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18MN641

Sixth Semester B.E. Degree Examination, July/August 2022 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. What are the social and economic impacts due to mining activities? Justify your answer with a case study. (12 Marks)
- b. Mention the Mine Laws influencing the mining industries in India. (08 Marks)

OR

- 2 a. What are the environmental impacts due to mining activities? Justify your answer with a case study. (12 Marks)
- b. What do you mean by 'Stockholm Conference 1972'? Where it was organized? What are the main agenda and outcome of this conference? (08 Marks)

Module-2

- 3 a. As a planning engineer, what factors you would select the optimum plant site locations for constructions? Describe. (12 Marks)
- b. Summarize the importance and need of mine planning. (08 Marks)

OR

- 4 a. Summarize the details to be furnished during preparation of Detailed Project Report (DPR) of underground coal mine projects. (14 Marks)
- b. Mention the factors affecting the division of coal field into mining areas. (06 Marks)

Module-3

- 5 The following are the data of a new underground coal mine: Thickness of a seam A = 1.0m, seam B = 1.2m and seam C = 1.4m; weight of 1m³ coal seams (equal for all seams) = 1.35t/m³, annual planned output of the mine = 11,00,000 t/year; daily planned output of the mine = 3666 tons; coefficient of recovery (equal for all seams) = 0.95; length of the productive face (equal for all seams) = 120m; width of web (equal for all seams) = 1.3m; number of cycles in the face per day (equal for all seams) = 2; cyclic coefficient (equal for all seams) = 0.8; coefficient accounting for the percentage of coal output from productive faces (equal for all seams) = 0.95 and gradient of the seam = 12°. Determine:
 - a. The planned output from the faces (10 Marks)
 - b. The number of the productive faces in the mining property. (05 Marks)
 - c. Make arrangement of the faces within the mining area. (05 Marks)

OR

- 6 a. With a neat sketch, explain dimensions of development workings in underground coal mines. (10 Marks)
- b. Explain with neat sketches, the division of mining property into parts. (10 Marks)

Module-4

- 7 a. Define cut-off-grade and break even cut-off-grade. Why it is important for mining Industry? (05 Marks)
- b. Explain the desirable features of selecting a stopping method in underground metal mine. (15 Marks)

OR

- 8 a. Describe how time study and work study helps in improvement of production in mines. (10 Marks)
- b. Mention the types of stopping methods in underground metal mining and explain any one method briefly. (10 Marks)

Module-5

- 9 a. List the factors to be considered for effective mine closure plans. (10 Marks)
- b. Illustrate corrective measures to be applied for minimizing socio-economic impacts of mine closure on mining communities. (10 Marks)

OR

- 10 Summarize the provisions for the following during planning for mine closure:
 - a. Water managements (10 Marks)
 - b. Underground facilities. (10 Marks)

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