

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER- VII EXAMINATION-SUMMER 2023

Subject Code: 3172211

Date: 17/06/2023

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) | Discuss the principle of action of roof bolts. | 03 |
| | (b) | Discuss the problems associated with mining of thick coal seams? | 04 |
| | (c) | What do you mean by powered supports? Explain its functions. Also write the factors affecting the selection of powered supports system. | 07 |
| Q.2 | (a) | Write the salient features of shield method of mining. | 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) | What is horizontal slicing method? Discuss horizontal slicing in ascending order with stowing with neat sketch. | 07 |
| OR | | | |
| Q.3 | (a) | Write the applicability conditions of inclined slicing with stowing 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. | 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 chock-Shield support with neat sketch. | 07 |
| OR | | | |
| Q.4 | (a) | How face development is done in thin seam mining method? | 03 |
| | (b) | Explain principle of underground coal gasification with schematic diagram of UCG system. | 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) Explain deep -sea mining for manganese nodules. **07**

OR

- Q.5** (a) Write a short note on ore mining by leaching. **03**
- (b) Write the advantages and disadvantages of underground coal gasification? **04**
- (c) Write the conditions suitable for underground gasification of coal. Also discuss the constituent processes of underground coal gasification. **07**
