

22376

23124

3 Hours / 70 Marks

Seat No.

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- Instructions :**
- (1) All Questions are *compulsory*.
 - (2) Answer each next main Question on a new page.
 - (3) Illustrate your answers with neat sketches wherever necessary.
 - (4) Figures to the right indicate full marks.
 - (5) Assume suitable data, if necessary.
 - (6) Use of Non-programmable Electronic Pocket Calculator is permissible.
 - (7) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Attempt any FIVE of the following :

10

- (a) Define Illumination.
- (b) Explain the principle of self contained breathing apparatus.
- (c) Define Lag on Ignition.
- (d) Explain the term 'Intrinsically safe apparatus'.
- (e) Define Flameproof Enclosure.
- (f) Enlist different types of fire extinguishers.
- (g) State the mechanism of spontaneous heating of coal.

2. Attempt any THREE of the following :

12

- (a) Describe the factors which affects the mechanism of spontaneous combustion.
- (b) Explain the process of sealing of fire area in a gassy coal mine of degree II & III.
- (c) Describe how will you collect the sample from behind the sealed off area.
(any two methods)
- (d) Illustrate the Coward's diagram with its significance.



- 3. Attempt any THREE of the following : 12**
- (a) Describe the causes of Firedamp explosion.
 - (b) Enlist and explain the factors affecting the inflammability of a coal dust explosion.
 - (c) With a neat sketch, interpret the behaviour of gases in a sealed off area.
 - (d) Explain the stage method of reopening of a sealed off area with its applicability conditions.
- 4. Attempt any THREE of the following : 12**
- (a) Explain the preventive measures to be carried out for firedamp explosion.
 - (b) Describe underground causes of inundation and its preventive measures.
 - (c) Explain the working of a self rescuer with a sketch.
 - (d) With a neat sketch, explain the working of a Cap lamp with its safety features and reactions.
 - (e) Write precautions to be taken while approaching old water logged area.
- 5. Attempt any TWO of the following : 12**
- (a) Describe the fittings to be used for fire stoppings.
 - (b) State and explain the factors to be considered for selecting the method of reopening of a sealed off area.
 - (c) Explain the working of a CO₂ extinguisher. State different locations where fire extinguishers are to be placed.
- 6. Attempt any TWO of the following : 12**
- (a) Define Fresh Air Base. Draw a layout of FAR. State the equipments to be kept at FAB and persons deployed thereat.
 - (b) Justify how the pulmotor is used in rescue operations.
 - (c) State and explain different types of barriers to be used to arrest coal dust explosion.
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