

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-VII (NEW) EXAMINATION – WINTER 2023

Subject Code:3172211

Date:16-12-2023

Subject Name: Advanced Mining Methods

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) Write the principle of action of roof bolts.	03
	(b) Discuss the problems in mining of thin coal seams?	04
	(c) What do you mean by powered supports? Explain its purposes. Also write the factors affecting the selection of powered supports system.	07
Q.2	(a) What are the factors affecting the division of a seam into slices?	03
	(b) What do you mean by slice mining? Also explain the order of slicing in detail with neat sketch.	04
	(c) Explain horizon mining with its features. State its advantages and disadvantages.	07
	OR	
	(c) Describe the types of machineries are used in thin seam extraction.	07
Q.3	(a) Write the applicability conditions of horizon mining system.	03
	(b) Discuss the factors affecting the planning of distance between Horizons in details.	04
	(c) Explain shield method of mining in details.	07
	OR	
Q.3	(a) Write the applicability conditions of inclined slicing with filling in ascending order.	03
	(b) How optimum distance between horizons and crosscuts can be determined? Explain briefly.	04
	(c) Describe the methods of establishing linkage between bore holes in underground coal gasification.	07
Q.4	(a) Write a short note on diagonal slicing method.	03
	(b) How breaking down of coal is done in hydraulic mining? Explain briefly.	04
	(c) What are the main components of powered supports system? Explain Shield support with neat sketch.	07
	OR	
Q.4	(a) How is face development done in thin seam mining method?	03
	(b) Write the advantages and disadvantages of underground coal gasification?	04
	(c) Describe the methods or ways to transport the broken coal in hydraulic mining.	07

- Q.5** (a) What do you understand by radioactive minerals? Name the methods of mining used for radioactive minerals. **03**
- (b) Discuss the advantages and disadvantages of hydraulic mining of coal. **04**
- (c) Write the conditions suitable for underground gasification of coal. Also discuss the constituent processes of underground coal gasification. **07**

OR

- Q.5** (a) Write a short note on ore mining by leaching. **03**
- (b) Explain principle of underground coal gasification with schematic diagram of UCG system. **04**
- (c) Explain deep -sea mining for manganese nodules. **07**
