

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII EXAMINATION – SUMMER 2025

Subject Code:3172213

Date:16-05-2025

Subject Name:Rock Fragmentation

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

Q.1	(a)	Explain the operational components of drilling machine.	03
	(b)	Discuss the composition of explosive.	04
	(c)	Discuss the type of drilling method with neat sketch based on their principle of working.	07
Q.2	(a)	What do you mean by hydraulic drill machine?	03
	(b)	Explain delay detonators and its advantages with neat sketch.	04
	(c)	Explain the mechanism of rock breakage by percussive drilling with neat sketch.	07
		OR	
	(c)	Discuss the blast design pattern using in underground mine with neat sketch.	07
Q.3	(a)	Explain penetration rate with one example.	03
	(b)	Discuss the principle and operation of “jack hammer” drill machine used in underground coal mining.	04
	(c)	Describe blast design parameters in details.	07
		OR	
Q.3	(a)	Differentiate between low explosive & high explosive with suitable examples.	03
	(b)	Compare the top hammer (TH) drill machine with down the hole hammer (DTH).	04
	(c)	What is secondary blasting? Explain its types in detail.	07
Q.4	(a)	What do you understand by permitted explosives? Also write its type.	03
	(b)	Define drillability? Also write the factors affecting the drillability of rock.	04
	(c)	Discuss the properties of explosive in detail.	07
		OR	
Q.4	(a)	Explain the application and importance of high speed video camera in mining.	03
	(b)	What do you understand by safety fuse and detonating fuse?	04
	(c)	Discuss the causes and Impact of ground vibration and air blast on the neighboring structures and communities.	07
Q.5	(a)	Differentiate between the term slurry and emulsion explosive.	03
	(b)	Write a short note on VOD probe.	04
	(c)	Discuss the blast design pattern using in surface mine with neat sketch.	07
		OR	
Q.5	(a)	Write are the application of image analysis technique in mining? Also name the software used for the same.	03
	(b)	Explain powder factor with one example.	04
	(c)	What is a control blasting method? Explain any two method of control blasting in detail.	07
