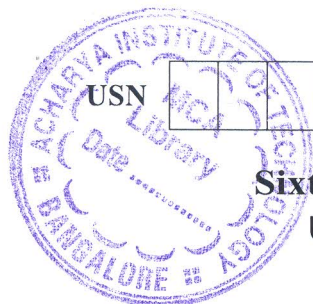


CBCS SCHEME



USN

18MN641

Sixth Semester B.E. Degree Examination, Jan./Feb. 2023 Underground Mine Planning and Design

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Summarize the social and economic impacts due to mining activities. (10 Marks)
b. List out the Mine Laws influencing the mining industries in India. (10 Marks)

OR

- 2 a. Summarize the environmental impacts due to underground mining activities. (08 Marks)
b. Mention the factors to be considered during selection of optimum plant site locations for constructions. (12 Marks)

Module-2

- 3 a. Summarize in brief, the three stages involved during mine planning study. (12 Marks)
b. Mention the factors affecting the division of coal field into mining areas. (08 Marks)

OR

- 4 a. Summarize the details to be furnished during preparation of Detailed Project Report (DPR) of underground coal mine projects. (12 Marks)
b. With a neat sketch, explain pit bottom layout for men and material winding in 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 :
• Daily coal output of the mine is 1500 tons.
• Annual rate of face advance 400 m.
• Life of the mine is 35 years.
• The gradient of the seam is 15°
• Weight of 1 cm of the coal seam is 1.3 t/m^3
• Thickness of the seam is 1.5 m and
• Co-efficient of recovery of the coal is 0.88. (12 Marks)
b. Explain in details the division of mining property into level divisions. (08 Marks)

OR

- 6 a. Summarize the parameters to be considered to determine length of the longwall face and number of longwall faces to achieve planned output. (12 Marks)
b. Explain in details the division of mining property into panel divisions. (08 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and/or equations written eg, $42+8=50$, will be treated as malpractice.

Module-4

- 7 Determine the break-even cut off grade for a copper mine assuming the following data :
- Mill recovery = 90%
 - Mill concentrate grade = 30%
 - Smelting loss = 10 kg/te of concentrate
 - Refining loss – 5 kg/ te of blister copper.
 - Gross value of copper/kg = Rs.600
 - Cost of mining / milling per ton of Ore including amortization and depreciation costs per ton of Ore = Rs.600
 - Transport cost from mill to refinery per ton of Ore (@ Rs.100 / ton of concentrate)
 - Smelting and refining costs per ton of Ore (@ Rs.300 / ton of concentrate)
 - Other costs to be taken as (@20% of the above costs) per ton of Ore. (20 Marks)

OR

- 8 a. As a Mine's Manager Planning, what are the criteria do you prefer for selection of stoping methods in underground metalliferous mines, discuss in details. (14 Marks)
- b. Explain the objectives of work study. (06 Marks)

Module-5

- 9 a. Define mine closure and state types of mine closure. Under what conditions mine/mining activities are ceased. (10 Marks)
- b. Summarize the immediate impacts of unplanned mine closure on the mining community. (10 Marks)

OR

- 10 Discuss the following with respect to effective mine closure :
- a. Surface facilities. (05 Marks)
- b. Underground facilities. (05 Marks)
- c. Socio-economics. (10 Marks)
