likely	0.50	40,000	25,000
Pessimistic	0.20	30,000	16,000

**Additional information:**

1. The current unit variable cost is Sh.50. However, it is expected to vary in the next production period as follows:

Economic condition	Probability	Sh.
High	0.20	55
Medium	0.60	52
Low	0.20	47

2. The fixed cost of production is currently at Sh.335,000 per month. It is expected to vary as follows in the next production period:

- Increase by Sh.80,000 with a probability of 0.20
- Increase by Sh.60,000 with a probability of 0.60
- Increase by Sh.40,000 with a probability of 0.20

**Required:**

Using a probability tree simulation:

(i) Determine the selling price that the company should adopt to maximise profitability. (10 marks)

(ii) The probability that the company will at least break even for each of the price increase of Sh.5 and Sh.10 per unit of product "Reno". (4 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

(a) Sawasawa Ltd. manufactures 3 units of product "Zed" per day. The sale of this product depends upon demand which has the following distribution:

Sales (units)	Probability
270	0.10
280	0.15
290	0.20
300	0.35
310	0.15
320	0.05

**Additional information:**

1. The production cost and the sales price of each unit are Sh.4,000 and Sh.5,000 respectively.
2. Any unsold unit is to be disposed of at a loss of Sh.1,500 per unit.
3. There is a penalty of Sh.500 per unit if the demand is not met.
4. The following random numbers are given:

10, 99, 65, 99, 95 01, 79, 11, 16 and 20.

**Required:**

Estimate the total profit or loss for Sawasawa Ltd. for the next 10 days.

(10 marks)

(b) Beta Division, which is part of Mega Group, is considering an investment opportunity with the following information:

1. An initial investment of Sh.45 million in equipment at the beginning of year 1 which will be depreciated on a straight line basis over a three year period with a nil residual value at the end of year 3.
2. Net operating cash inflows in each of years 1-3 will be Sh.12.5 million, Sh.18.5 million and Sh.27 million respectively.
3. The management accountant of Beta Division has estimated that the net present value (NPV) of the investment would be Sh.1,937,000 using a cost of capital of 10%.
4. A bonus scheme which is based on short-term performance evaluation is in operation in all divisions within the Mega Group.

**Required:**

(i) Compute the residual income of the proposed investment.

(3 marks)

(ii) Comment on the values obtained in reconciling the short term and long term decision views likely to be adopted by divisional management regarding the viability of the proposed investment. (3 marks)

(c) Blade Ltd. uses decision tree analysis to evaluate potential projects. The Company has been exploring the launch of a new product which it believes has a 70% probability of success. The company is however considering undertaking an advertising campaign costing Sh.500,000 which would increase the probability of success to 95%. If successful, the product would generate income of Sh.2,000,000 otherwise Sh.700,000 would be received.

**Required:**

Using decision tree, advise the management of Blade Ltd. on the maximum amount of cash that the company should be prepared to pay for advertising. (4 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

Hi-Tech Ltd. intends to launch a locally manufactured printer in the coming month of December 2020. The research and development department of the company has provided the following information relating to the production of the printer:

	Sh.	Sh.
Selling price per printer		17,500
<b>Variable production cost:</b>		
Direct materials (800 grams at Sh.7,500 per kg)	6,000	
Direct labour (75 minutes at Sh.3,000 per hour)	3,750	
Variable overheads (60% of direct labour)	<u>2,250</u>	<u>(12,000)</u>
Contribution per printer		<u>5,500</u>

**Additional information:**

1. Production of the printer is scheduled to commence on 1 December 2020.
2. The company plans to produce and sell 3,000 printers per month.
3. A direct material loss of 10% is expected with no resale value.
4. The annual fixed cost attributable to the production of the printers is Sh.60 million. This cost accrues evenly throughout the year.
5. A learning curve effect of 95% is expected.

**Required:**

(a) Determine the standard labour cost for the month of December 2020. (6 marks)

(b) Prepare a budget for the month of December 2020 showing the budgeted profit. (4 marks)

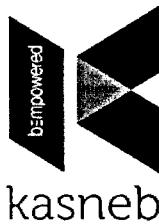
(c) Assume the actual results for the month of December 2020 for the production level of 3,000 printers are as follows:

	Sh“000”
Sales (3,000 at Sh.18,000 each)	54,000
Direct materials (2,700 kgs at Sh.7,000 per kg )	18,900
Direct labour (1,700 hours at Sh.3,250 per hour)	5,525
Variable overheads	3,400
Fixed costs	<u>5,075</u>
	<u>21,100</u>

**Required:**

Reconcile the budget profit in (b) above with the actual profit showing clearly all the operating variances. (10 marks)  
**(Total: 20 marks)**

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### CPA PART III SECTION 5

#### ADVANCED MANAGEMENT ACCOUNTING

TUESDAY: 26 November 2019.

Time Allowed: 3 hours.

Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.

#### QUESTION ONE

(a) Examine three benefits that might accrue to a business organisation as a result of good ethical behaviour by management accountants. (6 marks)

(b) Justify why in the short term some costs and revenues are not relevant for decision making. (3 marks)

(c) Fairdeal Ltd. uses a third party delivery service to deliver goods to customers. The current average cost per delivery is Sh.125. Fairdeal Ltd. is considering establishing an in-house delivery service. A number of factors could affect the average total cost per delivery for the in-house delivery mode.

The table below shows the possible average total cost and the probability of each one occurring for the in-house delivery mode:

Average total cost (Sh.)	Probability
105	0.05
107	0.10
110	0.08
121	0.12
125	0.14
126	0.16
142	0.12
156	0.18
158	0.05

#### Required:

(i) Expected value of the average total cost based on the above probability distribution. (2 marks)

(ii) Evaluate the decision that the company's manager is likely to make based on the average total cost in (c) (i) above and the current average delivery cost of Sh.125 per delivery, assuming the manager is:

- Risk neutral.
- Risk averse.
- Risk seeker.

(9 marks)

**(Total: 20 marks)**

#### QUESTION TWO

(a) QHY Ltd. manufactures a product branded "Tamu". To manufacture a unit of Tamu, three ingredients are required namely; A, B and C. Currently, QHY Ltd. is operating at its full capacity of 28,000 machine hours. The product is manufactured in batches of 20 litres. The current production data is provided as follows:

Ingredient	Machine hours per batch	Cost per batch		
		Variable Sh.	Fixed Sh.	Total Sh.
A	6	200	60	260
B	10	220	70	290
C	12	240	180	420
Cost of assembly		320	130	<u>450</u>

	Sh.	Sh.	Sh.
Total cost per batch		1,420	
Profit mark-up		<u>280</u>	
Selling price		<u>1,700</u>	

**Additional information:**

1. During discussion on the budget for the year ending 31 December 2020, the sales manager estimated that sales volume might grow either by 50% or 75% provided the required machine capacity is available.
2. While assembly capacity could be increased and meet the projected growth in demand, the machine capacity of 28,000 hours cannot be increased. Therefore, in order to take advantage of the buoyant market, the management is considering the purchase of one of the three ingredients.
3. The following quotation has been received from an external supplier:

**Ingredient      Price per batch (20 litres)**

	Sh.
A	290
B	320
C	390

4. The management of QHY Ltd. has decided to buy only one ingredient in any one financial period.

**Required:**

Evaluate which ingredient and the quantity of the ingredient to be outsourced if production is increased by:

- (i) 50%. (5 marks)
- (ii) 75%. (5 marks)

- (b) Kiawara Ltd. maintains a perpetual inventory system. The Economic Order Quantity (EOQ) model has established an economic order quantity of 3,000 units with an average daily usage of 100 units and a lead-time of 20 days for its single input product branded "Zed".

The following information relates to the usage of product Zed during the re-order period:

Usage during the re-order period (units)	Number of times the quantity is used
1,800	34
1,900	40
2,000	90
2,100	20
2,200	10
2,300	6

**Additional information:**

1. Stock-out cost amount to Sh.400 per unit.
2. The optimum number of orders based on the EOQ model is 5 times per annum.
3. The annual carrying cost is Sh.80 per unit.

**Required:**

- (i) Advise the management of Kiawara Ltd. on the amount of safety stock to be maintained. (8 marks)
- (ii) Determine the probability of a stock-out. (2 marks)

**(Total: 20 marks)**

**QUESTION THREE**

- (a) The assembly department of Lenku Race Course Club has designed a new concept in racing bicycles with the intention of selling them to professional racing teams.

The estimated cost and selling price of the first racing bicycle to be manufactured and assembled is as follows:

	Sh.
Materials	6,000
Assembly labour (12 hours at Sh.300 per hour)	3,600

	Sh.
Manufacturing overheads (150% of labour cost)	5,400
Profit mark-up	<u>6,000</u>
Selling price	<u>21,000</u>

**Additional information:**

1. It is expected that material cost per bicycle is to remain constant irrespective of the number of bicycles manufactured.
2. The management expects the assembly time to gradually improve with experience and has therefore estimated an 80% learning curve.
3. A racing team has approached the club's assembly department and made enquiries on the following quotations:
  - The price of the second bicycle if the team purchases the first bicycle assembled and immediately places an order for the second bicycle.
  - The average price of the third and fourth bicycles if the team waits until the first two bicycles are sold to another team.
  - The price per bicycle if the team places an order for the first eight bicycles to be assembled.

**Required:**

Evaluate the price quotations for each of the three enquiries outlined above.

(9 marks)

(b) Dawa Chemical Ltd. manufactures a single product branded "XP". The following information for the financial year 2018 relates to the product:

1. Standard cost per unit of product XP:

Material	Kgs	Price per Kg	Total	
			Sh.	Sh.
F	15	4	60	
G	12	3	36	
H	8	6	<u>48</u>	
				144

Labour	Hours	Rate per hour		
			Sh.	
Department P	4	10	40	
Department Q	2	6	<u>12</u>	
				196

2. Budgeted sales for the period amount to 4,500 units at Sh.260 per unit.

3. There were no budgeted opening and closing inventories of product XP.

4. The actual materials and labour used were as follows:

Materials	Kgs	Price per Kg	Total	
			Sh.	Sh.
F	59,800	4.25	254,150	
G	53,500	2.80	149,800	
H	33,300	6.40	213,120	

Labour	Department	Hours	Rate per hour		
				Sh.	Sh.
P		20,500	10.60	217,300	
Q		9,225	5.60	51,660	

5. During the period, 4,100 units of product XP were produced and sold for Sh.1,158,000.

**Required:**

Compute the following variances:

- (i) Material price variance. (3 marks)
- (ii) Material mix variance. (3 marks)

(iii) Material yield variance. (3 marks)

(iv) Labour rate variance. (2 marks)

**(Total: 20 marks)**

#### QUESTION FOUR

(a) Describe three categories of environmental costs. (6 marks)

(b) Bedaline Ltd. is a manufacturing division of a large industrial company. Aslop Wafula, the divisional manager is about to purchase a new plant to manufacture a new product. Aslop could either purchase an automatic plant or a manual plant each of which has the same capacity and expected useful life of four years. The two machines however differ in their expected capital cost and cash flows as shown below:

	<b>Automatic plant</b>	<b>Manual plant</b>
	Sh.	Sh.
Initial capital investment	9,600,000	7,800,000
Net cash flows before tax:		
Year: 1	3,600,000	3,900,000
2	3,600,000	3,300,000
3	3,600,000	2,250,000
4	3,600,000	1,500,000
Net present value at 16%	473,451	284,422

#### Additional information:

1. In the above calculation, it is assumed that the plant will be installed and paid for at the beginning of year 1 and that the net cash flows occur at the end of each year.
2. Neither of the plant is expected to have a residual value.
3. Like all other divisional managers in the company, Aslop Wafula is expected to generate before tax return on his divisional investment in excess of 16% per annum which he is currently just managing to achieve. Anything less than 16% returns would make him ineligible for a performance bonus and might reduce his pension benefit when he retires early in Year 3.
4. In calculating divisional returns, divisional assets are valued at net book value at the beginning of the year. Depreciation is charged on a straight line basis.

#### Required:

(i) Using appropriate computations, justify why neither return on investments (ROI) nor residual income (RI) would motivate Aslop Wafula to invest in the machine with the higher net present value. (12 marks)

(ii) Advise on what should be done to assist in reconciling the difference between using accounting based performance measures and using discounted cash flow methods. (2 marks)

**(Total: 20 marks)**

#### QUESTION FIVE

(a) ValleySide Fitness Ltd. specialises in the manufacture of a small range of hi-tech products for the fitness market.

They are currently considering the development of a new type of fitness monitor, which would be the first of its kind in the market. It would take one year to develop, with sales then commencing at the beginning of the second year. The product is expected to have a life cycle of two years, before it is replaced with a technologically superior product.

The following cost estimates have been made:

Units manufactured and sold	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>
	-	100,000	200,000
Sh.	Sh.	Sh.	Sh.
Research and development costs	160,000,000	-	-
Products design costs	800,000,000	-	-
Marketing costs	1,200,000,000	1,000,000,000	1,750,000,000
Manufacturing costs:			
• Variable cost per unit	-	40,000	42,000
• Total fixed production costs	-	650,000,000	1,290,000,000
Distribution costs:			
• Variable cost per unit	-	4,000	4,500
• Total fixed distribution costs	-	120,000,000	120,000,000

	Sh.	Sh.	Sh.
<b>Selling costs:</b>			
• Variable cost per unit	-	3,000	3,200
• Total fixed selling costs	-	180,000,000	180,000,000
• Administrative costs	200,000,000	900,000,000	1,500,000,000

**Note: Ignore the time value of money.**

**Required:**

The lifecycle cost per unit.

(8 marks)

(b) Nilo Ltd. is one of the largest and most diversified textile firms in the country. The company manufactures and sells its products through 25 individual divisions that operate more or less like autonomous companies.

Each division of the company has its own manufacturing plants for making the division's products, a sales team and administrative staff to provide financial assistance and control. Broad policy and financial guidance as well as technical assistance is provided from the head office of the company. Nilo Ltd. uses several measures to determine divisional performance.

However, the most widely used measure is the return on investment (ROI) of each division.

The following information relates to determination of the ROI of all the divisions:

1. The returns of each investment of a division is determined using the following formula:  

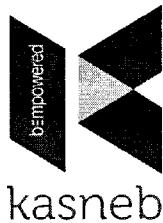
$$\text{Return} = \text{Divisional revenues (sales to outsiders and insiders)} - \text{direct divisional costs} - \text{allocated central corporate costs}$$
2. The investment of a division is determined as follows:  

$$\text{Investment} = \text{Book value of assets}$$
3. Book value of assets is the aggregate of the accounts receivable net of accounts payable, inventories including raw materials, work in-progress and finished goods and long term assets net of accumulated depreciation.
4. The actual ROI is calculated monthly for each division and the formula is uniform across all divisions as it is centrally determined.
5. In undertaking performance evaluation, emphasis is laid on trends rather than absolute goals and standards.
6. The management also lays emphasis on divisions whose performance is improving or deteriorating and has set a minimum expected ROI below which the manager is required to face disciplinary action. This minimum ROI is however loosely set hence easily achievable.
7. The minimum ROI is determined by applying different weights to the three investment components as follows; 20% of depreciable assets, 12% for inventories and 6% for account receivables.
8. Transfer prices between divisions are negotiated between themselves.

**Required:**

Discuss three strengths and three weaknesses of the return on investment measure as used by Nilo Ltd. (12 marks)  
**(Total: 20 marks)**

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## CPA PART III SECTION 5

### ADVANCED MANAGEMENT ACCOUNTING

**WEDNESDAY: 22 May 2019.**

**Time Allowed: 3 hours.**

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.**

**QUESTION ONE**

(a) Highlight four fields in which the use of environmental management accounting (EMA) is applied. (4 marks)

(b) The following details show the direct labour requirements for the first six batches of a new product that were manufactured during the month of March 2019 by Tengeneza Ltd.:

	<b>Budget</b>	<b>Actual</b>
Output (batches)	6	6
Labour hours	2,400	1,950
Total labour cost (Sh.)	1,680,000	1,365,000

The Management Accountant reported the following variances:

Total labour cost variance	Sh.315,000 (favourable)
Labour rate variance	Nil
Labour efficiency variance	Sh.315,000 (favourable)

The production manager has now revealed that he forgot to inform the Management Accountant that he expected a 90% learning curve to apply for at least 10 batches.

**Required:**

Compute the planning and operational variances that analyse the actual performance taking into account the anticipated learning effect. (8 marks)

**Note:** The learning index for a 90% learning curve is -0.1520.

(c) Marima Ltd. is considering introducing two new products in the market.

The company has the following options:

Option 1: Introduce both products.  
 Option 2: Introduce either of the products.  
 Option 3: Introduce none of the products, depending on their performance in the market.

An analysis of the product's likely performance indicates the probability of a good performance as 30%, fair performance as 50% and poor performance as 20%. The sales revenue depending on the state of nature is as shown below:

<b>Decision</b>	<b>State of nature</b>		
	<b>Good performance (S1)</b> Sh.“million”	<b>Fair performance (S2)</b> Sh.“million”	<b>Poor performance (S3)</b> Sh.“million”
Neither	0	0	0
Product 1 only	30	15.6	7.2
Product 2 only	25.2	14.4	7.2
Both	52.8	8.8	3.2

**Required:**

(i) For each decision, determine the expected monetary value. (4 marks)

(ii) Advise the management of Marima Ltd. on the action to take assuming that Rima Ltd. could supply perfect information at a cost of Sh.5 million. (4 marks)

**(Total: 20 marks)**

**QUESTION TWO**

(a) Discuss five challenges associated with the return on investment (ROI) approach in financial performance measurement. (10 marks)

(b) Faidika Ltd. buys and sells a single product branded "NN". The demand and lead time of product NN is not constant.

The following probability distribution has been provided:

Demand (units)	Probability
2	0.02
3	0.08
4	0.22
5	0.34
6	0.18
7	0.09
8	0.07

Lead time (weeks)	Probability
1	0.23
2	0.45
3	0.17
4	0.09
5	0.06

**Additional information:**

1. The re-order point and the re-order quantity has been set at 40 units and 30 units respectively.
2. The holding cost per unit per week is Sh.35.
3. The cost of placing an order is Sh.350.
4. If the company runs out of stock, a contribution of Sh.120 per unit is lost.
5. The opening inventory at the beginning of the first week was 60 units.

**Required:**

Using simulation of the above problem for 10 weeks, determine the average weekly cost using the following random numbers:

50      68      52      08      59      90      81      85      95      15      89      28      60      03  
 (10 marks)  
**(Total: 20 marks)**

**QUESTION THREE**

Kitchen Masters Ltd. specialises in the manufacture and sale of firewood ovens.

Each oven consists of a main unit plus a set of oven fittings. The company has two divisions; A and B. Division A manufactures the oven while Division B manufactures the sets of oven fittings.

Currently, all of Division A's sales are made externally. However, Division B sells to Division A as well as to external customers. Both divisions are profit centres.

The following data is available for both divisions:

Division A	Sh.
Current selling price for each oven	450
<b>Costs per oven:</b>	
• Fittings from division B	75
• Other materials from external suppliers	200
• Labour costs	45

	Sh.
Annual fixed overheads	7,440,000
Annual production and sales of ovens (units)	80,000
Maximum annual market demand for ovens (units)	80,000
<b>Division B</b>	
Current external selling price per set of fittings	80
Current price for sales to Division A	75
<b>Costs per set of fittings:</b>	
• Materials	5
• Labour costs	15
Annual fixed overheads	4,400,000
	Units
Maximum annual production and sale of sets of fittings (including internal and external sales)	200,000
Maximum annual external demand for sets of fittings	180,000
Maximum annual internal demand for sets of fittings	80,000

**Additional information:**

1. The transfer price charged by Division B to Division A was negotiated some years ago between the previous divisional managers, who have now both been replaced by new managers.
2. Head office only allows Division A to purchase its fittings from Division B, although the new manager of Division A believes that he could obtain fittings of the same quality and appearance for Sh.65 per set, if he was given the autonomy to purchase from outside the company.
3. Division B makes no cost savings from supplying internally to Division A rather than selling externally.

**Required:**

(a) Under the current transfer pricing system, prepare a profit statement showing the profit for each of the divisions and for Kitchen Masters Ltd. as a whole. Your sales and cost figures should be split into external sales and inter-divisional transfers, where appropriate. (6 marks)

(b) Head office is considering changing the transfer pricing policy to ensure maximisation of company's profits without demotivating either of the divisional managers. Division A will be given autonomy to buy from external suppliers and Division B to supply external customers in priority to supplying Division A.

Evaluate the maximum profit that could be earned by Kitchen Masters Ltd. if transfer pricing is optimised. (8 marks)

(c) Discuss the issues of encouraging divisional managers to take decisions in the interest of the company as a whole, where transfer pricing is used. Provide a reasoned recommendation of a policy that Kitchen Masters Ltd. should adopt. (6 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

(a) Highlight four ethical standards of management accountants. (4 marks)

(b) Bidii Ltd. operates a single retail outlet which sells directly to the public. The profit statement for the months of March 2019 and April 2019 are provided as follows:

	<b>March</b>	<b>April</b>
	Sh.“000”	Sh.“000”
Sales	8,000	9,000
Cost of sales	<u>(5,000)</u>	<u>(5,500)</u>
Gross profit	3,000	3,500
<b>Expenses:</b>		
Selling and distribution costs	(800)	(900)
Administrative costs	<u>(1,500)</u>	<u>(1,500)</u>
Net profit	<u>700</u>	<u>1,100</u>

**Required:**

(i) Using the high-low points technique, identify the behaviour of cost of sales, selling and distribution costs and administrative costs. (6 marks)

(ii) Draw a contribution break-even chart and identify the monthly break-even sales value and area of contribution. (4 marks)

(iii) Assuming a margin of safety equal to 30% of the break-even value, calculate Bidii Ltd.'s annual profits. (2 marks)

(iv) Bidii Ltd. is now considering opening another retail outlet selling the same product. The company plans to use the same profit margins in both outlets and has estimated that the specific costs of the second outlet will be Sh.10,000,000 per annum. Bidii Ltd. also expects that 10% of its annual sales from its existing outlet would transfer to this second outlet if it were to be opened.

**Required:**  
 Annual value of sales required from the new outlet in order to achieve the same profit as previously obtained from the single outlet. (4 marks)

**(Total: 20 marks)**

#### QUESTION FIVE

(a) Global Chain Ltd. has supermarkets located in most towns and cities across the East African region. Over the last few years, profits have fallen prompting the top management to seek technical advice from CP Ltd., a consulting firm that specialises in business turn-around.

CP Ltd. has managed to obtain relevant information from the management of the company and has organised it as follows:

		2016	2017	2018
Percentage of staff promoted	Actual Budget	6% 30%	5% 30%	8% 30%
Average lead time for re-stocking	Actual Target	3 days 3 days	3.25 days 3 days	4.1 days 3 days
Sales/Turnover (Sh. billion)	Actual Target	200 208	192 210	169 215
Loyalty points awarded to customers (percentage of sales value)	Actual Target	1.4% 1.5%	1.3% 1.5%	1.2% 1.5%
Total number of staff grievances lodged in a year	Actual Target	47 Nil	101 Nil	123 Nil
Operating expenses (Sh. billion)	Actual Target	190 180	196 182	199 185
Customer satisfaction index	Actual Target	78% 95%	63% 95%	59% 95%
Processing time for goods returned on warranties (Replacements)	Actual Target	2 weeks 1 week	3 weeks 1 week	3 weeks 1 week

**Required:**

Explaining the current status of Global Chain Ltd., prepare a balanced scorecard report covering the four perspectives, using the above information. (12 marks)

(b) Hazina Ltd. is a cosmetics company that produces perfumes. The perfume market is very competitive and subject to frequent changes. The finance team at Hazina Ltd. prepare monthly rolling budgets as part of their planning and management control process.

The data for the forthcoming new budget period are as follows:

1. The variable cost of producing a bottle of perfume is Sh.210.
2. The planned selling price of a bottle of perfume is Sh.450 and at this selling price, demand for the perfume is expected to be 125,000 bottles.
3. Information from the marketing division at Hazina Ltd. suggests that for every Sh.30 increase in the selling price, the customer demand would reduce by 10,000 bottles and that for every Sh.30 decrease in the selling price, the customer demand would increase by 10,000 bottles.

**Required:**

(i) Advise on the revenue that Hazina Ltd. would earn if the selling price of a bottle of perfume was set in such a way that profits would be maximised for the forthcoming budget period. (6 marks)

(ii) Explain the use of rolling budgets in planning and management control process at Hazina Ltd. (2 marks)

**(Total: 20 marks)**

**CPA PART III SECTION 5**

**ADVANCED MANAGEMENT ACCOUNTING**

**WEDNESDAY: 28 November 2018.**

**Time Allowed: 3 hours.**

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.**

**QUESTION ONE**

(a) Stating two examples in each case, distinguish between “internalised environmental costs” and “externalised environmental impacts”. (6 marks)

(b) ABC Ltd. is a firm that is engaged in the repair and maintenance of property, plant and equipment. The firm has received an order from XYZ Ltd. to repair its property, plant and equipment.

The management accountant of ABC Ltd. has provided the following information:

	<b>Note</b>	<b>Sh.“000”</b>
<b>Direct materials:</b>		
100,000 welding rods at Sh.10 per rod	1.	1,000
300,000 welding rods at Sh.12 per rod		3,600
<b>Other materials</b>		
	2.	2,000
<b>Labour cost:</b>		
Skilled: 30,000 hours at Sh.30 per hour	3.	900
Unskilled: 20,000 hours at Sh.15 per hour	4.	300
<b>Depreciation:</b> General purpose machines		
Specific purpose machines	5.	100
	6.	<u>200</u>
<b>Total cost</b>		<u>8,100</u>
<b>Profit</b>		<u>810</u>
<b>Suggested price</b>		<u>8,910</u>

**Additional information:**

1. The repair contract requires 400,000 welding rods of which 100,000 rods are already in inventory. These types of rods are about to be phased out of the market and hence if they are not used, they will have to be discarded.
2. If ABC Ltd. is awarded the contract, it will have to purchase an extra 300,000 welding rods of the new model at a cost of Sh.12 per rod.
3. Other materials will have to be bought at the above price if the contract is to be undertaken.
4. Skilled workers will have to be hired at the cost provided.
5. ABC Ltd. has five unskilled workers who are currently idle. The cost shown above is the guaranteed salary payable to the five workers.
6. The depreciation given is for the general purpose machines which are normally used to do other jobs including the special one if allocated.
7. The depreciation given is for machines which will be bought specifically for this contract. After the contract is complete, the machines will be scrapped without any alternative use.
8. ABC Ltd. aims to earn a profit mark up of 10% on cost on all work undertaken.

**Required:**

- (i) Advise the management of ABC Ltd. on the minimum price to quote on this contract. (10 marks)
- (ii) Describe why in practice the minimum price is never actually used. (4 marks)

**(Total: 20 marks)**

**QUESTION TWO**

(a) Nion Ltd. wishes to determine whether it should be investigating its variances or not.

The following information is relevant for the decision to be undertaken:

1. There is a 90% probability that the production processes will remain in control.
2. The benefit of investigating variances is Sh.55,000.

3. It will cost Sh.1,500 to inspect the process at the investigation point.  
 4. If a correctable cause is discovered, it will cost Sh.10,000 to make the necessary adjustments.

**Required:**

Using a decision tree, evaluate whether the variances should be investigated.

(10 marks)

(b) STM Ltd. intends to open a new outlet in the northern part of the country.

The following information relates to the outlet over the next four years:

1. The budgeted sales volume in the first year of operation is 18,000 units. This sales volume is expected to grow at the rate of 10% for years one, two and three but no further growth is expected from year four.
2. The selling price will be set at Sh.900 per unit for the first two years but then reduce by 5% per annum for each of the next two years.
3. Gross profit is expected to be 40% of sales in the first year, but will reduce as the sale price reduces. The purchase price on goods for resale will remain constant for the four years.
4. The overheads including depreciation are budgeted at Sh.5,250,000 for the first two years rising to Sh.6,000,000 in years three and four.
5. The new outlet requires an investment of Sh.7,500,000 at the start of its first year of trading.
6. STM Ltd. depreciates its non-current assets at the rate of 25% on cost with nil residual value expected.

**Required:**

For each of the four years, compute the following:

(i) Net profit. (6 marks)

(ii) Return on investment (ROI). (4 marks)

**(Total: 20 marks)**

**QUESTION THREE**

(a) Describe three roles that are played by a management accountant in environmental management accounting (EMA). (6 marks)

(b) Vitabu Ltd. stocks books for sale. The company is concerned about high inventory cost and is therefore considering reviewing its current inventory management system.

**Additional information:**

1. Daily demand is probabilistic and follows the following distribution:

Demand (Units)	Probability
10	0.22
14	0.30
18	0.40
22	0.08

2. Lead time is also probabilistic and follows the following distribution:

Lead time (Days)	Probability
2	0.1
3	0.3
4	0.2
5	0.4

3. Ordering cost is Sh.1,000 per order.

4. Holding cost is Sh.50 per day while stock out cost is Sh.200 per unit.

5. The policy of the company is to order 55 books whenever stocks fall below 15 books.

6. The opening inventory on the first day was 55 books.

7. The following random numbers are provided:

94562406423947955223705699163168744270003

**Required:**

(i) A simulation of the company's inventory balances for a period of 10 days. (10 marks)

(ii) The average daily inventory cost. (4 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

(a) MWL Ltd. has in the past produced just one fairly successful product. However, a new version of this product has recently been launched. In the meantime, development works continue with the aim of adding a related product to the portfolio of products.

Given below are some details of the activities carried out during the month of October 2018:

Units produced:	Existing product	25,000
	New product	5,000
Production cost (Sh.):	Existing product	375,000
	New product	70,000
Sales revenue (Sh.):	Existing product	550,000
	New product	125,000
Hours worked:	Existing product	5,000
	New product	1,250
Development cost (Sh.)		47,000

**Required:**

Compute the performance indicators that could be used for each of the four perspectives on the balanced scorecard. (8 marks)

(b) AZK Ltd., a manufacturing company, is planning to launch a new product model whose lifecycle is three years.

The following estimated data has been provided:

Details	1 January 2018	31 December 2018	31 December 2019	31 December 2020
Research and development cost (Sh.)	850,400	200,000	-	-
<b>Production cost:</b>				
Variable cost per unit (Sh.)	-	100	80	90
Total fixed cost (Sh.)	-	500,000	500,000	500,000
<b>Marketing cost:</b>				
Variable cost per unit (Sh.)	-	12	8	10
Total fixed cost (Sh.)	-	200,000	150,000	100,000
<b>Distribution cost:</b>				
Total fixed cost (Sh.)	-	120,000	120,000	120,000
Disposal of special equipment (Sh.)	-	-	-	300,000
Present value factor	1	0.89	0.80	0.71
Production (units)	-	20,000	20,000	20,000

The Marketing Director believes that customers could only pay Sh.120 per unit but the Finance Director believes this will not cover all projected costs throughout the product's lifecycle.

**Required:**

(i) Evaluate the lifecycle cost per unit. (8 marks)

(ii) Comment on the target price by the Marketing Director and suggest ways of reducing any cost gap. (4 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

(a) Explain four shortcomings of the traditional budgeting process. (4 marks)

(b) Discuss four factors that could encourage the adoption of activity based costing (ABC) in a large service organisation. (8 marks)

(c) Zed Ltd. has received an order to supply 30 units of Product Aye. So far, 14 units have been completed. The first unit required 40 direct labour hours and a total of 240 direct labour hours have been recorded for the 14 units.

**Additional information:**

1. The production manager expects an 80% learning effect for this type of work.
2. The company uses standard absorption costing.
3. The costs attributable to the centre in which Product Aye is manufactured are as follows:

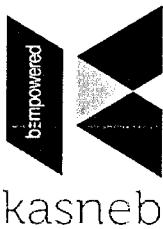
Direct materials	Sh.30 per unit
Direct labour	Sh.6 per hour
Variable overheads	Sh.0.50 per direct labour hour
Fixed overheads	Sh.6,000 per four-week operating period

**Required:**

(i) The learning curve index. (2 marks)

(ii) The unit cost. (6 marks)

**(Total: 20 marks)**



## CPA PART III SECTION 5

### ADVANCED MANAGEMENT ACCOUNTING

**WEDNESDAY: 23 May 2018.**

**Time Allowed: 3 hours.**

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.**

#### QUESTION ONE

A company manufacturing roof tiles has been considering the likely demand for the tiles over the next six years. The demand pattern is estimated as follows:

High demand for six years	0.5
Low demand for six years	0.3
High demand for three years followed by low demand for three years	0.2

#### Additional information:

1. There is no probability of a low demand followed by a high demand.
2. Enlargement of capacity will be required and the following options are available:
  - Option A: Install a fully automatic facility immediately at a cost of Sh.10.8 million.
  - Option B: Install a semi-automatic facility immediately at a cost of Sh.8 million.
  - Option C: Install a semi-automatic facility immediately as in Option B above and upgrade to a fully automatic facility at an additional cost of Sh.4 million in three years time provided demand has been high for the three years.
3. The returns expected under the three capacity options and demand levels are estimated as follows:

Option		If demand is high	If demand is low
	A	Sh.3.2 million per annum	Sh.1.2 million per annum
	B	Sh.1.8 million per annum	Sh.1.6 million per annum
C	Upgrade	Sh.2.2 million per annum for three years	Sh.0.6 million per annum for three years
	No upgrade	Sh.1.0 million per annum for three years	Sh.1.6 million per annum for three years

#### Required:

- (a) A decision tree representing the above information. (8 marks)
- (b) Advise the company on which capacity option to take given that the objective is to maximise expected monetary value (EMV). (12 marks)

**(Total: 20 marks)**

#### QUESTION TWO

- (a) Explain the following costs as used in decision making:

- (i) Avoidable costs. (2 marks)
- (ii) Sunk costs. (2 marks)
- (iii) Differential costs. (2 marks)

(b) The following data relates to the weekly amount spent on entertainment by households, the annual income of the head of the household and the household size in terms of number of persons:

Amount spent per week	Annual income of head of household per year		Household size
	Sh.	Sh.	
2,000		600,000	1
1,700		500,000	2
500		1,000,000	1
0		1,400,000	4
300		2,500,000	2
800		1,000,000	5
1,400		2,100,000	1
1,900		1,700,000	1
3,200		2,900,000	2
1,700		1,400,000	3
900		700,000	1
800		900,000	3
400		1,400,000	2
2,000		1,900,000	1
1,000		1,300,000	1
900		1,000,000	2
700		900,000	3
1,400		1,100,000	3
5,900		3,400,000	6
700		1,000,000	2

A computer output of the above data using a spreadsheet package was provided as follows:

**Regression statistics**

Multiple R	0.669191
R square	0.447817
Adjusted R square	0.382855
Standard error	10.196161
Observations	20

Anova	df	ss	ms	F	significance F
Regression	2	1432.03	716.0149	6.893453	0.006423
Residual	17	1765.77	103.8688		
Total	19	3197.80			

	Coefficients	Standard error	t stat	P-value	Lower 95%	Upper 95%
Intercept	-4.099268	5.583689	-0.734151	0.472862	-15.87984	7.681302
Income	0.985764	0.313508	3.144306	0.005915	0.32432	1.647208
Size	1.762415	1.716065	1.027009	0.318808	-1.858171	5.383002

**Required:**

(i) The equation of regression line of the data. (2 marks)

(ii) A statistical analysis of the computer results. (6 marks)

(iii) Outline three factors that might hinder the interpretation of your results above. (6 marks)

**Note: Round off your figures to two decimal places.**

**(Total: 20 marks)**

**QUESTION THREE**

(a) Outline four costs that should be reported in an environmental cost report. (4 marks)

(b) Describe two models that could be used by a management accountant to scan risks in their operating environment. (4 marks)

(c) Mambo Leo Limited buys and sells a single product branded “Zee”.

The demand and lead time of the product are uncertain.

The following probability distribution has been provided:

Demand (units)	Probability
3	0.02
4	0.08
5	0.11
6	0.16
7	0.19
8	0.13
9	0.10
10	0.08
11	0.07
12	0.06
Lead time (days)	Probability
2	0.20
3	0.30
4	0.35
5	0.15

**Additional information:**

1. The ordering cost per order is Sh.80.
2. The holding cost per unit per day is estimated at Sh.2 while the unit shortage cost is Sh.20 per unit per day.
3. The re-order quantity is 40 units and the re-order level is 20 units with a beginning inventory balance of 30 units.

**Required:**

Using simulation of the above problem for 10 days, determine the average daily cost using the following random numbers:

Demand	68	13	09	20	73	07	92	99	93	18
Lead time	30	22	17	13	08	39	35	24	12	34

(12 marks)  
(Total: 20 marks)

**QUESTION FOUR**

(a) Explain the following budget setting styles.

- (i) Imposed style. (2 marks)
- (ii) Participatory style. (2 marks)
- (iii) Negotiated style. (2 marks)

(b) Smart Furniture Ltd. makes and sells three types of sofa sets namely; American, Butterfly and Comfy.

The management accountant of Smart Furniture Ltd. has provided the following budgeted information for the coming period:

	Type of sofa set		
	American	Butterfly	Comfy
Production and sales (units)	900	800	1,000
Selling price per unit (Sh.)	40,000	20,000	30,000
Price cost per unit (Sh.)	35,000	16,000	24,000

**Additional information:**

1. The company's budgeted overhead costs for the coming period are:

	Sh.
Processing services	3,480,000
Assembly services	2,562,000
Quality control	1,930,500
Selling and administration	<u>3,007,500</u>
	10,980,000

2. The overheads are currently absorbed to products based on assembly labour hours.
3. Production of each type of sofa set takes place in batches of 50 units.

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4. The company has also provided the following estimates for the coming period:

	Type of sofa set		
	American	Butterfly	Comfy
Machine hours per unit	4	3	6
Direct labour hours per unit	7	5	8
Number of customer orders	30	40	50

5. The management accountant has just learnt of activity based costing (ABC) and would be willing to apply it.

**Required:**

A budgeted profit statement using:

(i) Conventional absorption costing using assembly labour hourly rate. (6 marks)

(ii) Activity based costing (ABC). (8 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

(a) Ace Ltd. has two divisions namely; Bee and Cee each under a divisional manager. The two divisions plan to acquire some investments in the month of August 2018.

**Additional information:**

- The cost of capital for both divisions is 13%.
- The current return on investment of each division is 15%.
- The divisions' planned investments have the following features:

	Bee	Cee
Capital required for investment (Sh.)	800,000	400,000
Revenue generated by investment (Sh.)	450,000	210,000
Net profit margin (%)	30	35

**Required:**

For each of the two divisions, compute:

(i) Return on investment (ROI). (3 marks)

(ii) Residual income. (3 marks)

(b) Techsavy Ltd. has several independent divisions. The company's Tube division manufactures a picture tube used in television sets. The Tube division's income statement for the year ended 31 March 2018 in which 8,000 tubes were sold is given below:

	Total Sh."000"	Per unit Sh.
Sales	13,600	1,700
Cost of goods sold	(8,400)	(1,050)
Gross margin	5,200	650
Selling and administrative expenses	(3,900)	(487.5)
Divisional net income	1,300	162.5

The above cost of Sh.1,050 to produce a single tube consists of the following costs:

	Sh.
Direct materials	380
Direct labour	270
Manufacturing overheads (75% fixed)	400
Total cost per tube	1,050

The Tube division has fixed selling and administrative expenses of Sh.3,500,000 per year.

Techsavy Ltd. has just established a new division called TV Division that will produce a television set that requires high resolution picture tubes. The Tube division has been tasked to manufacture 2,500 of these tubes each year and sell them to the TV division. As part of determining the price that should be charged to the TV division, the Tube division has estimated the following costs for each of the new high resolution tubes.

	Sh.
Direct materials	600
Direct labour	490
Manufacturing overheads (2/3 fixed)	540
Total cost per tube	1,630

To manufacture the new tubes, the Tube division would have to reduce production of its regular tubes by 3,000 units per year. There would be no variable selling and administrative expenses on the intercompany business and total fixed overhead costs would not change. Assume direct labour is a variable cost.

**Required:**

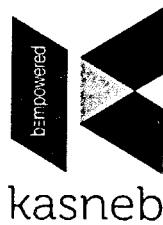
(i) Advise on the lowest acceptable transfer price from the perspective of the Tube division for each of the new high resolution tubes. (8 marks)

(ii) Assume that the TV division has identified an external supplier that could provide the high resolution tubes for only Sh.2,000 each, and the Tube division is willing to pay this price.

Evaluate the effect of this decision on the profits of the company as a whole.

(6 marks)

**(Total: 20 marks)**



## CPA PART III SECTION 5

### ADVANCED MANAGEMENT ACCOUNTING

**WEDNESDAY: 29 November 2017.**

**Time Allowed: 3 hours.**

**Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.**

#### QUESTION ONE

(a) Tripa Ltd. is a company that specialises in the production of umbrellas. For the year ending 31 December 2018, the company is planning to produce special promotional umbrellas branded "Jumbo". Tripa Ltd. wishes to determine the optimal number of umbrellas that should be produced.

**Additional information:**

1. If all the umbrellas are sold within the year 2018, they would be sold at Sh.900 each.
2. If the company is unable to sell all the umbrellas within the year 2018, then they would be sold in the following year at Sh.300 per umbrella.
3. The production cost per umbrella amounts to Sh.400.
4. The demand for the umbrellas depends on the performance of the economy which is highly unpredictable.

The following are the possible states of economy:

<b>Economy</b>	<b>Probability</b>	<b>Demand (Number of umbrellas)</b>
Good	0.30	500,000
Average	0.46	350,000
Poor	0.24	300,000

5. Tripa Ltd. has to decide to produce the umbrellas at one of the states of the economy in order to match forecast demand.
6. The opportunity cost of not selling an umbrella that is demanded is Sh.100.

**Required:**

- (i) Construct a pay off table showing all the possible outcomes. (6 marks)
- (ii) Advise the management of Tripa Ltd. on the optimal level of production based on the expected value, maximax and maximin criteria. (9 marks)

(b) Sori Ltd. produces and sells three products; A, B and C. Sori Ltd. has contracts to supply products A and B which will utilise all the specific materials that are available to make these two products during the next period.

The revenue that these contracts will generate and the contribution to sales (C/S) ratios of products A and B are as follows:

	<b>Product A</b>	<b>Product B</b>
Revenue	Sh.10 million	Sh.20 million
C/S ratio	15%	10%

**Additional information:**

1. Product C will generate a contribution to sales (C/S) ratio of 25%.
2. The total fixed costs of Sori Ltd. are Sh.5.5 million during the next period.
3. The management have budgeted to earn a profit of Sh.1 million.

**Required:**

The revenue that needs to be generated from product C for Sori Ltd. to achieve the budgeted profit. (5 marks)

**(Total: 20 marks)**

**QUESTION TWO**

(a) One of the major purposes of a budget is operational control. Through budgeting, management tries to match actual results to outcomes.

**Required:**

Other than control, discuss four other purposes of a budget.

(8 marks)

(b) Actcross Ltd., a subsidiary of Master Pack Ltd., a packaging company is preparing a budget for the year ending 30 June 2018. In respect of fuel consumption, the company desires to estimate an equation in the form of  $y = a + bx$ , where "y" is the total expense at an activity level "x", "a" is the fixed cost and "b" is the variable cost.

The following information relates to the year ended 30 June 2017:

Year and Month	Machine hours Sh.“000”	Fuel expenses Sh.“000”
<b>2016</b>		
July	34	640
August	30	620
September	34	620
October	39	590
November	42	500
December	32	530
<b>2017</b>		
January	26	500
February	26	500
March	31	530
April	35	550
May	43	580
June	48	680

The annual total and monthly average figures for the year ended 30 June 2017 were as follows:

	Machine hours Sh.“000”	Fuel expenses Sh.“000”
Annual total	420	6,840
Monthly average	35	570

**Required:**

Estimate the fixed and variable elements of fuel expense from the above data using the following methods:

(i) High-low. (3 marks)

(ii) Least squares regression. (7 marks)

(c) From the information in (b) above, the coefficient of determination arising is approximately 0.25. Interpret the significance of this information. (2 marks)

**(Total: 20 marks)**

**QUESTION THREE**

(a) Measuring customer performance in the context of a firm encompasses using generic measures to assess the impact of various strategies on customers.

**Required:**

With regard to performance measurement in the service industry, identify three key indicators of customer performance measurement. (6 marks)

(b) Wood Master Ltd. makes quality wooden benches both for indoor and outdoor use. Results have been disappointing in recent years and a new managing director has been appointed in order to boost the production volumes.

After an initial assessment, the director has noted that the budgets had been set at easily achievable levels for employees. He argues that employees would be better motivated by setting budgets that challenged them more in terms of higher expected output other than changing the overall budgeted output. The director has not yet altered the standard cost card. The budgeted output and sales for the month of October 2017 was 4,000 benches.

The standard cost card at this output level is provided below:

	Sh.
Wood (25 kgs at Sh.32 per kg)	800
Labour (4 hours at Sh.80 per hour)	320
Variable overheads (4 hours at Sh.40 per hour)	160
Fixed overheads (4 hours at Sh.160 per hour)	640
Total standard cost	<u>1,920</u>
Selling price	<u>2,200</u>
Standard profit	<u>280</u>

**Additional information:**

- Overheads are absorbed on the basis of labour hours and the company uses an absorption costing system.
- Stocks are valued at standard cost. There were no stocks at the beginning of the month of October 2017.
- Actual results for the month of October 2017 were as follows:

	Sh.“000”
Wood (80,000 kgs at Sh.35 per kg)	2,800
Labour (16,000 hours at Sh.70 per hour)	1,120
Variable overheads	600
Fixed overheads	1,960
Total production cost (3,600 benches)	6,480
Closing stock (400 benches at Sh.1,920 each)	(768)
Cost of sales	<u>5,712</u>
Sales (3,200 benches)	<u>7,200</u>
Actual profit	<u>1,488</u>

- The average monthly production and sales for some years prior to October 2017 had been 3,400 units and budgets had previously been set at this level. Very few operating variances had historically been generated by the standard cost used.
- The finance director suggested that an absorption costing system is misleading and that marginal costing system should be considered at some stage in the future to guide decision making.

**Required:**

- The operating variances. (10 marks)
- A statement reconciling the actual profit and the budgeted profit for Wood Master Ltd. (4 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

- Bipo Ltd. is planning to launch a new product into the market. In order to determine the introduction selling price of the product, a market research was undertaken. The following information has been obtained from the research under two possible selling prices; Sh.300 and Sh.350 per unit:

Selling price per unit Sh.300		Selling price per unit Sh.350	
Probability	Sales volumes (units)	Probability	Sales volume (units)
0.4	120,000	0.3	108,000
0.5	110,000	0.3	100,000
0.1	140,000	0.4	94,000

**Additional information:**

- The variable production cost would be Sh.120 per unit for production volumes up to and including 100,000 units each year. However, if production exceeds 100,000 units each year, the variable production cost per unit would fall to Sh.110 for all units produced.
- Advertising costs would be Sh.9,000,000 per annum at a selling price of Sh.300 and Sh.9,700,000 per annum at a selling price of Sh.350.
- Fixed production costs would be Sh.4,500,000 per annum.

**Required:**

Advise the management of Bipo Ltd. on the optimal selling price per unit for the new product. (11 marks)

- The Lofters group comprises two companies namely; W Ltd. and Zed Ltd. W Ltd. is a trading company with two divisions; the Design division which designs wind turbines and supplies the designs to customers under license and the Gearbox division, which manufactures gearboxes for the car industry.

Zed Ltd. manufactures components for gearboxes. It sells the components globally and also supplies W Ltd. with components for its Gearbox division.

The financial results for the two companies for the year ended 31 December 2017 are as follows:

	<b>W Ltd.</b>		<b>Zed Ltd.</b>
	<b>Design Division</b>	<b>Gearbox Division</b>	
	<b>Sh.“000”</b>	<b>Sh.“000”</b>	<b>Sh.“000”</b>
External sales	14,300	25,535	8,010
Sales to Gearbox division			<u>7,550</u>
			<u>15,560</u>
Cost of sales	(4,900)	(16,200)	(5,280)
Administrative costs	(3,400)	(4,200)	(2,600)
Distribution costs	-	<u>(1,260)</u>	<u>(670)</u>
Operating profit	<u>6,000</u>	<u>3,875</u>	<u>7,010</u>
Capital employed	<u>23,540</u>	<u>32,320</u>	<u>82,975</u>

The cost of sales in the Gearbox division includes the cost of components purchased from Zed Ltd.

**Required:**

Evaluate the performance of Zed Ltd. and each division of W Ltd. using the following performance measures:

- (i) Return on capital employed (ROCE). (3 marks)
- (ii) Asset turnover. (3 marks)
- (iii) Operating profit margin. (3 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

(a) Environmental management accounting (EMA) is complementary to the conventional financial management accounting approach with the aim of developing appropriate mechanisms that assist in identification and allocation of environmental related costs.

With reference to the above statement, highlight four areas for the application of EMA. (4 marks)

(b) Trans Ltd. supplies a product branded “BBG”. Although the annual demand for BBG is high, it varies considerably.

The demand during lead time and the associated probabilities are as follows:

<b>Demand during lead time</b>	<b>Probability</b>
600	0.25
650	0.23
700	0.12
750	0.10
800	0.08
850	0.05
900	0.05
950	0.04
1,000	0.03
1,050	0.03
1,100	0.02

**Additional information:**

1. Trans Ltd. places 5 orders annually.
2. The ordering cost per order amounts to Sh.6,000.
3. The carrying cost amounts to Sh.1,000 per unit.
4. The estimated stock-out cost is Sh.5,000 per unit.
5. The re-order point is 850 units.
6. The lead time is 12 working days.

**Required**

- (i) Advise the management of Trans Ltd. on the amount of safety stock to be maintained. (14 marks)
- (ii) Determine the probability of stock-out. (2 marks)

**(Total: 20 marks)**

# KASNEB

## CPA PART III SECTION 5

### ADVANCED MANAGEMENT ACCOUNTING

WEDNESDAY: 24 May 2017.

Time Allowed: 3 hours.

Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.

#### QUESTION ONE

(a) Furahia Ltd., an events management company is considering whether to advertise an outdoor concert. The sale of tickets is dependent on the weather, as indicated below:

- If the weather is poor, it is expected that 5,000 tickets will be sold without advertising. There is a 70% chance that the weather will be poor.
- If the weather is good, it is expected that 10,000 tickets will be sold without advertising. There is a 30% chance that the weather will be good.
- If the concert is advertised and the weather is poor, there is a 60% chance that advertising will stimulate further demand and ticket sales will increase to 7,000.
- If the concert is advertised and the weather is good, there is a 25% chance that advertising will stimulate further demand and ticket sales will increase to 13,000.

The profit expected before deducting the cost of advertising at different levels of ticket sales are as follows:

Number of tickets sold	Profit Sh. "000"
5,000	(20,000)
6,000	(5,000)
7,000	35,000
8,000	55,000
9,000	70,000
10,000	90,000
11,000	115,000
12,000	130,000
13,000	150,000

The cost of advertising the concert is expected to be Sh.15,000,000.

**Required:**

Using a decision tree, advise the management of Furahia Ltd. on whether the outdoor concert should be advertised. (12 marks)

(b) Samoa Ltd. has to decide which of the three new mutually exclusive products; X, Y and Z, to launch. The company's directors believe that the demand for the three products will vary depending on competitor's reaction. There is a 30% chance that the competitor's reaction will be strong, a 20% chance that the competitor's reaction will be normal and a 50% chance that the competitor's reaction will be weak. The company uses expected value to make this type of decision.

The net present values of the possible outcomes are as follows:

Competitor's reaction	Product X Sh. "000"	Product Y Sh. "000"	Product Z Sh. "000"
Strong	400	800	1,200
Normal	600	1,200	800
Weak	1,000	1,600	1,000

A market researcher believes that he could provide perfect information on potential competitor's reaction in the above market.

**Required:**

Advise the management of Samoa Ltd. on the maximum amount that should be paid for the information from the market researcher. (8 marks)

(Total: 20 marks)

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Out of 4

**QUESTION TWO**

(a) Evaluate three benefits that might accrue to an organisation that adopts Environmental Management Accounting (EMA). (6 marks)

(b) Jambo Ltd. is a multiproduct firm. The company intends to launch a new product branded "ZP" in the coming months.

Production will be in batches of 1,000 units throughout the life of the product. It is expected to achieve a 90% learning curve but the learning would cease after the 64<sup>th</sup> batch.

Other relevant data of product "ZP" is as follows:

Expected life (production)	<u>256,000 units</u>
	Sh.
Selling price per unit	123
Direct material cost per unit	36
Total direct labour cost (first batch)	52,500
Variable overhead costs per unit	24
Total specific fixed costs	3,875,000

The learning index for a 90% learning curve is -0.152.

**Required:**

(i) The expected profit to be earned from the product over its lifetime. (8 marks)

(ii) It has now been established that the learning effect will continue for all of the 256 batches that will be produced.

**Required:**

The "learning curve" required to achieve a lifetime product profit of Sh.10 million, assuming that a constant learning rate applies throughout the product's life. (6 marks)

**(Total: 20 marks)**

**QUESTION THREE**

(a) Explain the term "incremental budgeting", citing one of its major limitations as a budgeting technique. (4 marks)

(b) Discuss the three approaches of evaluating performance. (6 marks)

(c) You have been provided with the following operating statement which represents an attempt by a firm to compare the actual performance with the budget for the quarter which has just ended:

Number of units sold	Budget	Actual	Variance
	Sh. "000"	Sh. "000"	Sh. "000"
Sales	1,024	1,071	47
<b>Cost of sales (all variable):</b>			
Materials	168	144	
Labour	240	288	
Overheads	32	36	
Total variable costs	440	468	(28)
Fixed labour cost	100	94	6
<b>Selling and distribution costs:</b>			
Fixed	72	83	(11)
Variable	144	153	(9)
<b>Administrative costs:</b>			
Fixed	184	176	8
Variable	48	54	(6)
	548	560	(12)
Net profit	36	43	7

**Required:**

(i) Using a flexible budgeting approach, redraft the operating statement so as to provide a more realistic indication of the variances. (8 marks)

(ii) Explain why the original operating statement was of little use to the management. (2 marks)

**(Total: 20 marks)**

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Out of 4

**QUESTION FOUR**

(a) A pizza vendor buys pieces of pizza every morning at Sh.450 each by placing an order one day in advance and sells them at Sh.700 each.

Unsold pizza could be sold the following day at Sh.200 per piece and thereafter if still unsold the pizza is treated as waste.

The pattern of demand of the pizza is given below:

**Fresh pizza:**

Daily sale	100	101	102	103	104	105	106	107	108	109	110
Probability	0.01	0.03	0.04	0.07	0.09	0.11	0.15	0.21	0.18	0.09	0.02

**One day old pizza:**

Daily sale	0	1	2	3
Probability	0.70	0.20	0.08	0.02

**Additional information:**

1. The vendor adopts the rule that, if there is no stock of pizza at the end of the previous day, an order of 110 pieces is placed, otherwise an order of 100 or 105 pieces is placed whichever is nearest to the actual fresh pizza sale on the previous day.
2. Use the following set of random numbers:

Fresh pizza	37	73	14	17	24	35	29	37	33	68
One day old pizza	17	28	69	38	50	57	82	44	89	60

**Required:**

Starting with zero stock and a pending order of 105 pieces of pizza, simulate the transactions for 10 days and determine the vendor's profit or loss. (10 marks)

(b) Vesto Ltd. intends to launch a new product into the market. The management of the company is uncertain of some variables namely; selling price, variable cost and the annual sales volume of the product.

The following information relates to the possible values of the above variables and their associated probabilities:

Selling price per unit Sh.	Probability	Variable cost per unit Sh.	Probability	Sales volume (Units)	Probability
700	0.20	350	0.10	20,000	0.20
875	0.50	550	0.50	30,000	0.40
900	0.30	600	0.40	40,000	0.40

**Additional information:**

1. The sales volume is the estimated annual sales.
2. The uncertain variables are independent of one another.

**Required:**

Simulate the scenario above to determine the average annual contribution of the product.

Use the following random numbers: 80, 60, 43, 63, 21, 40, 36, 05, 69, 16, 73, 86, 28, 31, 61, 57, 39, 96, 49, 77, 26, 95, 82, 72. (10 marks)

(Total: 20 marks)

**QUESTION FIVE**

(a) Summarise four factors that should be taken into consideration in establishing the length of a proposed budget period. (4 marks)

(b) Reka Ltd. has two manufacturing divisions namely; A and B. Division A manufactures a single product branded "RR". Two-thirds of the output of "RR" is sold externally while the balance is transferred to division B where it is used as raw material in the manufacture of a product branded "TT".

The unit costs of product "RR" are as follows:

	Sh.
Direct material	12
Direct labour	6
Direct expenses	6
Variable manufacturing overheads	6
Fixed manufacturing overheads	12
Selling and packaging expense (variable)	<u>2</u>
	<u>44</u>

**Additional information:**

1. Annually, 10,000 units of product "RR" are sold externally at the standard price of Sh.90 per unit while 5,000 units are transferred to division B at an internal transfer charge of Sh.87 per unit.
2. The selling and packaging expense is not incurred for internal transfers.
3. The unit costs of product "TT" are as follows:

	Sh.
Transferred-in item ("RR")	87
Added direct materials	69
Direct labour	9
Variable overheads	36
Fixed overheads	36
Selling and packaging expense (variable)	<u>3</u>
	<u>240</u>

4. A recent study of the demand and sales relationship of the company's products by the sales division produced the following results:

• <b>Division A</b>			
Selling price (Sh.)	60	90	120
Demand (units)	15,000	10,000	5,000

• <b>Division B</b>			
Selling price (Sh.)	240	270	300
Demand (units)	7,200	5,000	2,800

5. The manager of division B has proposed that transfers from division A should be made at Sh.36 per unit which represents the variable costs plus a minimum mark-up.

**Required:**

Advise the management of Reka Ltd. on the following:

(i) The current effect of the transfer pricing system on the company's profits. (10 marks)

(ii) The effect on profit of adopting the above proposal from the manager of division B. (6 marks)

**(Total: 20 marks)**

# KASNEB

## CPA PART III SECTION 5

### ADVANCED MANAGEMENT ACCOUNTING

WEDNESDAY: 23 November 2016.

Time Allowed: 3 hours.

Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.

#### QUESTION ONE

(a) Business organisations are required to factor in environmental concerns in their decision making.

Describe four ways of aligning business operations with environmental issues. (8 marks)

(b) The following information relates to night shift operations at Waki Ltd., a manufacturing company.

1. The night shift workers normally consist of 30 skilled men, 15 semi-skilled men and 10 unskilled men, who are paid at standard hourly rates of Sh.80, Sh.60 and Sh.40 respectively.
2. A normal working week consists of 40 hours.
3. The weekly output for night shift workers is expected to be 2,000 units.
4. In the second week of the month of October 2016, the night shift workers consisted of 40 skilled men, 10 semi-skilled men and 5 unskilled men, who were paid at Sh.70, Sh.65 and Sh.30 respectively. During that week, 4 hours were lost due to abnormal idle time and 1,600 units were produced.

**Required:**

Compute for the second week of October 2016:

- (i) Labour cost variance. (2 marks)
- (ii) Labour rate variance. (2 marks)
- (iii) Labour efficiency variance. (3 marks)
- (iv) Labour mix variance. (3 marks)
- (v) Idle time variance. (2 marks)

**(Total: 20 marks)**

#### QUESTION TWO

(a) SL Ltd. manufactures and stocks component Q which is used as an input material in another department within the organisation. The past data on component Q is as follows:

- Average demand per day is 130 units.
- Average production lead time is 5 days.

The frequency distribution of actual demand during lead time is given below:

Actual demand (units)	Frequency
300-399	0
400-499	16
500-599	20
600-699	25
700-799	14
800-899	8
900-999	3

The company targets an 85% service level during lead time.

**Required:**

- (i) The re-order level. (9 marks)
- (ii) The safety stock level. (3 marks)

(b) Innovators Ltd. has designed a new model of a manufacturing machine. The cost and sales price of the first machine to be produced has been estimated as follows:

“Sh.000”	
Materials	25,000
Labour (2,000 hours x Sh.15,000 per hour)	30,000
Overhead (50% of labour cost)	<u>15,000</u>
	70,000
Profit mark-up (25%)	<u>17,500</u>
Selling price	<u>87,500</u>

The company plans to sell all the machines at full cost plus 25%. A 90% learning curve is expected to apply to the production work. Only one customer has expressed interest in buying the machine so far, but he views Sh.87,500,000 as too high a price to pay. He could buy more of the machines in the coming periods.

**Required:**

(i) If the customer above paid Sh.87,500,000 for the first machine, determine the price he would have to pay later for a second machine. (4 marks)

(ii) Advise the management of Innovators Ltd. on the price quotation per machine if the customer above places an order for the third and the fourth machines as a single order. (4 marks)

**(Total: 20 marks)**

**QUESTION THREE**

Best deal Ltd. has developed a new product and is currently considering the marketing and pricing policy that it should employ for the product. Specifically, it is considering whether the sales price should be set at Sh.150 per unit or at a higher price of Sh.240 per unit. Sales volume and respective probabilities at these two prices are as follows:

Sales price of Sh.150		Sales price of Sh.240	
Forecast sales volume	Probability	Forecast sales volume	Probability
20,000	0.1	18,000	0.1
30,000	0.6	16,000	0.3
40,000	0.3	20,000	0.3
		24,000	0.3

**Additional information:**

- Fixed production cost of the venture will be Sh.380,000.
- The level of advertising and publicity costs will depend on the sales price and the market aimed for. With a sales price of Sh. 150 per unit, the advertising and publicity costs will amount to Sh.120,000. With a sales price of Sh.240 per unit, these costs will amount to Sh.1,220,000.
- Labour and variable overhead costs will amount to Sh.50 per unit produced.
- Each unit produced requires 2 Kgs of raw materials and the basic cost is expected to be Sh.40 per Kg. However, the suppliers of the raw materials are prepared to lower the price in return for a firm agreement to purchase a guaranteed minimum quantity. If Best deal Ltd. contracts to purchase at least 40,000 Kgs, then the price will be reduced to Sh.37.5 per Kg for all purchases. If Best deal Ltd. contracts to purchase a minimum of 60,000 Kgs, then the price will be reduced to Sh.35 per Kg for all purchases. It is only if Best deal Ltd. guarantees either of the above minimum levels of purchases in advance that the appropriate reduced prices will be effected.
- If Best deal Ltd. was to enter into one of the agreements for the supply of the raw materials and was to find that it did not require to utilise the entire quantity of materials purchased, then the excess could be sold. The sales price will depend upon the quantity that is offered for sale. If 16,000 Kgs or more is sold, the sales price will be Sh.29 per Kg for all sales. If less than 16,000 Kgs are offered, the sales price will only be Sh.24 per Kg.
- Irrespective of the amount sold, the costs incurred in selling the excess raw materials per kg. will be as follows:

	Sh.
Packaging	3.00
Delivery	4.50
Insurance	1.50

- Best deal Ltd.'s management team feels that losses are undesirable while high expected monetary values are desirable. Therefore, it is considering the utilisation of a formula that incorporates both aspects of the outcome to measure the desirability of each strategy. The formula to be used to measure desirability is:

$$\text{Desirability} = L + 3 E$$

Where    L = The lowest outcome of the strategy.  
           E = The expected monetary value of the strategy.

The higher this measure is, the more desirable the strategy.

The marketing manager seeks your advice, as the management accountant, to assist in deciding on the appropriate strategy.

**Required:**

(a) Prepare statements showing the various expected outcomes of each of the choices open to Best deal Ltd. (14 marks)

(b) Advise the management of Best deal Ltd. on the best choice of strategies if the company's objective is to:

- (i) Maximise expected monetary value. (2 marks)
- (ii) Minimise the harm done to the firm if the worst outcome of each choice was to occur. (2 marks)
- (iii) Maximise the score on the above mentioned measure of desirability. (2 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

Everlast Ltd. operates three health and fitness centres in the country. Each centre offers dietary plans and fitness facilities or programmes to clients under the supervision of dieticians and fitness trainers.

Residential accommodation is also available at each centre. The centres are located in the Western, Eastern and Central parts of the country.

The following information is available:

1. Summary of financial data for Everlast Ltd. for the financial year ended 30 June 2016:

	Western Sh. "000"	Eastern Sh. "000"	Central Sh. "000"	Total Sh. "000"
<b>Revenue:</b>				
Fees received	1,800	2,100	4,500	8,400
Variable cost	(468)	(567)	(1,395)	(2,430)
Contribution	1,332	1,533	3,105	5,970
Fixed cost	(936)	(1,092)	(2,402)	(4,430)
Operating profit	<u>396</u>	<u>441</u>	<u>703</u>	<u>1,540</u>
Interest cost on long-term debt at 10%				(180)
Profit before tax				1,360
Income tax for the year				(408)
Profit for the year				<u>952</u>

**Average book values for 2016:**

<b>Assets:</b>			
Non-current assets	1,000	2,500	3,300
Current assets	<u>800</u>	<u>900</u>	<u>1,000</u>
Total assets	<u>1,800</u>	<u>3,400</u>	<u>4,300</u>

**Equity:**

Share capital	2,500
Retained earnings	4,400

**Non-current liability:**

Long-term borrowing	1,800
Current liabilities	80
Total equity and liabilities	<u>800</u>

2. Everlast Ltd. defines residual income (RI) for each centre as operating profit minus required rate of return of 12% of the total assets of each centre.

3. At present, Everlast Ltd. does not allocate long-term borrowings of the group to the three separate centres.
4. Each centre faces similar risk.
5. Tax is payable at the rate of 30%.
6. The market value of the equity capital of Everlast Ltd. is Sh.9 million and the cost of equity is 15%.
7. The market value of long-term borrowing is equal to its book value.
8. The directors are concerned about the return on investment (ROI) generated by Eastern centre and are considering using sensitivity analysis in order to show how target ROI of 20% might be achieved.
9. The marketing director stated at a recent board meeting that “The Group’s success depends on the quality of service to our clients. In my opinion, we need only to concern ourselves with the number of complaints received from clients during each period as this is the most important performance measure of our business. The number of complaints received from clients is a perfect performance measure. As long as the number of complaints received from customers is not increasing from period to period, then we can be confident about our future prospects”.

**Required:**

The directors of Everlast Ltd. have requested you as the management accountant to prepare a report providing them with explanations as to the following:

- (a) The most successful centre. Your report should include commentary on return on investment (ROI), residual income (RI) and economic value added (EVA) as measures of financial performance. Detailed calculations regarding each of the three measures must be included as part of your report. (12 marks)
- (b) The percentage change in revenue, total cost and net assets during the period that would have been required in order to achieve a target ROI of 20% for Eastern centre. (6 marks)
- (c) State whether you agree with the statement of the marketing director in note (9) above. (2 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

Sang Ltd. has two divisions namely; X and Y. Division X manufactures electrical components which it sells to division Y and external customers.

Division Y has designed a new product branded “Yetu” and has requested division X to supply the electrical component which is required in the manufacture of the new product. Each unit of product “Yetu” will require one electrical component. This component will no longer be sold by division X to external customers. Division X has quoted a transfer price to division Y of Sh.45 for each unit of the electrical component.

It is the policy of Sang Ltd. to reward managers based on their individual division’s return on capital employed.

The details of the monthly production for each division are as follows:

**Division X**

- Output The electrical component will be produced in batches of 1,000 units. The maximum capacity is 6,000 components per month.
- Variable cost Sh.15 per component.
- Fixed cost Sh.50,000 (these are incurred specifically to manufacture the electrical component).

**Division Y**

- Output Product “Yetu” will be produced in batches of 1,000 units. The maximum customer demand is 6,000 units of product “Yetu” per month.
- Variable cost Sh.9 per unit plus the cost of electrical component.
- Fixed cost Sh.75,000 (these are incurred specifically to manufacture product “Yetu”).

The relationship between the monthly customer demand and the selling price of product "Yetu" is as follows:

Demand (units)	Selling price per unit (Sh.)
1,000	120
2,000	110
3,000	100
4,000	90
5,000	80
6,000	67

**Required:**

(a) Based on a transfer price of Sh.45 per electrical component, advise the management of Sang Ltd. on the monthly profit that would be earned as a result of selling product "Yetu". (6 marks)

(b) Determine the maximum monthly profit from the sale of product "Yetu" for Sang Ltd. (4 marks)

(c) Using the marginal cost of electrical component as a transfer price, advise the management of Sang Ltd. on the monthly profit that would be earned as a result of selling product "Yetu" by divisions X and Y and the company as a whole. (6 marks)

(d) (i) Using the above scenario, discuss the problem of setting a transfer price. (2 marks)

(ii) Suggest a transfer pricing policy that would help Sang Ltd. to overcome the transfer pricing problems that it faces. (2 marks)

**(Total: 20 marks)**

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# KASNEB

## CPA PART III SECTION 5

### ADVANCED MANAGEMENT ACCOUNTING

WEDNESDAY: 25 May 2016.

Time Allowed: 3 hours.

Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.

#### QUESTION ONE

(a) Management accountants are required to conduct themselves ethically. A commitment to ethical professional practice requires observation of principles that express values and standards that guide conduct such as honesty, fairness, objectivity and responsibility.

**Required:**

With reference to the above statement, summarise six benefits of ethical behaviour by management accountants in business. (6 marks)

(b) (i) The learning phenomenon applies to time and will affect any cost which is a function of time. Whenever costs are estimated, the potential impact of learning should be considered.

**Required:**

Highlight four areas where the learning curve is applied in business. (4 marks)

(ii) Describe four limitations of using the learning curve in business. (4 marks)

(c) Space Com Ltd. is about to bid on a new radar system. Although the product uses new technology, Space Com Ltd. believes that a learning rate of 75% is appropriate. The first unit is expected to consume 700 hours and the contract is for 40 units.

**Required:**

(i) The total amount of hours required to build the 40 units. (2 marks)

(ii) The average time to build each of the 40 units. (2 marks)

(iii) Assuming that a worker works 2,080 hours per year, determine the number of workers that should be assigned to this contract to complete it in a year. (2 marks)

**(Total: 20 marks)**

#### QUESTION TWO

The Raha Resort, which is privately owned, is a world famous luxury hotel and cricket complex. It has been chosen as the venue to stage "The Ribon Cup", a cricket tournament which is contested by teams from across the world. The tournament is scheduled to take place during the month of December 2016. The resort will offer accommodation for each of the five nights that guests would require accommodation.

The following information is available regarding the period of the tournament:

1. Hotel data:

Total number of rooms 2,400

Rooms mix:

- Double rooms 75%
- Single rooms 15%
- Family rooms 10%

Fees per room per night (Sh.):

- Double rooms 4,000
- Single rooms 3,000
- Family rooms 6,000

Number of guests per room:

- Double rooms 2
- Single rooms 1
- Family rooms 4

Note: When occupied, all rooms will contain the number of guests as above.

Costs:

Variable cost per guest per night Sh.1,000

Attributable fixed costs for the five-day period:

- Double rooms Sh.5,160,000
- Single and family rooms (total) Sh.3,000,000

2. Accommodation for guests is provided on an all-inclusive basis (meals, drinks and entertainment).
3. The hotel management expects all single and family rooms to be "sold out" for each of the five nights of the tournament. However, they are unsure whether the fee in respect of double rooms should be increased or decreased. At a price of Sh.4,000 per room per night they expect an occupancy rate of 80% of available double rooms. For each Sh.100 increase/decrease, they expect the number of rooms to decrease/increase respectively by 40.
4. The objective of the hotel management is to maximise profit.

**Required:**

(a) (i) The fees that should be charged per double room per night in order to maximise profits during the tournament. (6 marks)

(ii) The profit that would be earned from staging the tournament as a consequence of charging the fee determined in (a)(i) above. (4 marks)

(b) The management of the hotel is concerned about the level of variable costs per guest per night to be incurred in respect of the tournament. A recent review of proposed operational activities has concluded that variable cost per guest per night in all rooms in the hotel would be reduced by 20% if proposed changes in operational activities were made. However, this would result in additional attributable fixed costs amounting to Sh.2,000,000 in respect of the five-day period.

**Required:**  
Advise the management whether, on purely financial grounds, they should make the proposed changes in operational activities. (6 marks)

(c) Discuss two initiatives that the management might consider in order to further improve the profit from staging the cricket tournament. (4 marks)

**(Total: 20 marks)**

### QUESTION THREE

(a) Sawasawa Ltd. is a fitness centre serving traders within the Central Business District (CBD). Currently, the centre has 4,000 members with each member paying a subscription fee of Sh.35,000 per annum.

The centre comprises of a gym, a swimming pool and a small exercise area.

A competitor plans to open a new fitness centre within the same locality. This is expected to cause a decrease in membership numbers for Sawasawa Ltd. unless its facilities are upgraded.

Consequently, Sawasawa Ltd. is considering the following options in a bid to improve its membership numbers:

#### Option 1

No upgrade. In this case, membership numbers would be expected to fall to 3,250 per annum for the next four years. Operational costs would remain unchanged at the current level of Sh.4,500 per member per annum.

#### Option 2

Upgrade the exercise area. The capital cost of this upgrade would be Sh.18,000,000. The expected effect on membership numbers for the next four years is as follows:

Probability	Effect on membership numbers
0.3	Remain at their current level of 4,000 members per annum.
0.7	Increase to 4,800 members per annum.

The effect on operational costs for the next four years is expected to be:

Probability	Effect on operational costs
0.4	Increase to Sh.6,000 per annum per member.
0.6	Increase to Sh.8,000 per annum per member.

Any improvements are expected to last for four years.

**Required:**

(i) Using the expected monetary value (EMV) criterion, recommend the decision that Sawasawa Ltd. should make. (8 marks)

(ii) Advise on the maximum price that Sawasawa Ltd. should pay for perfect information about the upgrade of the exercise area. (4 marks)

(b) James Makali prides himself as the largest sausage supplier in the city. Small, freshly baked sausages are the speciality of his shop. He has sought help in determining the number of sausages he should make each day so as to maximise his long run profitability.

From an analysis of past demand, he estimates the demand for sausages as follows:

<b>Demand (packets)</b>	<b>Probability of demand</b>
-------------------------	------------------------------

1,800	0.05
2,000	0.10
2,200	0.20
2,400	0.30
2,600	0.20
2,800	0.10
3,000	0.05

**Additional information:**

1. The selling price per packet amounts to Sh.90.
2. The cost per packet which includes handling and transportation amounts to Sh.65.
3. Sausages that are not sold at the end of the day are sold as day-old merchandise the following day at Sh.30 per packet.

**Required:**

Using continuous analysis of probability distribution of demand, advise on the optimal production quantity (in packets) for the sausages. (8 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

(a) Environmental Management Accounting (EMA) is broadly defined as the identification, collection, analysis and use of two types of information for internal decision making namely:

1. Physical information on the use and flow of energy, water and materials including waste.
2. Monetary information on environmental related costs, earnings and savings.

The management accountant possesses important cost data and information regarding the environment.

**Required:**

With regard to the above statement, evaluate the role of management accountants in Environmental Management Accounting (EMA). (6 marks)

(b) Ujuzi Ltd. operates a standard marginal cost accounting system. The information relating to product "Exa" which is manufactured in one of the company's department is given below:

<b>Standard marginal cost per unit</b>	
	<b>Sh.</b>

Direct materials: 6 kgs at Sh.40 per kg.	240
Direct labour: 1 hour at Sh.70 per hour	70
Variable production overhead	30
	<u>340</u>

**Additional information:**

1. Variable production overheads vary with units produced.
2. Budgeted fixed production overheads per month amount to Sh.1,000,000.

3. Budgeted production for product Exa amounted to 20,000 units per month.
4. Budgeted selling price per unit amounted to Sh.440.
5. The actual results for the month of April 2016 were as follows:

Units of Exa produced	18,500
<b>Sh.</b>	
Direct materials purchased and used (113,500 kgs.)	4,426,500
Direct labour (17,800 hours)	1,299,400
Variable production overheads incurred	588,000
Fixed production overheads incurred	<u>1,040,000</u>
	<u>7,353,900</u>
Actual selling price per unit Sh.480	

**Required:**

- (i) Prepare in columnar format, the original budget, flexed budget and actual profit statement. (6 marks)
- (ii) Statement reconciling the original budgeted profit and the actual profit.  
(Show all operating variances). (8 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

- (a) Discuss the application of the Fitzgerald and Moon's building block model in performance measurement with particular focus to service organisations. (10 marks)
- (b) The following information relates to investment opportunities available to Tumaini Ltd:

Investment opportunity	Annual profit Sh.	Cost of investment Sh.
A	300,000	900,000
B	300,000	1,600,000
C	240,000	1,200,000
D	280,000	800,000
E	260,000	1,000,000

**Additional information:**

1. The company currently has profits of Sh.1,250,000 and investments of Sh.5,000,000.
2. The minimum required rate of return of the company is 20%.
3. The company will only invest in projects that will improve on the current performance.

**Required:**

- (i) The return on investment (ROI) and the residual income (RI) for each of the investment opportunities. (5 marks)
- (ii) Based on the performance measures above, rank the investment opportunities in their order of preference. Comment on the project (s) that the company should invest in. (5 marks)  
(Hint: Select the project (s) that will maximise the final profitability).

**(Total: 20 marks)**

# KASNEB

## CPA PART III SECTION 5

### ADVANCED MANAGEMENT ACCOUNTING

WEDNESDAY: 25 November 2015.

Time Allowed: 3 hours.

Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.

#### QUESTION ONE

Zomau Ltd. is in the process of setting a selling price for one of its products.

Three prices are under consideration; Sh.40, Sh.43 and Sh.44 per unit.

The following information is also provided about future demand for the product under different market conditions:

#### Demand (in units) under the three prices

Market condition	Sh.40	Sh.43	Sh.44
Best possible	18,000	16,000	14,500
Most likely	16,000	14,500	14,000
Worst possible	12,000	10,000	8,000

Fixed costs are estimated to be Sh.240,000 and the variable cost per unit is Sh.20.

#### Required:

Advise the company on the best possible price to set for the product on the basis of the following decision making criteria:

- (a) Maximax decision rule. (4 marks)
- (b) Maximin decision rule. (4 marks)
- (c) Laplace criterion of rationality. (4 marks)
- (d) Minimax criterion. (4 marks)
- (e) Advise Zomau Ltd. whether it is worth acquiring perfect information, assuming that the cost of obtaining the information is Sh.3,167. (4 marks)

**(Total: 20 marks)**

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#### QUESTION TWO

- (a) Describe four advantages of activity based budgeting (ABB). (8 marks)

- (b) The following data relate to Mambo Leo Ltd's estimated usage of raw materials for the month of December 2015.

Usage (units)	Probability
1,440	0.06
1,520	0.14
1,600	0.30
1,680	0.16
1,760	0.13
1,840	0.10
1,920	0.07
2,000	0.04

#### Additional information:

1. Stock outs will cost the company Sh.80 per unit.
2. Average monthly holding cost is estimated at Sh.10 per unit.
3. A lead time of four days is required for ordering raw materials.
4. The economic order quantity for the raw materials is 1,600 units every 30 days.

#### Required:

- (i) The optimal safety stock. (10 marks)
- (ii) The probability of being out of stock. (2 marks)

**(Total: 20 marks)**

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**QUESTION FOUR**

(a) Transfer prices are of critical importance in evaluating performance because they influence both revenues of the selling division and costs of the buying division.

In reference to the above statement, explain five transfer pricing policies that could be adopted and their implications. (10 marks)

(b) The following data relate to the operations of division X of Pendo Ltd.:

	Sh.
Selling price per unit	90
Variable cost per unit	54
Fixed costs per year	900,000
Investments	2,700,000

**Additional information:**

- Y Ltd. has placed a special order for 10,000 units per year from Pendo Ltd. The firm has requested for a special price.
- The current volume of production is 43,000 units.
- Accepting the special order will increase fixed costs by Sh.90,000 and investment by Sh.240,000.

**Required:**

- The number of units to be sold to achieve a return on investment of 25% without the special order. (2 marks)
- The return on investment without the special order. (2 marks)
- The lowest price at which Pendo Ltd. could sell the additional 10,000 units without reducing the return on investment in (b) (ii) above. (6 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

(a) Citing three reasons, explain the purpose of cost estimation. (6 marks)

(b) Wood Ltd. makes quality wooden benches for both indoor and outdoor use. Results have been disappointing in recent years and a new managing director, Mr. P. Rono was appointed to raise production volumes.

After an initial assessment, Mr. P. Rono considered that budgets had been set at low levels which were easily achieved by employees. He argued that employees would be better motivated by setting budgets which challenge them more in terms of higher expected output.

Other than changing the overall budgeted output, Mr. P. Rono has not altered any part of the standard cost card. Thus, the budgeted output and sales for the month of October 2015 was 4,000 benches. The standard cost card below was prepared on this basis.

	Sh.
Wood: 25 kilogrammes at Sh.3.20 per kilogramme	80
Labour: 4 hours at Sh.8 per hour	32
Variable overheads: 4 hours at Sh.4 per hour	16
Fixed overheads: 4 hours at Sh.16 per hour	<u>64</u>
Total cost	192
Standard profit	<u>28</u>
Standard selling price	<u>220</u>

**Additional information:**

- Overheads are absorbed on the basis of labour hours. The company uses absorption costing system.
- There were no stocks at the beginning of October 2015.
- Stocks are valued at standard cost.
- Actual results for the month of October 2015 were as follows:

	Sh.
Wood: 80,000 kilogrammes at Sh.3.50 per kilogramme	280,000
Labour: 16,000 hours at Sh.7 per hour	112,000
Variable overheads	60,000
Fixed overheads	<u>196,000</u>
Total production cost (3,600 benches)	648,000

**QUESTION THREE**

(a) (i) In the context of management accounting, explain the term "life cycle costing". (2 marks)

(ii) Kipevu Ltd. is considering launching a new product branded "KV". The product is estimated to have a life of three years.

The following costs are estimated to be incurred at different phases of the product's lifecycle:

	Sh."000"	Sh."000"
Research and development		1,500
Product design		600
Operating costs: Year 1	360	
Year 2	420	
Year 3	<u>432</u>	1,212
Disposal cost (at the end of year 3)		60

**Additional information:**

1. The company's target revenues for the three years are as follows:

Year	Revenue (Sh."000")
1	900
2	1,800
3	2,400

2. The present value factors are estimated as follows:

Year	Present value factor
1	0.9100
2	0.8300
3	0.7500

**Required:**

Advise the management of Kipevu Ltd. on whether the product should be launched.

(8 marks)

(b) Tamu Catering Services seized a market opportunity to supply ready meals to XYZ Airlines. The meals are served to passengers as part of inflight services under two categories namely; economy class and business class. An analysis of results for the financial year ended 31 October 2015 for each category are shown below:

Number of meals (million)	Economy class		Business class	
	3.5	Sh."million"	7	Sh."million"
Sales	<u>350</u>		<u>980</u>	
<b>Costs:</b>				
Ingredients (variable)	175		560	
Labour (fixed)	70		140	
Administrative (fixed)	<u>110</u>		<u>220</u>	
Total costs	<u>355</u>		<u>920</u>	
Profit/(loss)	<u>(5)</u>		<u>60</u>	

**Additional information:**

1. The unit costs and prices applicable to this business have been stable and are expected to remain as such for the foreseeable future.
2. The cost of ingredients are identifiable directly to each category.
3. Other costs (labour and administrative) are common to both categories and have been allocated to the two categories in proportion to the total number of meals sold each year.
4. The business could expand beyond its present volume without incurring any increase in fixed costs. The fixed costs would also not change if either of the categories was abandoned.

**Required:**

(i) The total sales required to break-even. (6 marks)

(ii) The total sales required to earn a revenue of Sh.300 million. (4 marks)

(Total: 20 marks)

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	Sh.
Closing stock (400 benches at Sh.192 each)	<u>(76,800)</u>
Cost of sales	571,200
Sales (3,200 benches at Sh.225 each)	<u>720,000</u>
Actual profit	<u>148,800</u>

5. The average monthly production and sales prior to October 2015 had been 3,400 units and budgets had previously been set at this level. Very few variances had historically been generated by the standard costs used.
6. Mr. P. Rono has made some significant changes to the operations of the company. However, the other directors are now concerned that Mr. P. Rono has been too ambitious in raising production targets.

**Required:**

Prepare an operating statement for the month of October 2015 showing all operating variances and reconciling budgeted and actual profits.

(14 marks)

(Total: 20 marks)

# KASNEB

## CPA PART III SECTION 5

### ADVANCED MANAGEMENT ACCOUNTING

#### PILOT PAPER

September 2015.

Time Allowed: 3 hours.

Answer ALL questions. Marks allocated to each question are shown at the end of the question. Show ALL your workings.

#### QUESTION ONE

(a) Langa Langa Ltd. was privatised three years ago. The board of directors are trying to enhance performance for the benefit of shareholders. The board has introduced the use of economic value added (EVA) as a key performance indicator.

The following financial information is available for the year ended 30 June 2015.

	Sh. "million"
1. Income statement	
Sales	575
Operating costs	<u>(460)</u>
Operating profit	115
Finance costs	<u>(38)</u>
Profit before tax	77
Corporate tax at 30%	<u>(23.1)</u>
Profit after tax	<u>53.9</u>

2. Statement of financial position indicates capital employed as at 1 July 2014 as Sh.1,060 million.  
3. Operating costs include:

	Sh. "million"
Research and development costs	20
Depreciation	98
Goodwill amortised	11.5
Advertising costs	3.5
4. Goodwill written off in the previous years amounted to Sh.34.5 million.	
5. Economic depreciation is approximately Sh.114 million.	
6. Cost of capital is as follows:	
Equity	18%
Debt	10%
Debt to equity ratio	60%

#### Required:

Calculate the company's performance using EVA.

(10 marks)

(b) The executive director of Theta Ltd. attended a seminar on performance measurement organised by a management consulting firm. He identified the following areas to be assessed:

1. Financial return to shareholders.
2. Maintain high market share.
3. Increase productivity annually.
4. Offer up to date product range of high quality.
5. To be known as responsible employer.
6. To acknowledge sound responsibility.
7. To grow and survive autonomously.

#### Required:

(i) Suitable measures of performance for each of the stated goals. (7 marks)  
(ii) Explain one goal that could be considered to be sufficient to incorporate all others. (3 marks)

(Total: 20 marks)

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## QUESTION TWO

(a) "Just in Time (JIT) manufacturing enables purchasing, production and sales to occur in quick succession with inventory being maintained at minimum level.

**Required:**

With reference to the above statement, explain three problems associated with adoption of JIT system. (3 marks)

(b) Katibu Ltd. holds regular stocks of sports equipment. For one of the stock item, they have decided to use economic order quantity with no stock out model.

**Additional information:**

1. The equipment have erratic demand but on average they sell 400 items per week, with the standard deviation of 125 units per week.
2. The items are supplied by a foreign supplier at Sh.800 per item. Lead time is 3 weeks.
3. The predicted annual stock holding cost is 15% of inventory value.
4. Delivery and order processing is approximately 12 man hours with wages being Sh.25,600 per week for a 40 hours week.
5. Assume normal distribution on demand.

**Required:**

(i) Calculate the economic order quantity (EOQ). (3 marks)

(ii) Suppose the company is incorrect in its predicted delivery and order processing costs but correct in all other predictions. If the actual cost is Sh.12,000, compute the maximum amount that the company should pay to discover true incremental costs. (6 marks)

(iii) Determine the re-order point and the buffer stock held if there is to be no more than 1% chance of stock-out during the re-order period. (4 marks)

(iv) If managers set re-order level at 1,500 units, what is the probability of stock-out on any given order cycle. (2 marks)

(v) How many times would you expect stock-out during the year. (2 marks)

**(Total: 20 marks)**

## QUESTION THREE

(a) Identify four factors to be considered before deciding whether to investigate variances. (4 marks)

(b) The management accountant might use opportunity cost in the following situations:

- (i) Non routine decisions such as accept or reject special offer.
- (ii) Make or buy decisions.
- (iii) Setting of transfer prices from one division to another.

**Required:**

Discuss giving examples the use of opportunity cost in each of the above cases. (5 marks)

(c) Sally manufacturing Ltd. manufactures a product using three types of raw materials; "Exe", "Wye" and "Zed". The managing director is concerned that material costs have been increasing over time.

The management accountant has suggested the use of statistical quarterly control (SQC) charts to monitor the variance movements.

**Additional information:**

1. The production capacity is 10,000 units and the company is operating at full capacity. The usage per unit of output is 2.5 kgs of each raw material.
2. Cost records shows the following monthly usage of the raw materials:

Month	Exe (kgs)	Wye (kgs)	Zed (kgs)
January	24,250	26,000	25,750
February	26,000	23,500	24,000

Month	Exe (kgs)	Wye (kgs)	Zed (kgs)
March	27,750	24,250	23,500
April	26,000	25,250	26,750
May	30,500	26,250	23,000
June	29,500	26,750	28,250
July	31,500	27,750	24,750
August	28,500	28,000	26,500
September	29,250	28,750	25,250
October	30,750	29,750	23,250
November	29,750	30,000	24,500
December	31,000	30,500	26,000

3. The standard usage is 25,000 kgs per month with a standard deviation of 2,500 kgs per month.
4. The management accountant is suggesting investigation of any usage greater or less than two deviations from the expected ( $\pm 2\sigma$ ).

**Required:**

- (i) Indicate the variance investigation decisions. (3 marks)
- (ii) Present the SQC charts for material usage for the period and make the necessary conclusions. (8 marks)

**(Total: 20 marks)**

**QUESTION FOUR**

- (a) Explain the importance of recognising the effects of learning curves when preparing performance reports. (4 marks)
- (b) Explain how companies might introduce a cost reduction programme without affecting its customer's perceptions of product values. (4 marks)
- (c) The finance director of Estimator Solutions Ltd. have availed to you the following data for a company:

1. The company has one single manufacturing department.
2. The cost data available relate to the last 16 months as follows:

Departmental overhead cost (Sh.'000')	Direct labour hours (‘000’)	Direct material quantity (kgs.) (‘000’)	Number of orders processed (‘000’)
25,835	878	970	88
24,451	1,088	934	100
28,611	1,281	667	108
32,361	1,340	1,243	110
28,967	1,090	964	90
24,817	1,067	903	67
29,975	1,188	876	88
26,135	928	820	28
31,361	1,319	984	19
26,008	790	933	90
27,812	934	966	93
28,612	871	940	87
22,992	781	518	81
31,836	1,236	1,017	236
26,252	902	881	92
26,977	1,140	751	140

3. A computer program has been used to analyse the above data. The results are as follows:

Regression	Dependent variable	Independent variable	Coefficient	Standard error	t-value
I	Overhead	Labour hours	8.50	1.93	4.4
		Materials	6.95	2.21	
		Orders	6.59	7.19	0.9
	Y intercept (Sh.'000')		12,052	2.286	5.3
	Adjusted $r^2 = 0.76$		1,281		
	Standard errors of estimate				

Regression	Dependent variable	Independent variable	Coefficient	Standard error	t-value
II	<b>Overhead</b>	Labour hours	8.88	1.87	4.7
		Materials	7.06	2.19	3.2
	Y intercept (Sh.'000')		12,190	2.267	5.4
	Adjusted $r^2 = 0.76$		1,273		
	Standard errors of estimate				
III	<b>Overhead</b>	Labour hours	10.98	2.27	4.8
	Y intercept (Sh.'000')		16,310	2.421	6.7
	Adjusted $r^2 = 0.60$				
	Standard errors of estimate				
IV	<b>Overhead</b>	Labour hours	10.68	3.26	3.27
	Y intercept (Sh.'000')		18,277	2.997	8.14
	Adjusted $r^2 = 0.39$		2027		
	Standard errors of estimate				

Coefficient of correlation between variables is as follows:

	<b>Overhead</b>	<b>Labour</b>	<b>Material</b>	<b>Orders</b>
Overhead	1.000			
Labour	0.7913	1.000		
Material	0.6580	0.3489	1.000	
Orders	0.3253	0.2420	0.1324	1.000

**Required:**

(i) The most reasonable estimate of recently experienced overhead cost function. Justify your answer. (4 marks)

(ii) Determine if the equation provides a useful prediction of overheads that might be experienced next month. (5 marks)

(iii) Explain the purpose for which the managers might use the predicted equation. (3 marks)

**(Total: 20 marks)**

**QUESTION FIVE**

(a) Delcom Ltd. is planning to introduce a new product. Market research information suggests that the product should sell 100,000 units over its life cycle at a price of Sh.420 per unit. The company seeks to make a mark-up of 40% of product cost. Life cycle costs of the product will be as follows:

	Sh.	Sh.
Design and development costs		10,000,000
Marketing and distribution costs		5,000,000
Manufacturing costs per unit		
Direct materials	50	
Direct labour	60	
Variable production overheads	60	
Fixed production overheads	30	200
End of life costs		4,000,000

**Required:**

(i) The lifecycle cost per unit. (3 marks)

(ii) The product's cost gap. (2 marks)

(iii) The management accountant estimates that if the company spends additional Sh.1,000,000 on design, manufacturing cost per unit could be reduced. Compute the maximum manufacturing cost per unit that will be tolerated if the company was to earn the required mark-up. (5 marks)

(iv) To manage cost effectively the company should emphasis on cost management at the planning and design stage. Explain decisions that can be made at the planning and design stage which can affect the cost of product and reduce the cost gap. (4 marks)

(b) The management accountant of Rebitech Ltd. is preparing budgets for the coming period.

The following data is available for last year:

1. Sales	Sh.40,000,000
Variable costs	60% of sales
Fixed cost	Sh.14,000,000

2. He is worried that costs will rise next year. The inflation rates and probabilities of occurrence are provided as follows:

Average inflation	Probability
4%	0.2
6%	0.5
8%	0.3

3. Inflation will affect all variable costs and fixed costs except depreciation which will remain constant at Sh.300,000 per annum and rent (fixed lease rental) at Sh.3,000,000 per annum.

4. The sales manager has informed the accountant that it might be difficult to raise the selling price despite inflation. He estimates sales demand at current price as follows:

	Sales Sh.	Probability
Pessimistic	40,000,000	0.3
Most likely	44,000,000	0.4
Optimistic	52,000,000	0.3

**Required:**

(i) Probability of at least breaking even. (3 marks)

(ii) Probability of achieving a profit of at least Sh.4,000,000. (3 marks)

**(Total: 20 marks)**