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University Examinations 2023/2024

FOURTH YEAR SECOND SEMESTER EXAMINATION FOR THE DEGREE OF BACHELOR OF BUSINESS ADMINISTRATION

BFB 3462: PROJECT MANAGEMENT DECISION MAKING MODELS

DATE: APRIL 2024 **TIME: 2 HOURS**

INSTRUCTIONS: *Answer question **one** and any other **two** questions*

QUESTION ONE (30 MARKS)

a) A farmer has recently acquired a 150 hectares piece of land. He has decided to grow Wheat and barley on that land. Due to the quality of the sun and the region's excellent climate, the entire production of Wheat and Barley can be sold. He wants to know how to plant each variety in the 150 hectares, given the costs, net profits and labor requirements according to the data shown below:

VarietyCost	Cost(Price/Hec)	Net Profit (Price/Hec)	Man-days/Hec
Wheat	200	100	20
Barley	400	220	40

The farmer has a budget of shs.20,000 and an availability of 1,400 man-days during the planning horizon. Find the optimal solution and the optimal value using LP graphical method. (12 marks)

b) Project management is an integrated undertaking that deals with different types of decisions. Discuss the decision making processes (8 Marks)

c) Discuss the steps of decision making process (10 marks)

QUESTION TWO (20 MARKS)

a) ABC Ltd has six independent projects available for investment as follows

Project	Initial cost Sh.'M'	NPV@ 15% cost of capital sh. 'M'
U	70	22
V	25	10
W	30	10
X	65	16
Y	40	21
Z	50	-3

The firm has sh.200M available for investment

Required:

i. Using profitability index and net present value techniques, advise the company on which project(s) to invest in (10 marks)

b) Project X costs sh.550,000 and has a scrap value sh.150,000

The stream of income before depreciation and taxes are as follows:

	Shs.
Year 1	120,000
Year 2	130,000
Year 3	150,000
Year 4	180,000
Year 5	220,000

Let tax=40% and depreciation straight line

Calculate the pay period and the accounting rate of return (10 marks)

QUESTION THREE (20 MARKS)

a) Discuss the four elements of SWOT analysis matrix (8 marks)

b) Given the following information

ACTIVITY	PRECEDING ACTIVITY	DURATION
A	-	2
B	A	10
C	A	8
D	B	10
E	B,C	7
F	E	9
G	D,F	3
H	G	5

i. Draw the network diagram and determine the critical path and duration for the project (12 marks)

QUESTION FOUR (20 MARKS)

a) Elucidate the three main risk attitudes that distinguish different decision makers. (6 Marks)

b) A project manager is in charge of four projects located in different stations. He is searching for a certain special equipment which is needed in the last phase of each of the four projects. In total, 15 pieces of the special project are required in the four projects. It has been confirmed that there are three suppliers who can be able to supply those equipments. Details of availability, requirements and transport cost per equipment are given in the table below:

Special Equipments	Project A 3	Project B 3	Project C	Project D	Total 15
Supplier X 2 Suppler Y 6 Supplier Z 7 Total 15	Ksh 13 17 18	Ksh 11 14 18	Ksh 15 12 15	Ksh 20 13 12	Transportation Cost per unit

Required:

Advise the project manager on the most optimal solution (14 marks)

QUESTION FIVE (20 MARKS)

a) A Chemical manufacturer processes two chemicals namely Benta and Colion in varying proportions to produce three products, X, V, and Z. He wishes to produce at least 150 units of X, 200 units of Y and 60 units of Z. Each ton of Benta yields 3 of X, 5 of Y and 60 units of Z. Each ton of Colion yields 5 of X, 5 of Y and I of Z. If Benta costs of Sh 40 per ton and Colion sh 50 per ton.

Required:

i. Formulate the problem in the standard manner (4 marks)

ii. Set up the initial simplex tableau complete with slack variables. (4 marks)

iii. The final simplex tableau showing the optimum solution is as follows:

Solution variables	Products			Slack variables		Cost
				S_1	S_2	
	X	Y	Z			
B	0	1	6/5	-3/10	-3/10	5
C	1	0	-1	-1/2	+1/2	5
Quantity	0	0	-30	-25	-25	-1750

Required:

Interpret the optimal solution in term of:

a. Quantities to be purchased (3 marks)

b. Total cost (3 marks)

c. Valuation of constraints (3 marks)

d. Advise the manufacturer how to minimize his cost (3 marks)