GUJARAT TECHNOLOGICAL UNIVERSITY
BE- SEMESTER–VII (NEW) EXAMINATION – WINTER 2024

Subject Code:3172212   **Date:30-11-2024**
Subject Name: Mine System Engineering
Time:10:30 AM TO 01:00 PM   **Total Marks:70**
Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			MARKS
Q.1	**(a)**	Define the concepts of system. Describe the relation between sub-system and system environment.	**03**
	(b)	Describe the different assumptions of LPP.	**04**
	(c)	Define inventory. Explain the basic characteristics of an inventory system with advantages.	**07**
Q.2	**(a)**	Discuss the relationship regarding primal and dual solution.	**03**
	(b)	Describe the shortest route and minimal spannial tree problems.	**04**
	(c)	Explain the Creative aspects of planning and design.	**07**
		OR	
	(c)	Explain the factors influencing creativity, techniques and alternate ideas.	**07**
Q.3	**(a)**	Define CPM. Discuss the system of CPM.	**03**
	(b)	Describe the difficulties encountered in the construction of CPM chart and the use of dummy operations.	**04**
	(c)	Explain the advantages and limitations of CPM.	**07**
		OR	
Q.3	**(a)**	Define the following terms: Optimistic Time, Pessimistic Time, Most Likely Time	**03**
	(b)	Differentiate between CPM and PERT.	**04**
	(c)	Explain the advantages and limitations of PERT.	**07**
Q.4	**(a)**	Discuss the scope and limitation of simulation.	**03**
	(b)	Describe the types of simulation process.	**04**
	(c)	Explain Monte-Carlo simulation procedure. Also, discuss its applicability with suitable examples.	**07**
		OR	
Q.4	**(a)**	Discuss the objective of inventory management.	**03**
	(b)	Discuss the need of dynamic programing for mineral industry. Describe some methods for solving dynamic programming problem.	**04**
	(c)	Explain EOQ model with quantity discount.	**07**
Q.5	**(a)**	Discuss the application of assignment problem.	**03**
	(b)	Differentiate assignment problem with transportation problem.	**04**
	(c)	Explain the procedure for calculating the project completion time in case of probability is given.	**07**

Q.5 **(a)** Discuss the different types of solutions in transportation models.   **03**

(b) Describe the use of transportation model.   **04**

(c) Solve the given transportation problem using Vogel's approximation method.   **07**

Factories	Destination centers				Supply
	D_1	D_2	D_3	D_4	
F_1	3	2	7	6	50
F_2	7	5	2	3	60
F_3	2	5	4	5	25
Demand	60	40	20	15	

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