

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2022****Subject Code:3172216****Date:14/06/2022****Subject Name:Rock Excavation Technology****Time:02:30 PM TO 05:00 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

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|------------|---|-----------|
| Q.1 | (a) List the steps involved in rock excavation. | 03 |
| | (b) Write a note on importance of rock excavation engineering in mining | 04 |
| | (c) List the physio-mechanical properties of rocks considered while selecting an excavation method. | 07 |
| Q.2 | (a) Compare primary, secondary and tertiary process of rock breaking. | 03 |
| | (b) List the factors considered for selecting an explosive for rock excavation. | 04 |
| | (c) Explain the safety provisions made in a mine while blasting. | 07 |
| | OR | |
| | (c) Explain the use of computers in preparing blast designs. Mention its advantages. | 07 |
| Q.3 | (a) Define contour blasting. | 03 |
| | (b) Explain the working principle of ultrasonic instruments. | 04 |
| | (c) Explain the parameters considered for the evaluation of blasting. | 07 |
| | OR | |
| Q.3 | (a) Explain auger drills. | 03 |
| | (b) List the methods used for surface excavations. | 04 |
| | (c) Explain the steps to be taken for improving blast efficiency. | 07 |
| Q.4 | (a) List various instruments used in rock excavation. | 03 |
| | (b) List the parameters considered for site selection for construction of tunnels. | 04 |
| | (c) Explain the process of borehole logging and data interpretation. | 07 |
| | OR | |
| Q.4 | (a) List the instruments used for convergence monitoring. | 03 |
| | (b) Write a note on constructional features of tunnel boring machine (TBM). | 04 |
| | (c) Write a note on constructional features and working of continuous surface miner. | 07 |
| Q.5 | (a) Compare tunnel and cavern. | 03 |
| | (b) Write a note on seismic instruments. | 04 |
| | (c) Explain the excavation of caverns for hydroelectric projects. | 07 |
| | OR | |
| Q.5 | (a) List some softwares used for optimizing blast design. | 03 |
| | (b) List the factors considered while selecting a surface excavation machine. | 04 |
| | (c) Compare the mechanism of rock tool interaction of plough and shearer. | 07 |
