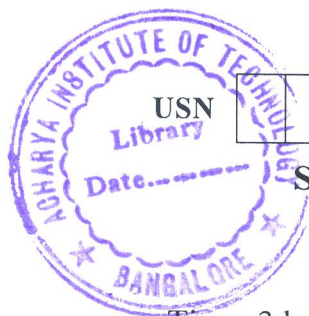


# CBCS SCHEME



15MN71

## Seventh Semester B.E. Degree Examination, June/July 2019 Underground Mine Planning and Design

Time: 3 hrs.

Max. Marks: 80

**Note: Answer any FIVE full questions, choosing ONE full question from each module.**

### Module-1

- 1 a. What are the positive social impacts due to mining activities? Justify your answer with a case study. (10 Marks)
- b. What do you mean by "Stockholm conference, 1972"? What are its main agenda and outcomes? (06 Marks)

**OR**

- 2 a. Mention the purpose of impoundments in mine. (02 Marks)
- b. Mention the factors to be considered during site selection for construction of impoundments. (04 Marks)
- c. With neat sketch, explain any one embankment design suitable for seepage control. (10 Marks)

### Module-2

- 3 a. What is feasibility study? When and why do companies undertake that study? What information does it include? What action would be initiated in case of positive or negative outcomes of feasibility study. (10 Marks)
- b. Mention the factors affecting the division of coal field into mining areas. (06 Marks)

**OR**

- 4 a. Draw a neat sketch of pit top layout with turn table and label its parts for underground coal mines. (08 Marks)
- b. Draw a neat sketch of pit bottom layout for skip winding and label its important features for underground coal mines. (08 Marks)

### Module-3

- 5 a. Determine the inclined length of the level and number of levels can be developed in a mining area, for the given conditions.
  - i) Daily coal output of the mine = 1500 tons
  - ii) Annual rate of face advance = 400 m
  - iii) Life of the mine = 35 yrs
  - iv) Dip of the seam =  $15^\circ$
  - v) Weight of  $1 \text{ m}^3$  of the coal seam =  $1.3 \text{ t/m}^3$
  - vi) Thickness of seam = 1.5 m
  - vii) Co-efficient of recovery of coal = 0.88(08 Marks)
- b. With a neat sketch, explain level and panel division of coal mining property. (08 Marks)

OR

- 6 a. Explain with a necessary equations, the steps to determine:
- The planned output from the longwall faces
  - The number of productive longwall faces in the mining property. (12 Marks)
- b. A DERD shearer is employed in a longwall panel of face length 140m, the extraction height is 3.5m and depth of the web cut is 0.7m. The cycle time for unidirectional cutting is 40min. considering bulk density of coal to be  $1.3 \text{ t/m}^3$ , determine monthly production from the face in ton, if effective working hour is 6 hour per shift. (04 Marks)

Module-4

- 7 Write a short note on :
- Cut – off grade (06 Marks)
  - Selection criteria for stoping methods. (10 Marks)

OR

- 8 a. Write a short note on :
- Time study for improvement in production (08 Marks)
  - Work study for improvement in production. (08 Marks)

Module-5

- 9 a. Define mine closure. Mention types of mine closure. (06 Marks)
- b. What are the economic impacts due to unplanned mine closure? Justify your answer with a case study. (10 Marks)

OR

- 10 a. Describe the basic principle of hydraulic mining. Mention its merits and demerits. (08 Marks)
- b. What is coal Bed methane? Explain the basic extraction method of coal bed methane with neat sketch. (08 Marks)

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