

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

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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

Duration: 3 Hrs.

Maximum Marks: 60

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	2
	(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	1
	(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	2
	(a) Ignore safety guidelines					
	(b) Avoid wearing PPE					
	(c) Use their mobile phones					
	(d) Follow confined space entry procedures and use appropriate safety gear					

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iv.	What should miners do in case of a fire in the mining area?	<b>1</b>	1	6, 12	3	2
	(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?	<b>1</b>	2	1,6	5	1
	(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?	<b>1</b>	2	3	5	1
	(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?	<b>1</b>	1	3,4	4	1
	(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?	<b>1</b>	1	7,6	5	2
	(a) To increase the number of accidents and injuries					
	(b) To reduce productivity and efficiency					

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	(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?	<b>1</b>	1	6, 12	3	2
	(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?	<b>1</b>	4	2	4	2
	(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					
Q.2	i. Explain the different categories of mine fires.	<b>4</b>	1	1,2	1	1
	ii. Write the precaution that should be taken on the parts of the belt conveyor.	<b>6</b>	2	4	2	1
OR	iii. Discuss the causes and prevention of accident from heavy machinery used in opencast mines.	<b>6</b>	2	4	3	2
Q.3	i. Discuss the different methods for detecting CO gas in underground working of a mine.	<b>2</b>	2	5	1	1
	ii. Explain the source of explosions in a mine. Write in brief the causes of coal dust explosion.	<b>8</b>	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.	<b>8</b>	2	5	4	1

**Marking Scheme**  
**FT3EL10 (T) Safety in Mines (T)**

Q.1	i)	a) To indicate restricted access areas for miners	1
	ii)	c) To prevent mechanical failures and accidents	1
	iii)	d) Follow confined space entry procedures and use appropriate safety gear	1
	iv)	c) Use fire extinguishers and follow emergency response procedures	1
	v)	c) To remove harmful gases, dust, and fumes from the mine.	1
	vi)	c) To prevent miners from falling while working at heights	1
	vii)	b) To identify potential risks and implement control measures.	1
	viii)	c) To protect the well-being of miners and ensure responsible mining practices	1
	ix)	b) To be aware of potential hazards and prevent accidents	1
	x)	c) To provide guidelines for dealing with potential accidents and emergencies	1
Q.2	i.	Write the different categories of mine fires.	4
	ii.	Write the precaution that should be taken on the parts of the belt conveyor. Full details of conveyor	6
	OR iii.	Discuss the causes and prevention of accident from heavy machinery used in opencast mines. Causes- 3 Marks Prevention- 3 Marks	6
Q.3	i.	Discuss the different methods for detecting CO gas in underground working of a mine.	2
	ii.	Explain the source of explosions in a mine? – 4 Marks Write in brief the causes of coal dust explosion? – 4 Marks	8
	OR iii.	Describe safety appliances in the haulage tracks of Indian underground coal mines – 5 Marks	8

with the help of suitable diagram. -3 Marks

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

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