



# CRAWFORD UNIVERSITY

FAITH CITY, IGBESA, OGUN STATE

HARMATTAN SEMESTER EXAMINATION, 2021/2022 SESSION

BUS 411: ANALYSIS FOR BUSINESS DECISION

TIME: 2.5 HOURS

**INSTRUCTION:** Answer FOUR questions in all. Section A is compulsory and any three in questions section B

**Section A: Instruction** choose the correct answer in the following multiple choice questions/ supply the correct answer

1. We can evaluate different marketing strategies with Markov analysis:
  - a. By comparing the initial condition of each strategy
  - b. By determining how soon a particular strategy will result in a steady state.
  - c. By comprising the steady state conditions resulting from different strategies.
  - d. None of the above
2. Markov analysis can answer the following questions:
  - a. What will be the state of the system at some future time?
  - b. What will be the state of the system when it reaches equilibrium?
  - c. What will be the transition probabilities at some future time?
  - d. All of the above.
3. A transition matrix depicts:
  - a. The market share of different brands under steady state conditions.
  - b. The market share of different brands in the initial state
  - c. The market share of different brands in the final state
  - d. The retention, gain or loss of customers by various brands in a single time period.
4. Markov models deal with:
  - a. Brand switching
  - b. Predict recruitment rates and promotion policies
  - c. Management of accounts receivable
  - d. All of the above
5. When making decisions under risk, we can use any of the following criteria except
  - a. Minimise expected loss
  - b. Maximise expected profit
  - c. Choose the state that is most likely to occur
  - d. Ensure expected marginal profit a greater than expected marginal loss
6. While creating a regret table or an opportunity loss table:
  - a. Subtract all payoff values from the highest payoff value in the matrix
  - b. Subtract the smallest payoff value from all other values in the payoff table
  - c. Subtract all payoffs in a strategy from the highest payoff for that strategy
  - d. Subtract all payoffs in a state of nature from the highest payoff in the payoff in that state of nature
7. While applying the realism criterion,  $\alpha$  is:
  - a. The coefficient of optimism
  - b. The coefficient of pessimism
  - c. The highest payoff value in the decision table

- d. The lowest value in the decision table
8. The expected value of perfect information is obtained by:
- Subtracting the maximum expected profit under risk from the expected profit with perfect information
  - Weighting the largest profit for each state of nature by the probability
  - Calculating the minimum expected loss for all the decisions
  - Both (a) and (c)
9. Use of utility as a decision criterion takes into account:
- The inconsistency of the decision maker
  - The risk profile of the decision maker
  - The decision maker's inability to judge the likelihood of occurrence of various states of nature
  - The decision maker's lack of preference for various alternatives.
10. A conditional loss table represents losses due to:
- Theft and pilferage
  - Opportunity loss due to under-stocking
  - Loss due to carrying costs
  - None of the above
11. The expected value of sample information is:
- The cost necessary to produce perfect information about the future
  - The price per unit of the product in question
  - The expected increase in revenue attributed to new information
  - The cost of obtaining sample information
12. A risk taker assigns:
- A higher utility value to losses than to gains
  - A higher utility value to gains than to losses
  - Equal utility value to gains and losses
  - None of the above
13. Group replacement policy is most suitable for (a) Trucks (b) Infant machine (c) Street light bulbs (d) New cars
14. In replacement analysis the maintenance cost is a function of (a) Time (b) Initial investment (c) Resale value (d) All of the above.
15. The waiting time in a queue is dependent on (a). the arrival rate (b). the service rate. (c). the physical layout of the queue. (d). all of the above.

15 marks.

**Section B: Answer any THREE questions in this section**

1. (a) God first Ltd is planning to invest ₦1million among three companies: equity shares in companies A,B,C. the pay offs in terms of growth in capital and rations on capital are known for each of the investments under each of the three economic conditions which may prevail, that is, recession, growth and stability. Assuming that God first must make its choice among the three portfolios for a period of one

year in advance, God first's expectations of net earnings (N000's) on the One million naira portfolio are given below.

Companies	Recession	Stability	Growth
A	-1500	600	1000
B	400	750	800
C	650	600	1500

You are required to determine the optional strategy for the investment under:

- (a) Maximum criteria (b) Maximax criteria (c) Minimax regret (d) Laplace's rule (e) Hurwicz's rule

$$\alpha = 0.6$$

10 marks

- (b) Explain four basic decision making environments in business decision analysis. 5 marks.

2. (a) Discuss four basic categories of replacement decisions.

6 marks

(b).A management is faced with the problem of choosing one of the products for manufacturing. The probability matrix after market research for the two products was as follows.

Act	States of Nature		
	Good	Fair	Poor
Product A	0.75	0.15	0.10
Product B	0.60	0.30	0.10

The profit that management can make for different levels of market's acceptability for the products are as follows:

Acts	State of nature		
	Good	Fair	Poor
Product A	35000	15000	5000
Product B	50000	20000	-3000

Calculate the expected value of the choice of alternatives and advise the management.

9 marks

3. A manufacturing production line turns out about 100 cars a day but deviations occur owing to many reasons. The production is more accurately described by the probability distribution given below:

Production /Day	95	96	97	98	99	100	101	102	103	104	105	106	
Probability	0.03	0.05	0.07	0.10		0.15	0.18	0.13	0.10	0.03	0.04	0.05	0.07

Finished cars are transported across the bay at the end of each day by ferry. If the ferry has space for 100 cars, what will be the available number of cars waiting to be shipped and the average number of empty spaces on the ship using the following random numbers 97, 02, 80, 66, 96, 55, 50, 29, 56, 51, 04, 86, 24, 39, 47.

15 marks

4a. Explain four benefits of simulation in management sciences.

5 marks.

4b. Examine four basic ways of customers' behavior in queuing system.

5 marks.

4c. Discuss four basic replacement policies in an organization.

5 marks

5. Pay off of the three acts A B C, and the state of nature X, Y, Z are given below:

State Nature	Act A	Act B	Act C
A	-30	-50	200
B	200	-100	-50
C	400	600	300

The probabilities of the state nature are 0.3, X, 0.3.

- i. Calculate the expected monetary value for the data.
- ii. Find the expected opportunity loss.
- iii. Find the EVPI.

15 marks.

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