

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2022

Subject Code:3172212

Date:10-01-2023

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: (i) Dummy activity (ii) Critical activity (iii) Slack time **03**
(b) Differentiate between CPM and PERT. **04**
(c) Compare system, sub-system and system environment in detail. **07**

- Q.2** (a) Write the limitations of PERT. **03**
(b) Discuss graphical method of solving Linear Programming Problems. **04**
(c) Discuss the Creative aspects of planning and design. **07**

OR

- (c) Discuss the factors influencing creativity, techniques and alternate ideas. **07**

- Q.3** (a) Write a short note on Primal and Dual Problem. **03**
(b) How will you define transportation model. Explain its application in mineral industry. **04**
(c) Draw a network diagram corresponding to the following information. Obtain early (E) & late (L) Start & finish time and total float. **07**

| Activity | 1-2 | 1-3 | 2-6 | 3-4 | 3-5 | 4-6 | 5-6 | 5-7 | 6-7 |
|------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Duration (weeks) | 4 | 6 | 8 | 7 | 4 | 6 | 5 | 19 | 10 |

OR

- Q.3** (a) Discuss the application of linear programming. **03**
(b) Write short notes on Assignment problem and its application for mineral industry. **04**
(c) Discuss Monte-Carlo simulation system. **07**

- Q.4** (a) How to calculate average and expected time in PERT. **03**
(b) What does a critical path actually signify? In what ways does it differ from any other path? **04**
(c) Explain the rules to be followed while constructing a network. **07**

OR

- Q.4** (a) Define the following terms in PERT: **03**
a) Optimistic Time Estimate
b) Pessimistic Time Estimate
c) Most Likely Time Estimate
(b) What is a linear programming model? Also write its assumptions. **04**
(c) What do you mean by network technique? Explain its objectives and advantages. **07**

- Q.5** (a) Write the scope and limitations of simulation. **03**
(b) What is the need of dynamic programming for mineral industry? Write some methods for solving dynamic programming problem. **04**
(c) Define inventory. Explain the basic characteristics of an inventory system with advantages. **07**

OR

- Q.5** (a) What do you understand by minimal spanning tree network model? **03**
(b) Write the assumption of EOQ model. **04**
(c) Write short notes on following:- **07**
i. Necessity for inventory control
ii. Functions performed by inventory
