

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2022****Subject Code:3172216****Date:16-01-2023****Subject Name:Rock Excavation Technology****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) Discuss the scope and importance of rock excavation engineering in mining and construction industries. | 03 |
| | (b) Explain blast design for surface excavations and optimization. | 04 |
| | (c) Explain physico-mechanical and geotechnical properties of rocks. | 07 |
| Q.2 | (a) Discuss the instrumentation for performance monitoring. | 03 |
| | (b) Explain the classification of surface excavating equipment systems. | 04 |
| | (c) List out different types of machineries used in underground excavation. Explain continuous miner with neat sketch. | 07 |
| | OR | |
| | (c) Explain electronic and manual data generation Bore hole logging system. | 07 |
| Q.3 | (a) List out different types of explosive for rock excavation. | 03 |
| | (b) Explain rock breaking processes. | 04 |
| | (c) Explain planning and site -investigation for tunneling. | 07 |
| | OR | |
| Q.3 | (a) Discuss the selection criteria of explosive for rock excavation. | 03 |
| | (b) Explain the parameters influencing location of a tunnel and its design. | 04 |
| | (c) Explain methods of tunneling. | 07 |
| Q.4 | (a) Discuss the selection criteria for cutting tools used for underground excavation. | 03 |
| | (b) Explain advances in blast design for underground excavations. | 04 |
| | (c) Explain application and selection guidelines for Bucket Wheel Excavator used in surface excavation. | 07 |
| | OR | |
| Q.4 | (a) Discuss equipment's selection criteria and procedures of surface excavation. | 03 |
| | (b) Explain different types of underground excavations. | 04 |
| | (c) Explain application and selection guidelines for continuous surface miners used in surface excavation. | 07 |
| Q.5 | (a) Discuss the techno-economic and safety aspects of surface and underground blasting. | 03 |
| | (b) Explain the selection of excavation method. | 04 |
| | (c) Explain different kinds of excavation method. | 07 |

OR

- | | | | |
|------------|------------|--|-----------|
| Q.5 | (a) | Discuss the procedure for evaluation of blast performance. | 03 |
| | (b) | Explain under water drilling and blasting. | 04 |
| | (c) | Explain non-destructive instruments used for excavations. | 07 |
