

22109

21819

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) List the different industries producing iron ore in India.
 - b) Define Bed separation by drawing a neat sketch.
 - c) Define hanging wall and foot wall.
 - d) Define “Stripping ratio” in opencast mines.
 - e) Draw the diagram of the wedge cut pattern used for coal face.
 - f) Draw the sketch of air crossing showing intake and return road way.
 - g) List four important engineering institute providing education in Bachelor degree in mining engineering.

P.T.O.

- 2. Attempt any THREE of the following: 12**
- a) Describe the role of Indian Bureau of mines in mining Industry.
 - b) Compare “Board and Pillar” method with “Long wall method” practiced in underground coal mines.
 - c) Illustrate with figure “Crown pillar and sill pillar in underground metal mines”.
 - d) Compare the surface mining with underground mining.
 - e) Describe delay detonator by drawing a neat sketch.
 - f) Describe the procedure of erecting wooden prop at the incline road way.
- 3. Attempt any THREE of the following: 12**
- a) Illustrate the role and function of DGMS in regulating mine safety.
 - b) A coal deposit is situated at 100 m depth. Select the suitable mode of entry (shaft, incline or Adit) and justify your answer by explaining the advantages of the selected entry over the other entry.
 - c) Describe the purpose of raise and winze with sketches.
 - d) Illustrate the following elements of benches of surface mine by drawing a neat sketch any four.
 - (i) Bench height
 - (ii) Bench width
 - (iii) Bench slope angle
 - (iv) High wall
 - (v) Toe of highwall.

- e) Calculate the powder factor and detonator factor under given conditions
- (i) No of holes – 16
 - (ii) Charge/ per hole – 400 gms.
 - (iii) Pull obtained – 1.2 m
 - (iv) Height of face – 3 m
 - (v) Width of face – 4.2 m
 - (vi) Specific gravity of coal – 1.4
- Assume your own conditions.

4. Attempt any TWO of the following: 12

- a) Illustrate the procedure of solid blasting carried in underground coal mines
- (i) Direct and Inverse initiation 2
 - (ii) Series and parallel connection 2
 - (iii) Name the pattern of drilling holes used 2
- b) Classify the different types of wooden support used in underground mines.
- c) Describe long wall advancing working layout showing Main gate, Tail gate and Barrier.

5. Attempt any TWO of the following: 12

- a) Illustrate the different types of damp (Gases) found in underground coal mines.
- b) Illustrate the layout of the underground metal mine showing Auxiliary shaft, Level, Companion level main level sub level ramp and store.
- c) Illustrate the layout of opencast mines showing boxcut, working trench, cut working front, face room of bench.

6. Attempt any TWO of the following:**12**

- a) Illustrate the various shapes of mineral deposits with neat sketch.
 - b) Describe the different types of permitted explosives used in underground coal mines.
 - c) Illustrate the following terms by drawing abbreviation used as per CMR 2017.
 - (i) Intalze 1
 - (ii) Return 1
 - (iii) Air crossing 1
 - (iv) Stopping 1
 - (v) Door 1
 - (vi) Air lock 1
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