

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2022****Subject Code:3152206****Date:09-01-2023****Subject Name:Underground Coal Mining****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 the rank of coal.	03
	(b) Define incubation period and its effect on coal mining.	04
	(c) Explain the theories for the origin of coal.	07
Q.2	(a) Explain different ways to open up a coal deposit through the underground mining method.	03
	(b) Give the applicability condition for bord and pillar mining method.	04
	(c) List the factors affecting the choice of mining method.	07
	OR	
	(c) Explain longwall advancing with a suitable diagram.	07
Q.3	(a) explain the unit operations in coal winning in bord and pillar mining method.	03
	(b) What are different types of supports used in bord and pillar mining method?	04
	(c) Explain types of power support with suitable diagrams.	07
	OR	
Q.3	(a) Explain friction/hydraulic props support.	03
	(b) List different types of stowing methods used in underground mining method.	04
	(c) Explain the longwall retreating method with a suitable diagram.	07
Q.4	(a) Explain the types of rock bolts used in the underground coal mining method.	03
	(b) What do you mean by stowing and caving techniques.	04
	(c) Explain a bord and pillar panel with a suitable diagram.	07
	OR	
Q.4	(a) Explain coalification.	03
	(b) Explain hydraulic stowing technique.	04
	(c) Elaborate Arrangement for stowing on surface and underground.	07
Q.5	(a) Explain the strike and dip direction of a coal seam.	03
	(b) List the different types of machinery used in a longwall face.	04
	(c) Elaborate systematic support rule in respect of bord and pillar mining method.	07
	OR	
Q.5	(a) What do you mean by spontaneous heating.	03
	(b) What are different types of loading and haulage method.	04

- (c) Find out the annual production of a mine with the following parameters: **07**
- Method of mining: bord and pillar
 - Gallery width and height: 4m X 3m
 - Pull per round of blasting: 1.2 m
 - Considering a single round of blasting per shift
 - Three shifts working in a day
 - Total working days in a year:300
 - Sp. Gravity of coal:1.4
