Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–IV (NEW) EXAMINATION – WINTER 2020

Subject Code: 3142209 Date: 19/02/2021

Subject Name: ROCK MECHANICS

Time:02:30 PM TO 04:30 PM Total Marks:56

Instructions:

1. **Attempt any FOUR questions out of EIGHT questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			Marks
Q.1	**(a)**	Explain the terms with its definition: Grain size, Minerals, Rocks	**03**
	(b)	Explain: Density with its types.	**04**
	(c)	Describe a stress-strain relationship of rock.	**07**
Q.2	**(a)**	Write a short note: Importance of rock mechanics to mining industry.	**03**
	(b)	Describe the stress, strain and strain energy?	**04**
	(c)	What is tri-axial compressive strength method? How to measure it in the laboratory?	**07**
Q.3	**(a)**	Which factors are affecting the rock strength?	**03**
	(b)	What is Hardness? How to measure it?	**04**
	(c)	How to measure a uniaxial compressive strength of rock? Explain in detail with neat sketch.	**07**
Q.4	**(a)**	What is dynamic properties of rock?	**03**
	(b)	What are the failure criteria of rock?	**04**
	(c)	What is creep? Describe any one model of it with neat sketch.	**07**
Q.5	**(a)**	Explain the Anisotropy.	**03**
	(b)	List out the ISRM standards for a rock specimen.	**04**
	(c)	Explain flat jack method with neat sketch.	**07**
Q.6	**(a)**	Explain in brief mechanics of rock failure.	**03**
	(b)	Explain the terms: Modulus of elasticity and Modulus of rigidity	**04**
	(c)	Discuss the Griffith theory of fracture initiation in the rock mass.	**07**
Q.7	**(a)**	What is RMR?	**03**
	(b)	What is RQD? How to measure it?	**04**
	(c)	Explain in details rock quality tunneling index (Q).	**07**
Q.8	**(a)**	Describe the classification of artificial supports.	**03**
	(b)	Write a short note on roof testing and stitching.	**04**
	(c)	How to do a pull out test of grouted rock bolt in the laboratory?	**07**

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