# 22250

**23124**

**3 Hours / 70 Marks**   Seat No.

*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 development in board and pillar.

   b) Define spontaneous heating of coal.

   c) Define contiguous seam.

   d) Enlist the names of the authorities to take the permission before starting depillaring operation.

   e) Define Longwall Advancing and Longwall Retreating methods of underground coal mining.

   f) Give the full farm of SERD and DERP.

   g) Define the terms subsidence and subsidence basin.

**Marks**

2. **Attempt any <u>THREE</u> of the following :**　　　　**12**

　　a) Explain the factors which affect the selection of method of working coal.

　　b) State the advantages and disadvantages of Board and Pillar Method over longwall method.

　　c) Enlist the various line of extraction of depillaring and explain any one of them with neat sketch.

　　d) Describe splitting and slicing method of depillaring.

3. **Attempt any <u>THREE</u> of the following :**　　　　**12**

　　a) State the precautions to be taken while working a contigeous seam.

　　b) Differentiate between Cyclic Longwall and Non-cyclic Longwall method.

　　c) Explain the factors which affect the Length of Longwall Face.

　　d) Elaborate the factors which affect the subsidence.

4. **Attempt any <u>THREE</u> of the following :**　　　　**12**

　　a) Describe withdrawal of support in Goaf area.

　　b) Explain the working below waterlogged once as per CMR 2017.

　　c) Explain the terms Local Fall, Main Fall and Air Blast.

　　d) Explain the Applicability conditions of Longwall Mining.

　　e) Explain the depillaring Hydraulic Stowing along with a neat sketch.

**Marks**

**5.　　Attempt any <u>TWO</u> of the following :　　　12**

a) A coal seam 1.8 m thick is developed with pillars 30 m × 30 m centre to centre with 3.6 m wide gallery. The extraction of coal during development is 10%. Now depillaring operation is undertaken with 100 tonne production per shift. The incubation period of coal is 10 months. Give the layout of the district and the number of coal pillars enclosed in the district. Specific Gravity of coal given is 1.4.

b) A coal seam 2.5 m thick at a depth of 175 m from surface dips in 1 in 7 is worked with pillar size 35 m × 30 m centre to centre and gallery size 4 m wide × 2.5 m ht. during development.

   During depillaring split gallery of 4 m wide are drivend and recovery of coal is 80%.

   i)   If the incubation period is 7 months find the number of pillars in a panel.

   ii)  If 4 splits and 3 stooks are worked. Find the production if the advance rate per shift is 1 m.

   iii) Find the manpower for the above production if the specific gravity of coal is 1.35.

c) State the arrangements to be made before starting sand stowing and explain the term H:L Ratio.

**6.　　Attempt any <u>TWO</u> of the following :　　　12**

a) A coal seam at a depth of 500 m is 1.2 m thick dipping at 1 in 5. The Longwall face is 150 m and it is advanced 1.8 m per day. The density of coal is 1.4 and incubation period of coal is 12 months. Find the production and the face length of Longwall advancing layout if recovery of coal is 80%.

b) Summerize the advantages and disadvantages of Longwall caving method.

c) State the names of the theories of subsidence and explain Dome theory with neat sketch.

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