PAN AFRICA CHRISTIAN UNIVERSITY

BACHELOR OF COMMERCE

END TERM EXAMINATION – ONLINE

DEPARTMENT: BUSINESS

COURSE CODE: BCM 305

COURSE TITLE: MANAGEMENT DECISION MODELS

Time: 3 HOURS

Instructions

- ***Read all questions carefully before attempting.***
- ***Answer FOUR questions out of the SIX Provided***
- ***Question ONE is Compulsory***

QUESTION ONE

a) Explain the three basic requirements for decision making, using suitable illustrations **(3 marks)**

b) Discuss the model that a manager can use to solve machine replacement problems in the organization **(3 marks)**

c) Using examples, define the following terms in relation to management decision models:

   i. Queuing theory **(2 marks)**

   ii. Slack **(2 marks)**

QUESTION TWO

Giving an example of each, differentiate between

i) Structured and Unstructured decisions **(5 marks)**

ii) Strategic and Operational decisions **(5 marks)**

QUESTION THREE

a) State the four properties of a linear programming model **(2 marks)**

b) A factory manufactures two products A and B. To manufacture one unit of A, 1.5 machine hours and 2.5 labor hours are required. To manufacture product B, 2.5 machine hours and 1.5 labor hours are required. In a month, 300 machine hours and 240 labor hours are available. Profit per unit for A is KES. 50 and for B is KES. 40.

Required

Formulate the linear programming model objective function and constraints **(8 marks)**

QUESTION FOUR

a) Define Expected Monetary Values. **(2 marks)**

b) As the manager of a company, you are presented with the below two projects that require funding.

The probability of project A being very successful (for KES 6000 profit) are 20%, the probability of project A being moderately successful (for KES 3500 profit) are 50% with all other outcomes generating profit (of KES 2500). The probability of project B being very successful (for KES 6500) profit are 10%, of being moderately successful (for KES 4000) are 60% with all other outcomes generating profit (of KES 1000).

Using the probabilities above, determine the project that would yield the largest return. **(8 marks)**

QUESTION FIVE

a) Define the term transportation model **(2 marks)**

b) Luminous Lamps has three factories - F_1, F_2, and F_3 with production capacity 30, 50, and 20 units per week respectively. These units are to be shipped to four warehouses W_1, W_2, W_3, and W_4 with requirement of 20, 40, 30, and 10 units per week respectively. The transportation costs (in KES.) per unit between factories and warehouses are given below.

Factory	**Warehouse**				**Supply**
	W_1	**W_2**	**W_3**	**W_4**	
F_1	1	2	1	4	30
F_2	3	3	2	1	50
F_3	4	2	5	9	20
Demand	20	40	30	10	

Required:

Calculate the minimum total transportation cost using northwest corner rule method **(8 marks)**

QUESTION SIX

a) Define the term Decision Analysis, citing relevant examples **(2 marks)**

b) Discuss why a manager would use the optimistic approach as opposed to the conservative approach when making a decision under uncertainty. **(4 marks)**

c) Explain any four difficulties of applying the rational model. **(4 marks)**