

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-VI (NEW) EXAMINATION – SUMMER 2022****Subject Code:3160613****Date:08/06/2022****Subject Name:Rock Mechanics and Tunneling****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) Explain rock failure in tri-axial compression.	03
	(b) Explain deformability and hardness of rock.	04
	(c) List out and explain physical properties of rock.	07
Q.2	(a) Explain objectives of rock exploration.	03
	(b) Explain the need of tunnel and its disadvantage.	04
	(c) Explain importance of Rock Mechanics.	07
	OR	
	(c) Why drainage is necessary in tunnel? Discuss various drainage systems for tunnel.	07
Q.3	(a) Write advantages of rock testing.	03
	(b) Differentiate between material and mass form of rocks.	04
	(c) Explain porosity & permeability of rocks.	07
	OR	
Q.3	(a) Explain effects of discontinuities on rock structure.	03
	(b) Explain significance of shaft and portals in tunnel.	04
	(c) What is drift? Explain various types of drifts used for tunneling in rock with neat sketches.	07
Q.4	(a) Explain swelling and anisotropy of rocks.	03
	(b) Write a short note on Mechanical Ventilation in Tunneling.	04
	(c) State engineering classification of rock mass.	07
	OR	
Q.4	(a) Draw sketch of different shapes of tunnel.	03
	(b) Explain mechanical properties of rock.	04
	(c) Explain rock boring and rock logging.	07
Q.5	(a) Write safety precautions in tunnel constructions.	03
	(b) Write short note on rock specimen shapes.	04
	(c) Define Rock mechanics & explain its importance.	07
	OR	
Q.5	(a) What are the causes of accidents in tunnel?	03
	(b) Explain swelling & anisotropy of rocks.	04
	(c) Enlist the various methods of tunneling in hard rock, explain step wise procedure of any one by drawing sketch.	07
