Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–IV (NEW) EXAMINATION – SUMMER 2024

Subject Code:3142209 Date:03-07-2024

Subject Name:Rock Mechanics

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 rock mechanics and rock mass.	**03**
	(b)	Explain importance of rock mechanics in mining.	**04**
	(c)	List out physico-mechanical properties of rock.	**07**
Q.2	**(a)**	Define density, porosity and Moisture content.	**03**
	(b)	Explain permeability and durability.	**04**
	(c)	Explain dynamic properties of rock.	**07**
		OR	
	(c)	Explain Griffith theory of fracture in rock mass.	**07**
Q.3	**(a)**	Explain analysis of stress-strain curve.	**03**
	(b)	Explain uniaxial and triaxial compressive strength.	**04**
	(c)	Explain shotcreting and roof stitching.	**07**
		OR	
Q.3	**(a)**	Define strength and list out various types of strength.	**03**
	(b)	Explain objective of rock mass classification.	**04**
	(c)	Explain Empirical criteria of rock failure.	**07**
Q.4	**(a)**	Explain Rock Quality Designation (RQD).	**03**
	(b)	Explain slake durability test.	**04**
	(c)	Explain rock mass rating by Bieniawski.	**07**
		OR	
Q.4	**(a)**	Define isotropic and anisotropic properties of rock.	**03**
	(b)	Explain rock failure with its types.	**04**
	(c)	Describe method for determination of modulus of elasticity.	**07**
Q.5	**(a)**	Explain Creep deformation.	**03**
	(b)	Explain rock bolting and cable bolting.	**04**
	(c)	Explain the forces and displacements associated with cable bolting.	**07**
		OR	
Q.5	**(a)**	Explain sources of pre-mining stress.	**03**
	(b)	Define abrasivity and its determination.	**04**
	(c)	Explain Mohr’s scale of hardness.	**07**

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