

| | | | | | | | |
|-----|------------------|---|----------|---|-----|---|---|
| Q.4 | i. | Write the benefits and applications of using ground injections in advance of tunnelling. | 4 | 1 | 3,5 | 3 | 1 |
| | ii. | Provide a list of sources that produce hazards that may arise in the tunnelling industry and who those hazards could impact. | 6 | 4 | 4,7 | 4 | 2 |
| OR | iii. | What type of safety measure can be put in place to minimize the risk of falling from height? | 6 | 3 | 3,4 | 2 | 2 |
| Q.5 | i. | What is fault tree analysis and steps to begin a fault tree? | 3 | 1 | 3,5 | 1 | 1 |
| | ii. | Differentiate between quantitative risk assessment and qualitative risk assessment with the help of suitable example. | 7 | 4 | 3,5 | 2 | 1 |
| OR | iii. | Explain the collection of accident data analysis for risk assessment. Also prepare a risk assessment Sheet for underground mines. | 7 | 2 | 2 | 5 | 1 |
| Q.6 | Attempt any two: | | | | | | |
| | i. | Explain the causes and prevention of accident from hand tools-pneumatic system. | 5 | 1 | 2 | 2 | 1 |
| | ii. | Discuss in detail major cases of accidents in mines. | 5 | 2 | 3,4 | 5 | 2 |
| | iii. | What steps are being taken by the Government to prevent accidents in mines? | 5 | 1 | 6,7 | 4 | 2 |

*Total No. of Questions: 6**Total No. of Printed Pages: 4***Enrollment No.....**

Faculty of Engineering
End Sem Examination Dec 2024
FT3EL10 Safety in Mines

Programme: B.Tech.**Branch/Specialisation: FT****Maximum Marks: 60****Duration: 3 Hrs.**

Note: All questions are compulsory. Internal choices, if any, are indicated. Answers of Q.1 (MCQs) should be written in full instead of only a, b, c or d. Assume suitable data if necessary. Notations and symbols have their usual meaning.

| | | Marks | BL | PO | CO | PSO |
|-----|------|--|----------|----|-----|-----|
| Q.1 | i. | What is the primary purpose of mining blasting warning signs? | 1 | 2 | 2 | 1 |
| | (a) | To indicate restricted access areas for miners | | | | |
| | (b) | To display safety slogans | | | | |
| | (c) | To promote mining products | | | | |
| | (d) | To provide directions within the mine | | | | |
| | ii. | Why should mining machinery undergo regular inspections and maintenance? | 1 | 4 | 3,7 | 2 |
| | (a) | To improve miners' equipment operation skills | | | | |
| | (b) | To increase mining revenue | | | | |
| | (c) | To prevent mechanical failures and accidents | | | | |
| | (d) | To reduce the need for new equipment purchases | | | | |
| | iii. | What should miners do before entering confined spaces in mining? | 1 | 1 | 6 | 3 |
| | (a) | Ignore safety guidelines | | | | |
| | (b) | Avoid wearing PPE | | | | |
| | (c) | Use their mobile phones | | | | |
| | (d) | Follow confined space entry procedures and use appropriate safety gear | | | | |

[2]

- iv. What should miners do in case of a fire in the mining area?
 - (a) Run toward the fire
 - (b) Try to extinguish the fire without proper training
 - (c) Use fire extinguishers and follow emergency response procedures
 - (d) Ignore the fire and continue working
- v. Why is adequate ventilation important in mining?
 - (a) To maintain pleasant temperatures for miners
 - (b) To increase visibility in the mine
 - (c) To remove harmful gases, dust, and fumes from the mine
 - (d) To reduce mining expenses
- vi. What is the purpose of a fall protection system in mining?
 - (a) To prevent miners from falling asleep during work
 - (b) To prevent miners from falling ill
 - (c) To prevent miners from falling while working at heights
 - (d) To prevent miners from falling into water bodies
- vii. What is the purpose of hazard assessments in mining?
 - (a) To increase mining productivity
 - (b) To identify potential risks and implement control measures
 - (c) To promote teamwork among miners
 - (d) To determine miners' job roles
- viii. What is the ultimate goal of mining safety measures?
 - (a) To increase the number of accidents and injuries
 - (b) To reduce productivity and efficiency

1 1 6,
12 3 2

[3]

- (c) To protect the well-being of miners and ensure responsible mining practices
- (d) To promote unsafe mining practices

- ix. Why should miners be cautious about their surroundings while working in mining operations?

- (a) To avoid getting lost in the mine
- (b) To be aware of potential hazards and prevent accidents
- (c) To find hidden treasures in the mine
- (d) To entertain themselves

- x. What is the purpose of emergency response plans in mining operations?

- (a) To test miners' ability to respond to emergencies
- (b) To create excitement and drama during drills
- (c) To provide guidelines for dealing with potential accidents and emergencies
- (d) To reduce mining downtime

1 2 3 5 1

- Q.2 i. Explain the different categories of mine fires. **4** 1 1,2 1 1
- ii. Write the precaution that should be taken on the parts of the belt conveyor. **6** 2 4 2 1
- OR iii. Discuss the causes and prevention of accident from heavy machinery used in opencast mines. **6** 2 4 3 2
- Q.3 i. Discuss the different methods for detecting CO gas in underground working of a mine. **2** 2 5 1 1
- ii. Explain the source of explosions in a mine. Write in brief the causes of coal dust explosion. **8** 2 3,4 3 1
- OR iii. Describe safety appliances in the haulage tracks of Indian underground coal mines with the help of suitable diagram. **8** 2 5 4 1

Marking Scheme

FT3EL10 (T) Safety in Mines (T)

with the help of suitable diagram. -3 Marks