PRN:		Course Code :	PCM201

First Year **M. Tech** End Semester Examination Winter 2024

Quantitative Techniques in Management

Day and Date: Sat ,30 Nov 2024 Max Marks: **100**

Time : 02:00PM To 05:00PM Duration: **03** hrs

Instructions: All questions are compulsory.

			Marks	Bloom's Level	CO
Q.1		**Attempt the following**			
	a)	Explain the various steps in the operation research development process.	08	2	CO1
	b)	Explain with example of an optimization technique used in construction project planning.	08	3	CO1
		OR			
	b)	Explain Operations Research important for managerial decision-making in engineering?	08	3	CO1
Q.2		**Attempt the following**			
	a)	Write note on Linear Programming and how is it used in Civil Engineering?	08	3	CO1
	b)	A firm manufactures 3 products A, B, C. The profits are Rs. 5, Rs. 2, Rs. 7 respectively. The firm has two machines whose processing time in minutes are as,	08	4	CO2

Machines	Products		
	A	B	C
P	5	7	3
Q	4	5	5

Machines P and Q have 3000 and 3500 machine minutes respectively. Formulate LP problem.

OR

	b)	A firm manufactures 3 products A, B, C. The profits are Rs. 4, Rs. 3, Rs. 5 respectively. The firm has two machines whose processing time in minutes are as,	08	4	CO2

Machines	Products		
	A	B	C
P	5	4	6
Q	3	3	5

Machines P and Q have 3000 and 3500 machine minutes respectively. Formulate LP problem.

Q.3		**Attempt any two from the following**			
	a)	Explain nonlinear programming. Provide an example.	08	3	CO2
	b)	Describe dynamic programming and its application in engineering.	08	3	CO2
	c)	Write a note on distinguishes integer programming.	08	3	CO2
Q.4		**Attempt any two from the following**			
	a)	Explain the Vogel's approximation method.	08	3	CO3
	b)	Determine an initial basic feasible solution to the transportation problem using northwest corner method.	08	5	CO3

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	To					Available
From	3	4	6	8	9	20
	2	10	1	5	8	30
	7	11	20	40	3	15
	2	1	9	14	16	13
Demand	40	6	8	18	6	

c)	Explain a decision tree and how is it used in work assignment.	08	5	CO3
Q.5	**Attempt any Two of the following**			
a)	Define Economic Order Quantity (EOQ).	09	2	CO3
b)	Discuss, why is inventory management crucial in construction projects?	09	4	CO4
c)	Explain safety stock in inventory management.	09	2	CO4
Q.6	**Attempt any Two of the following**			
a)	Write note on queuing theory.	09	3	CO4
b)	Explain the importance of sequencing models in project management.	09	3	CO4
c)	Discuss game theory applied in construction projects.	09	6	CO4

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