



MACHAKOS UNIVERSITY

University Examinations for 2019/2020 Academic Year

SCHOOL OF BUSINESS AND ECONOMICS

DEPARTMENT OF ACCOUNTING BANKING AND FINANCE

FOURTH YEAR SECOND SEMESTER EXAMINATION FOR

BACHELOR OF COMMERCE

BAC 403: MANAGEMENT ACCOUNTING II

DATE: 23/10/2020

TIME: 8:30 – 10:30 AM

INSTRUCTIONS:

Answer question one and any other two questions.

QUESTION ONE (COMPULSORY) (30 MARKS)

- a) A company has determined that the Economic Order Quantity (EOQ) for its only raw material is 2000 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 the estimated usage of the raw material for the month of December 2019:

Usage(units)	probability
1800	0.06
1900	0.14
2000	0.30
2100	0.16
2200	0.13
2300	0.10
2400	0.07
2500	0.04

Stock-outs will cost the company sh.100 per unit and the average monthly holding cost will be sh.10 per unit.

Required:

- i) Determine the optimal safety stock. (11 marks)
 - ii) Compute the probability of being out of stock. (2 marks)
- b) Sunshine Ltd is a manufacturing company which produces and sells a single product known as T1 at a price of sh.10 per unit. The company incurs a variable cost of sh.6 per unit and fixed costs of sh.400,000. Sales are normally distributed with a mean of 110,000 units and a standard deviation of 10,000 units. The company is considering producing a second product, T2 to sell at sh.8 per unit and incur a variable cost of sh.5 per unit with additional fixed cost of sh.50,000. The demand for T2 is also normally distributed with a mean of 50,000 units and a standard deviation of 5,000 units. If T2 is added to the production schedule, sales of T1 will shift downwards to a mean of 85,000 units and a standard deviation of 8,000 units. The correlation between sales of T1 and T2 is -0.9.

Required:

- i) The company's break-even point for the current and proposed production schedules. (7 marks)
 - ii) The coefficient of variation for the two proposals. (6 marks)
 - iii) Based on your computation in (i) and (ii) above advise the company on whether to add T2 to its production schedule. (2 marks)
- c) Explain two assumptions implied in the application of the transportation model. (2 marks)

QUESTION TWO (20 MARKS)

- a) Explain the assumptions of linear programming.
- b) Duplex Textile Ltd makes executive and standard dresses. An executive dress requires 60 minutes for cutting, 50 minutes for sewing, 40 minutes for finishing and 15 minutes for inspection and packaging. A standard dress requires 42 minutes for cutting, 30 minutes for sewing, 60 minutes for finishing and 6 minutes for inspection and packaging. The firm employs 35 tailors who spend a maximum of 630 hours for cutting, 600 hours for sewing, 708 hours for finishing and 135 hours for inspection and packaging every week. The profit contribution per dress is sh.1,500 for the executive dress and sh.1,350 for the standard dress.

Required:

- i) Formulate linear programming model.
- ii) Solve the linear programming model graphically.

QUESTION THREE (20 MARKS)

Bright stars, a private secondary school, is considering launching an A-level stream in the school. The following information relate to the decision:

1. The directors of the school consider that the enrolment in the A-level stream could be low, moderate or high with probabilities of 0.3, 0.6 and 0.1 respectively.
2. The directors of the school could either do nothing, build a small school or build a large school to cater for the A-level students.
3. Due to the nature of the problem and the likely reaction of competitors, the decision taken by the directors is considered irrecoverable.
4. The directors have requested the research manager to present estimates of the present value of the estimated profits with respect to each decision taken and the various states of nature.
5. The research manager has presented the following data:

Decision	Estimated profits (Sh. million)		
	State		
	Low	Moderate	High
Do nothing	0	0	6
Build a small school	-100	300	300
Build a large school	-200	200	800

6. One of the directors has suggested that Bright stars could hire a consultant at a cost of sh.25,000,000. The consultant would carry out a market survey and report on whether demand for the A-level stream would be poor, reasonable or good.

7. The directors have been presented with the following conditional probabilities based on previous surveys carried out by the consultant on behalf of the school:

Survey output

Real state of demand	Poor	Reasonable	Good
Low	0.8	0.1	0.1
Moderate	0.1	0.8	0.1
High	0	0.2	0.8

Required:

- i. The optimal decision based on the expected values.
- ii. Advise the directors on whether they should engage the service of the consultant.

QUESTION FOUR (20 MARKS)

A manufacturer incurred the following costs in a period for his single product:

	Sh.
Labour (25% variable)	8,000
Materials (100% Variable)	12,000
Selling costs (10% Variable)	2,000
Other costs (fixed)	<u>7,000</u>
Total cost	<u>29,000</u>

A normal period sales are 500 units at sh. 70 each, but up to 650 units could be made in a period.

Various alternatives are being considered:

- 1.Reduce the price to sh.63 each and sell all that could be made.
- 2.Increase the price to sh.80 each at which price sales would be 400 units.
- 3.Keep the present plan.

Required:

- a) Which is the most profitable plan?
- b) Compute the contribution to Sales ratio for each.
- c) Compute the break- even point for each alternative.

QUESTION FIVE (20 MARKS)

- a) Explain the meaning of a variance.
- b) The material standard for one unit of product Z is 3kg at sh.5 per kg. 14,000 kgs were used at a cost of sh.84,000 and 14,000 units were produced. calculate:
- i) Material price variance.
 - ii) Material usage variance.
 - iii) Material cost variance.
- c) From the following information, calculate:
- i) labour rate variance.
 - ii) Labour efficiency variance.
 - iii) Idle time variance.

Standard rate per hour Sh.8

Standard time per unit is 2hrs 30mins.

Time worked 42,000 hours.

Time paid at Sh.9 per hour 50,000hours.

Production achieved 8,000 units.