



NATIONAL OPEN UNIVERSITY OF NIGERIA
Plot 91, Cadastral Zone, Nnamdi Azikiwe Express Way, Jabi - Abuja
DEPARTMENT OF BUSINESS ADMINISTRATION
FACULTY OF MANAGEMENT SCIENCES
2024 1 EXAMINATION

COURSE CODE: BUS406

COURSE TITLE: ANALYSIS FOR BUSINESS DECISION

INSTRUCTIONS: 1. Indicate your Matriculation Number clearly

2. Answer questions one (1) 25marks and any other three (3) questions 15marks each

TIME: 2hrs 30mins

1a. The Total Concept Enterprises operates an egg distribution business in the neighbourhood. A crate of egg is bought at a cost of N1,800 and sold for N2,600. Other expense incurred per crate is put at N250. The contingency table below shows the demand for eggs in the week.

No of Crates Sold Weekly	200	250	320	340
Probability	0.20	0.25	0.35	0.20

i. Set up the reward payoff.

ii. What is the optimal quantity to stock under condition of uncertainty?

iii. What is the quantity to stock under Savage (regret) decision criterion?

1b. A caterer has four wedding to supply food and refreshment. Each has its own profit and associated deadline. The profit on each wedding supply are N120,000, N15,000, N20,000 and N38,000. The deadlines are 2,1,2,1 respectively. Based on job sequencing and using the greedy method, which weddings should the caterer select?

2a. A company has the following machines and operators assignment problem for the week.

Operators	Machines			
	1	2	3	4
A	5	5	6	8
B	10	3	2	5
C	4	7	7	1
D	14	9	2	2

i. Find the optimal allocation of operator to machines.

ii. Assuming that each operator receives a basic wage of N5,000 per hour, how much will be the weekly wage bill?

2b. Given that the following linear programming problem below is the primal, set up the dual problem.

$$Z = (\max) = 90X_1 + 65X_2$$

Subject to:

$$X_1 \leq 70$$

$$X_2 \leq 30$$

$$X_1 + X_2 \leq 85$$

$$X_1 + 3X_2 \leq 130$$

$$X_j \geq 0 \quad (j=1,2)$$

3a. Given that the contingency table below depicts the business strategies of two competitors.

			B		
		1	2	3	4
A	1	6	6	7	3
	2	3	2	-4	2
	3	5	9	10	6

i. Is there a pure strategy for this game?

ii. What is the strategy for each player?

iii. What is the value of the game?

3b. Given the following for two players, X & Y respectively, where both players have the option of going right (R) or left (L) with their respective probabilities as shown in the table below.

Y	X				
		R (q)		L (1-q)	
	R (p)	0	2	2	0
	L (1-p)	6	0	0	2

i. Establish the Nash Equilibrium point for player Y (Use differentiation method)

4a. How does decision tree comes into play in a business decision making, does it have any associated merits and demerits? Discuss.

4b. Miss Jacinta Owalabi graduated from NOUN in 2021. Her uncle promised to help her with a start-up of N4,000,000 on any business of her choice provided she able to convince him that the fund will be properly invested. Miss Jacinta has two business choices in mind as contained in the table below:

		Cash in flows	Probabilities
Project POS	Year 1	N2,000,000	0.3
	Year 2	N3,000,000	0.4
	Year 3	N4,500,000	0.3

Project	GSM	Year 1	N6,000,000	0.1
Electronics		Year 2	N3,000,000	0.6
		Year 3	N2,500,000	0.3

i. If you are Miss Jacinta, draft a memo to your uncle regarding your choice of startup and why.

5a. Muftau Afolabi operates a Kolanut distribution enterprises spread across three cities in Nigeria. A fourth market in Jigawa is being contemplated once the unit transport cost and other logistic cost are established. It is estimated that the likely demand will be in the range of 500 to 900. A market survey of annual demand and supply produced the following contingency table.

Source	Lagos	Akure	Awka	Jigawa	SUPPLY
P1	90	85	70		600
P2	175	110	95		1,400
P3	205	190	130		1,000
P4	60	120	75		500
DEMAND	1,600	1,050	400		

i. Using the North-West Corner method, determine the transportation cost.

5b. A rice processing company receives the following information for the supply of rice.

Annual Demand	20,000 units
Ordering Cost	N10 per order
Inventory Carrying Cost	20% of inventory value per year
Price of Rice per Bag	N20 per unit

The company is considering the possibility of allowing for back-order (stock out) incidence. The estimated annual cost of back ordering was established at 25% of the value of inventory.

- What should be the optimum number of units of the product that should be processed in one lot?
- What quantity of the product should be allowed to be back ordered if any?