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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 Sh.	Annual income of head of household per year Sh.	Household size No.
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	3,007,500
	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.

4.   The company has also provided the following estimates for the coming period:

	American	Butterfly	Comfy
	Type of sofa set		
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:
1.   The cost of capital for both divisions is 13%.
2.   The current return on investment of each division is 15%.
3.   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)

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