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	5,000,000
	11,000,000

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:

Sh.

Administration	8,500,000
Security	800,000
Rent and property	7,200,000
	16,500,000

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   Frequency   Probability
(No. of litres)

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 31st 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	5,140,000	5,140,000	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)

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