

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER- VII EXAMINATION-SUMMER 2023

Subject Code: 3172213

Date: 26/06/2023

Subject Name: Rock Fragmentation

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 drilling. Discuss why it is necessary. | 03 |
| | (b) Describe the different methods to assess blast damage. | 04 |
| | (c) List out different types of drill machines. Explain any one with neat sketch. | 07 |
| Q.2 | (a) Discuss the factors influencing selection of drill. | 03 |
| | (b) Discuss the factors affecting optimization of drilling parameters. | 04 |
| | (c) Explain different types of drill bits used in drilling with neat sketch. | 07 |
| OR | | |
| | (c) Explain different types of bit wear and effects of bit wear. | 07 |
| Q.3 | (a) Explain the mechanism of rock blasting. | 03 |
| | (b) Describe the impact of ground vibration and air blast on the neighboring structures and communities. | 04 |
| | (c) Explain blast design parameters and its calculation. | 07 |
| OR | | |
| Q.3 | (a) Describe the mechanism of drilling. | 03 |
| | (b) Explain the electric and non-electric methods of blasting. | 04 |
| | (c) Explain the emerging trends in initiating systems. | 07 |
| Q.4 | (a) Discuss the role of powder factor in evaluation of blasting. | 03 |
| | (b) Explain detonators and its type. | 04 |
| | (c) Explain different properties of explosives. | 07 |
| OR | | |
| Q.4 | (a) Discuss the present status of drilling and blasting practices in India. | 03 |
| | (b) Describe the general application and uses of explosive. | 04 |
| | (c) Explain the tools and techniques for pre-blast, in-blast and post-blast monitoring. | 07 |
| Q.5 | (a) Discuss the factors affecting drillability of rocks. | 03 |
| | (b) Explain image analysis techniques for measurement of rock fragmentation by blasting. | 04 |
| | (c) Explain different kinds of control blasting techniques. | 07 |
| OR | | |
| Q.5 | (a) Discuss the mitigative measures for blasting nuisances. | 03 |
| | (b) Explain permitted explosive and its type. | 04 |
| | (c) Define ground vibration. Explain its causes and damages. | 07 |
