

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VII (NEW) EXAMINATION – SUMMER 2024****Subject Code:2172207****Date:22-05-2024****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) What are the factors influencing the selection of drill machine?	03
	(b) Explain delay detonators and its advantages with neat sketch	04
	(c) What is mechanics of drilling? Explain the mechanism of rock breakage by percussive drilling with neat sketch.	07
Q.2	(a) Differentiate between low explosive & high explosive with suitable examples.	03
	(b) How drillability of rock is determined in laboratory? Also write the factors affecting the drillability of rock.	04
	(c) Describe the blast design parameters in detail.	07
OR		
	(c) Explain different types of drill bits used in drilling with neat sketch.	07
Q.3	(a) What is booster? Also explain the composition of explosive.	03
	(b) Discuss the principle and operation of “down the hole hammer (DTH)” drill machine.	04
	(c) Write a brief note on hydraulic drilling and long hole drilling.	07
OR		
Q.3	(a) What are electric and non-electric methods of blasting system?	03
	(b) Compare rotary drilling method with percussive drilling method.	04
	(c) Why control blasting methods are used in mines? Explain any two method of control blasting in detail.	07
Q.4	(a) Explain permitted explosive and its type	03
	(b) What is VOD and how it is determined?	04
	(c) Calculate the powder factor (kg/m^3) from below data :- (i) Bench Height – 10 m (ii) Hole Dia. – 165 mm and amount of explosive loaded in blast hole = 8.5 kg/m. Assume the parameters if required.	07
OR		
Q.4	(a) What is delay blasting technique? Explain briefly.	03
	(b) Explain novel methods of drilling.	04
	(c) Discuss the causes and Impact of ground vibration and air blast on the neighboring structures and communities.	07
Q.5	(a) What do you understand by nuclear blasting?	03
	(b) Write a note on high speed video camera.	04
	(c) What is secondary blasting? Explain its types in detail.	07
OR		
Q.5	(a) Write a note on ANFO.	03
	(b) Explain different types of bit wear and effects of bit wear.	04
	(c) Discuss the recent developments in explosive and blasting techniques.	07
