

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER- VII EXAMINATION-SUMMER 2023

Subject Code: 3172216

Date: 21/06/2023

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) What is rock excavation? Write its importance.	03
(b) Explain (a) Density (b) porosity (c) anisotropy (d) hardness	04
(c) What are the parameters to be considered during the selection of the excavation method?	07
Q.2 (a) What are the selection criteria of explosives for the rock excavation at the surface?	03
(b) Write a note on : Blast initiation system.	04
(c) Describe any one blast design with a neat sketch for opencast mines.	07
OR	
(c) Describe the rock breaking process in detail with a neat sketch.	07
Q.3 (a) Write a note on contour blasting.	03
(b) List out and brief the type of machineries used for rock excavation in opencast mines.	04
(c) Describe the constructional and operational features of a surface miner with a sketch.	07
OR	
Q.3 (a) Write a note on cast blasting.	03
(b) Write a note on: Underwater drilling and blasting.	04
(c) Describe the applicability and constructional features of bucket wheel excavator with merits and demerits.	07
Q.4 (a) Write a note on the ripper.	03
(b) What are the safety aspects considered during blasting at the surface and underground excavation?	04
(c) Describe the constructional and operational features of shearer machine with sketch.	07
OR	
Q.4 (a) Write a note on cavern and its applicability.	03
(b) List and brief the type of machineries used for rock excavation in the underground.	04
(c) Describe the constructional and operational features of coal plough with a sketch.	07
Q.5 (a) Write a note on schmitt hammer test.	03
(b) What is tunneling? Write the site investigation parameters of it.	04
(c) Describe the constructional and operational features of the tunnel boring machine with a suitable sketch.	07
OR	
Q.5 (a) Write a note on GPR.	03
(b) What is convergence? How to measure it?	04
(c) What is non-destructive test? Describe any one test with a neat sketch, constructional features and applicability.	07
