KIBABII UNIVERSITY

UNIVERSITY EXAMINATIONS

SPECIAL/SUPPLEMENTARY EXAMINATIONS

2019/2020 ACADEMIC YEAR

SECOND YEAR SECOND SEMESTER

FOR THE DEGREE OF BACHELOR OF COMMERCE

COURSE CODE: BCO 206

COURSE TITLE: MANAGEMENT DECISION MODEL

DATE: 17/02/2021 **TIME: 2.00PM-4.00PM**

INSTRUCTIONS TO CANDIDATES

Answer **All** questions in Section A and Any other TWO (2) Questions from **Section B**

SECTION A

QUESTION ONE

a) Define a model and state the steps of building and testing a model (4mrks)
b) What are the objectives of assignment technique (4mks)
c) Highlight the assumptions of linear programming (6mks)
d) State the rules of drawing networks (4mks)
e) Outline the seven steps in decision making analysis (6mrks)
f) What are the characteristics of single channel system under queueing theory (3mrks)
g) Outline circumstances when simulation is used (3mrks)

SECTION B

QUESTION TWO

a) Company AB ltd will be introducing a new line of bicycles frames to be made from material A and material B. The frames will be introduced in two grades X and Y profit on grade X is sh.2100 while profit on grade Y is sh.3100.

The number of Kgs of each material needed per frame is summarized in the table.

	A	B
X	**4**	**6**
Y	**8**	**4**

The supplier delivers 200kgs of material A and 160 kgs of material B.

Required:

i. Formulate the linear program. (3mks)
ii. Optimal solution (3mks)
iii. Shadow prices(3mks)
iv. Using shadow prices get the solution to the dual LP. (3mks)

b) A company employs salesmen based at various locations throughout the country to attend to customers. Four sales orders have been received and the company finds. Four salesmen are available the profit in each sales person is given in the table and the company wishes to service the order to maximize the total profits

	Customer	W	X	Y	Z
salesmen	Alfred	25	18	23	14
	Billy	38	15	53	23
	Charles	15	17	41	31
	David	26	28	36	29

Required

Assign the salesmen to maximize profits (8mrks)

(Total 20mrks)

QUESTION THREE

Consider an organization with 3 supply sources and three selling points.

Supply sources	Quantity	Destinations	Quantity
X	60	A	76
Y	82	B	102
Z	80	C	44

Unit	**Transport costs**		
	A	B	C
X	4	8	8
Y	16	24	16
Z	8	16	24

Required: Optimal transportation schedule (20mks)

QUESTION FOUR

City Taxis Ltd operates a taxi service covering three areas of Nairobi City Centre; Eastlands and Westlands. The firm has officers in each of the three areas of Nairobi where taxis are available for hire. Recently CTL commissioned a study on the contribution of their taxis in various zones of Nairobi. The analysis of the records kept by the drivers rate of the passengers picked up in the city centre 50% are to destinations in the City centre, 40% to Eastlands and 10% to Westlands. Of the passengers picked up in Eastlands40% go to city centre 30% are taken to destinations in within Eastlands, and 30% to Westlands. Of the passengers picked in Westlands 20% go to destinations in the City centre, 60% to Eastlands and 20% to areas within Westlands.

Required:

a) Express the process described in a transition matrix (4mks)

b) Suppose that at the beginning of the day 60% are in the city centre,10% in the Eastlands and 30% in the Westlands. What is the distribution? (6mks)

QUESTION FIVE

a) Consider the following activities and the scheduled time for

Activity	Proceedings	Time
A	-	8
B	-	5
C	-	4
D	A	2
E	A	10
F	C	6
G	BEF	3
H	BEF	7
I	DG	3

Required

Draw the network and determined the critical path (10 mrks)

b) PQR ltd has provided the following details expected sales price

Expected sales (units)	**Shs.6**	**Shs.6.60**	**Shs.6.80**
Best possible	18,000	16,000	14,500
Most likely	16,000	14,500	14,000
Worst possible	12,000	10,000	8,000

Variable cost sh3 per unit

Fixed cost sh 30,000 for all decisions

If probabilities are as under

Best Possible	0.3
Most likely	0.5
Worst possible	0.2

What would be the value of perfect information if the cost of information is sh.900

(10mrks)