



MACHAKOS UNIVERSITY

University Examinations for 2021/2022 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF ACCOUNTING BANKING AND FINANCE

FOURTH YEAR SEMESTER EXAMINATION FOR

BACHELOR OF

BAC 403: MANAGEMENT ACCOUNTING II

DATE:

TIME:

INSTRUCTIONS:

Answer Question One and Any Other Two Questions

QUESTION ONE (30 marks)

- (a) Thunder manufacturing company produces a toxic product, 'coros' that must be sold in the month produced or else discarded. Thunder can manufacture 'coro' itself at a variable cost of sh40 per unit or they can purchase it from an outside supplier at a cost of sh70 per unit. Thunder can sell 'coros' at sh.80 per unit. Production levels must be set at the start of the period and cannot be changed during the period. The production process is such that at least 9,000 units must be produced during the period. Thunder management must decide whether to produce 'coros' or whether to purchase it from the outside supplier. The possible sales of 'coros' and their probabilities are:

Demand (units)	Probability
4,000	0.4
7,000	0.5
11,000	0.1

Required:

(17 marks)

- i) Expected demand
 - ii) Expected profit from purchasing 'coros' from an outside supplier and selling it.
 - iii) Expected profit from manufacturing and selling.
 - iv) Standard deviation of profits from purchasing and selling.
 - v) Standard deviation of profit from manufacturing and selling.
 - vi) Coefficient of variation for each alternative.
- (b) Demand is 100 units per month. Purchase cost per unit sh.10. Order cost sh.20
Holding cost 10% p.a. of stock value.
- **Required**
Calculate the minimum total cost with a discount of 2% given on orders of 350 and over. (5 marks)
- (c) Explain the methods that are used in transfer pricing. (3 marks)
- (d) The ICARE Company has three plants located throughout a state with production capacity 50, 75 and 25 gallons. Each day the firm must furnish its four retail shops R1, R2, R3, & R4 with at least 20, 20, 50, and 60 gallons respectively. The transportation costs (in sh.) are given below:

Company	Retail				Supply
	R1	R2	R3	R4	
P1	3	5	7	6	50
P2	2	5	8	2	75
P3	3	6	9	2	25
Demand	20	20	50	60	

Required: Using the North West Corner Rule, determine:

(5 marks)

- (i) The initial basic feasible solution.
- (ii) The minimum cost of transportation.

QUESTION TWO (20 MARKS)

BIKO is a bike retailer located in the outskirts of Paris. BIKO purchases bikes from PMX in orders of 250 bikes which is the current economic order quantity. PMX is now offering the following bulk discounts to its customers:

- 2% discount on orders above 200 units
- 4% discount on orders above 500 units
- 6% discount on orders above 600 units

The following information is relevant to forming the decision:

- Annual demand is 5000 units
- Ordering cost is sh.100 per order
- Annual holding cost is comprised of the following:
 - 5% insurance premium for the average inventory held during the year calculated using the net purchase price
 - Warehousing cost of Sh.6 per unit
- Purchase price is Sh.200 per unit before discount

Required:

BIKO is wondering if the EOQ model is still the most economical and whether increasing the order size would actually be more beneficial.

Advice.

QUESTION THREE (20 MARKS)

Muthothi 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 to vary. As part of a review of the system, typical stock item, part no. X 206, has been studied in detail as follows:

Data for Part No. X 206

Lead times (Days)	Probability	Demand (units)	Probability
15	0.2	5000	0.4
20	0.5	7000	0.6
25	0.3		

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

Required:

- a) Calculate the level of buffer stock implicit in a re-order level of 150,000 units. (8 marks)
- b) Calculate the probability of stock-outs. (3 marks)
- c) Calculate the expected annual stock-outs in units. (5 marks)
- d) Compute the stock-out costs per unit at which it would be worthwhile raising the re-order level to 175,000 units. (4 marks)

QUESTION FOUR (20 MARKS)

A company sells two products A and B with contribution margin ratios of 40 and 30 per cent and selling prices of sh.5 and sh.2.50 a unit. Fixed costs amount to sh.72,000 a month. Monthly sales average 30,000 units of product A and 40,000 units of product B.

Required:

- a) (i) Assuming that three units of product A are sold for every four units of product B, calculate the sales volume necessary to breakeven, in shillings and in units.
(ii) Calculate the margin of safety in sales shillings.
- (b) If the company spends an additional sh.9,700 on advertising, sales of product A can be increased to 40,000 units a month. Sales of product B will fall to 32,000 units a month if this is done. Should this proposal be accepted?
- c) Recalculate the breakeven point in shillings based on the figures in (b)
- d) State the condition that would have to hold true for the company to earn a zero profit at the breakeven volume you calculated in (c)

QUESTION FIVE (20 MARKS)

- a) A carpenter makes tables and chairs. Each table can be sold for a profit of sh.30 and each chair for a profit of sh.10. The carpenter can afford to spend up to 40 hours per week working and takes six hours to make a table and three hours to make a chair. Customer demand requires that he makes at least three times as many chairs as tables. Tables take up four times as much storage space as chairs and there is room for at most four tables each week.

Formulate this problem as a linear programming problem and solve it graphically.

- b) Solve the following linear program: (14 marks)
(6 marks)

maximise $5x_1 + 6x_2$

subject to

$$x_1 + x_2 \leq 10$$

$$x_1 - x_2 \geq 3$$

$$5x_1 + 4x_2 \leq 35$$

$$x_1 \geq 0$$

$$x_2 \geq 0$$