Model Question Paper -1 with effect from 2020-21(CBCS Scheme)

USN

Fifth Semester B.E. Degree Examination
Rock Mechanics

TIME: 03 Hours   **Max. Marks: 100**

Note: 01. Answer any **FIVE** full questions, choosing at least **ONE** question from each **MODULE**.

		Module – 1	
Q.1	**(a)**	Explain the scope and importance of Rock Mechanics in mining.	6 marks
	(b)	Describe the development and application of rock mechanics in mining.	6 marks
	(c)	Explain discontinuities and how it affects the mining operations.	8 marks
		OR	
Q.2	**(a)**	Explain mapping and hemispherical projection of discontinuities.	10 marks
	(b)	Explain in detail Barton's shear strength of joints.	10 marks
		Module – 2	
Q.3	**(a)**	Explain with an example on the analysis of stress in a two dimensional plane.	10 marks
	(b)	Explain Mohr's circle of stress and its significance.	10 marks
		OR	
Q.4	**(a)**	Illustrate stress-strain relationship of different rocks.	10 marks
	(b)	Illustrate the elasto-plastic behavior of different rocks	10 marks
		Module – 3	
Q.5	**(a)**	Explain with diagrams the determination of uni-axial compressive strength of a rock sample in laboratory.	10 Marks
	(b)	Explain abrasivity of rock and its determination in laboratory.	10 Marks
		OR	
Q.6	**(a)**	Explain Creep deformation and its strength behavior over time with a neat sketch.	10 marks
	(b)	Explain creep test and its rheological models with neat diagrams.	10 marks
		Module – 4	
Q.7	**(a)**	Explain how to determine in-situ shear strength of rock mass.	10 marks
	(b)	Explain how to determine in-situ bearing strength of rock mass.	10 marks
		OR	
Q.8	**(a)**	Explain Plate loading test with a neat sketch.	10 marks
	(b)	Explain Bore hole jack test with a neat sketch	10 marks
		Module – 5	
Q.9	**(a)**	Explain the important elastic constants of rocks with neat sketches.	10 marks
	(b)	Explain how static elastic constants of a rock is determined.	10 marks
		OR	
Q.10	**(a)**	Explain Coulomb failure criteria for rock and rock mass.	10 marks
	(b)	Explain Griffith failure criteria for rock and rock mass.	10 marks

Question		Bloom's Taxonomy Level attached	Course Outcome	Programme Outcome
Q.1	(a)	2	CO1	Engineering Knowledge
	(b)	2	CO1	Engineering Knowledge
	(c)	2	CO1	Problem Analysis
Q.2	(a)	2	CO1	Problem Analysis
	(b)	2	CO1	Problem Analysis
Q.3	(a)	2	CO2	Engineering Knowledge
	(b)	2	CO2	Engineering Knowledge
Q.4	(a)	2	CO2	Engineering Knowledge
	(b)	2	CO2	Problem Analysis
Q.5	(a)	2	CO3	Problem Analysis
	(b)	2	CO3	Problem Analysis
Q.6	(a)	2	CO3	Engineering Knowledge
	(b)	2	CO3	Design/Development of solutions
Q.7	(a)	2	CO4	Engineering Knowledge
	(b)	2	CO4	Engineering Knowledge
Q.8	(a)	2	CO4	Problem Analysis
	(b)	2	CO4	Problem Analysis
Q.9	(a)	2	CO5	Engineering Knowledge
	(b)	2	CO5	Engineering Knowledge
Q.10	(a)	2	CO5	Engineering Knowledge
	(b)	2	CO5	Engineering Knowledge

Bloom's Taxonomy Levels	**Lower order thinking skills**		
	Remembering(knowledge):L_1	Understanding Comprehension): L_2	Applying (Application): L_3
	Higher order thinking skills		
	Analyzing (Analysis): L_4	Valuating (Evaluation): L_5	Creating (Synthesis): L_6