KUMARAGURU
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Register Number: ……

MBA DEGREE EXAMINATIONS: APRIL / MAY 2023

(Regulation 2022)

Second Semester

MASTER OF BUSINESS ADMINISTRATION

P22MPB2112: Decision Models for Projects

COURSE OUTCOMES

CO1: Explain the concepts and characteristics of decision models in managing projects

CO2: Propose appropriate decision models in projects for arriving at an optimal solution using software

CO3: Establish suitable decision-making models in Project Management within the given conditions and constraints to arrive at rational decisions

Time: Three Hours **Maximum Marks: 100**

PART A (10Q x 2 Mark = 20 Marks)

1	What are the basic elements of a Linear Programming Problem?	CO1	K_1
2	Explain the significance of non-negativity conditions in an optimization problem.	CO1	K_1
3	Explain 'Redundancy' in LPP'. Support your answer with a diagram, by considering a problem with two decision variables.	CO1	K_1
4	Explain 'Unbounded solution' in LPP. Support your answer with a diagram, by considering a problem with two decision variables.	CO1	K_1
5	Distinguish between a Balanced and an Unbalanced Assignment Model.	CO3	K_1
6	Distinguish between a Balanced and an Unbalanced Transportation Problem.	CO3	K_1
7	Define 'Steady State' in a queue.	CO1	K_1
8	What are the properties of a competitive game?	CO3	K_1
9	Define the following terms used I Queuing theory : a) Balking b) Collusion c) Reneging d) Jockeying	CO3	K_1
10	When do we use Simulation Models? What is the limitation of Simulation?	CO3	K_1

PART B (4Q x 16 Mark = 64 Marks) Answer Any Four Questions only

11	In order to supplement daily diet, a person wishes to take some tablets -X and some tablets-Y. The contents of iron, calcium and vitamins in X and Y (in milligram per tablet) are given as below:	CO2	K_5

Tablets	Iron	Calcium	Vitamin
X	6	3	2
Y	2	3	4

A person needs at least 18 milligram of iron, 21 milligram of calcium and 16 milligram of vitamins per day. The price of each tablet of X and Y is Rs. 20 and Rs. 10 respectively. How many tablets of each type should the person take per day in order to satisfy the above requirement at the minimum cost? – Formulate a LPP that will give a solution to the above problem.

12 Solve by Graphical Method: CO3 K_5

Maximize $Z = 5 X_1 + 4 X_2$

Subject to :

$4X_1 + 5X_2 \leq 10$

$3X_1 + 2X_2 \leq 9$

$8X_1 + 3 X_2 \leq 12$

$X_1, X_2 \geq 0$

13 Solve the following Transportation Problem by Least Cost Method CO3 K_5

		Destination			Availability
		X	Y	Z	↓
Origin	A	4	5	6	70
	B	6	4	5	35
	C	7	7	6	45
Requirement →		60	40	50	150

14 Patients arrive at a clinic at an average rate of 12 per hour. If the arrival pattern of the patients follow Poisson distribution, what is the probability of getting exactly 9 customers in an hour? CO3 K_5

15 Find the optimal strategies for players 'A' and 'B'. Also, find the value of the game. Payoff matrix of player 'A' is given below: CO3 K_5

		Player - B				
		I	II	III	IV	V
Player- A	I	17	6	2	16	0
	II	13	11	10	12	14
	III	(-) 4	7	7	6	15
	IV	10	12	4	4	2

Part – C (1Q x 16 Mark = 16 marks)

16 The demand per day for a product was studied for a period of 200 days. The demand on each day varied from 2 to 6 products per day. The frequency of demand for different values as observed are given below: CO3 K_5

Demand Pattern during 200 days	
No. of products demanded per day	No. of times the demand occurred in a span of 200 days
2	32 times
3	58 times
4	92 times
6	18 times
	200

Simulate the demand for the ensuing 20 days based on the past data using Monte Carlo Simulation. Use the following set of random numbers:
45, 24, 02, 84, 04, 44, 99, 90, 88, 96, 39, 09, 47, 34, 07, 35, 44, 13, 18 & 80

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