

22250

12425

03 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) 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) Classify the Indian Coal seams on the basis of Inclination of the seam.
 - b) Calculate the % of Extraction during development 3 meter coal seam is developed to full weight and width of gallery is 4.2 meter. The dimension of coal pillar from center to center is 26 meter \times 26 meter.
 - c) Define thick seam.
 - d) Enlist the advantages of caving.
 - e) Give the full form of SERD and DERD.
 - f) Enlist the advantages of longwall double unit face over longwall single unit face.
 - g) Define the term subsidence and subsidence basin.

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- 2. Attempt any THREE of the following:** **12**
- a) Explain the factors which affect the selection of method of working coal.
 - b) State the various applicability conditions for board and pillar method.
 - c) Explain the preparatory arrangement to be done before starting depillaring.
 - d) Define Air blast. State the precautions to be taken to avoid air blast.
- 3. Attempt any THREE of the following:** **12**
- a) Define contiguous Seam. State the precautions to be taken while working a contiguous seam.
 - b) Explain the factors which affect the length of longwall face.
 - c) Compare longwall advancing method with longwall retraining method.
 - d) Elaborate the factors which affect the subsidence.
- 4. Attempt any THREE of the following:** **12**
- a) Explain the different types of pillars extraction method with neat sketch.
 - b) Describe the precautions to be taken while working below depillared goaf as per CMC 2017.
 - c) Describe the precautions to be taken while working near fire area as per CMR 2017.
 - d) Compare the cyclic longwall mining with non-cyclic longwall mining.
 - e) Explain the depillaring with hydraulic stowing along with a neat sketch.

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

- a) A coal seam is to be developed by using board and pillar method under following conditions.
 - i) Seam thickness - 4.5 meter
 - ii) Height of gallery during development - 2.8 meter.
 - iii) Width of gallery during development - 4.2 meter.
 - iv) Dimension of Pillar - 30.5 meter \times 30.5 meter
(center to center)
 - v) Incubation period - 10 months
 - vi) Specific gravity of coal - 1.4
 - vii) Average output during depillaring - 600 tonns per day.Calculate:
 - i) The percentage of extraction during development
 - ii) Number of pillars in a closed panel.
- b) A coal seam of 5 meter thickness is to developed by using LHD and Belt conveyor combination suggest a suitable layout and calculate Manpower and OMS. Assume your own conditions.
- c) Explain the who frames the strata control and monitoring plan as per CMR 2017. List the key guidelines of strata control and monitoring plan.

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

- a) A coal seam 5 meter thickness is proposed to developed by using DERD. Suggest suitable layout. Calculate the manpower requirement and OMS. Draw a neat sketch of layout.
 - b) Explain how thick seam working is done in longwall mining by Top slicing method.
 - c) Define the following terms by drawing a neat sketch:
 - i) Angle of Draw
 - ii) Limit line
 - iii) Subsidence basin
 - iv) Tensile zone
 - v) Compressive zone
 - vi) Full subsidence
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