

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-VI(NEW) EXAMINATION – WINTER 2022****Subject Code:3162204****Date:16-12-2022****Subject Name:Mine Hazards****Time:02:30 PM TO 05:00 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**

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|------------|---|-----------|
| <b>Q.1</b> | (a) What do you mean by fire? Explain its causes and prevention in surface mines.                   | <b>03</b> |
|            | (b) Discuss the different methods for reopening sealed off area in mines.                           | <b>04</b> |
|            | (c) Explain the emergency preparedness and response system.   | <b>07</b> |
| <b>Q.2</b> | (a) Discuss the illumination standards in mining area given by DGMS.                                | <b>03</b> |
|            | (b) Describe the procedure for investigations after an explosion.                                   | <b>04</b> |
|            | (c) List out different types of rescue equipment used in mines. Explain any two with neat sketches. | <b>07</b> |
| <b>OR</b>  |   |           |
|            | (c) Explain rescue and recovery work in connection with mine fire.                                  | <b>07</b> |
| <b>Q.3</b> | (a) Explain how fire can produce in mines and its effect in mines.                                  | <b>03</b> |
|            | (b) Discuss the precautions to be taken while approaching old workings.                             | <b>04</b> |
|            | (c) Explain causes and precautionary measures in mine inundations.                                  | <b>07</b> |
| <b>OR</b>  |   |           |
| <b>Q.3</b> | (a) List out the different types of illumination devices.   | <b>03</b> |
|            | (b) Discuss the uses of fire extinguisher.  | <b>04</b> |
|            | (c) List out different types of fire extinguisher. Explain any one with neat sketch.                | <b>07</b> |
| <b>Q.4</b> | (a) Discuss the factor affecting the limit of explosibility in fire damp.                           | <b>03</b> |
|            | (b) List out classes of fires and explain all in brief.   | <b>04</b> |
|            | (c) Explain the mitigation measures taken to reduce dust generation in mines.                       | <b>07</b> |
| <b>OR</b>  |   |           |
| <b>Q.4</b> | (a) Discuss the classification of rescue apparatus.   | <b>03</b> |
|            | (b) Explain the dust sampling methods.  | <b>04</b> |
|            | (c) Explain the design and construction of water dams.  | <b>07</b> |
| <b>Q.5</b> | (a) Discuss the applications of dust sampling apparatus.  | <b>03</b> |
|            | (b) Explain the method of dewatering a waterlogged working.   | <b>04</b> |
|            | (c) Explain spontaneous heating, its causes and detection in underground mines.                     | <b>07</b> |
| <b>OR</b>  |   |           |
| <b>Q.5</b> | (a) Discuss the common types of safety lamps & their uses and limitations.                          | <b>03</b> |

- (b) Describe the physical and chemical characteristics of coal liable to spontaneous heating. **04**
- (c) Explain the reason behind underground fires and its preventive measures. **07**

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