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Fifth Semester B.E. Degree Examination, Feb./Mar. 2022
Surface Mining

Time: 3 hrs.

Max. Marks: 100

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

Module-1

- 1 a. Explain the various applicability, advantages and disadvantages of surface mining when compared to underground mining. (10 Marks)
- b. Explain the factors affecting the selection of site for box-cut. (05 Marks)
- c. List the various types, applicability and limitations of Rippers used surface mining. (05 Marks)

OR

- 2 a. For the given conditions find the number of blast hole drills required in surface mining for the production of coal-3 million te/year, coal seam thickness – 10m, stripping ratio-3m³/te, chip of coal seam – 1 in 20 assume any other required data. (12 Marks)
- b. Describe the various bench parameters and their selection criteria in surface mines. (08 Marks)

Module-2

- 3 a. Explain the various applicability and limitations of electric shovel. (08 Marks)
- b. Prepare a statement of heavy earth moving machinery required for a surface coal mine producing 4.5 million tonne of coal per year and being worked by shovel dumper combination the average seam thickness is 10m and the stripping ratio is 2.5 m³/tonne. (12 Marks)

OR

- 4 a. Explain the general features and characteristics of hydraulic shovel. (05 Marks)
- b. Estimate the HEMM required in a surface iron ore mine producing 6.0 million tonne of ore per year. The average stripping ratio is 0.3 tonne/tonne the mine will be worked by shovel dumper combination with a bench height of 12m. (15 Marks)

Module-3

- 5 a. With a neat sketch, explain lateral block cutting method and full block method of working with a B.W.E. (10 Marks)
- b. Explain the various operational methods of C.S.M and list its applicability and limitations. (10 Marks)

OR

- 6 a. With a sketch, explain the construction and working of an B.W.E. (10 Marks)
- b. Explain the various types of HAC, its mode of operation, and its applicability and limitations. (10 Marks)

Module-4

- 7 a. Explain the different in-pit crushing and conveying methods and their respective applicability and limitations. (10 Marks)
- b. Explain methods vis-à-vis equipment for extraction of primary blocks in granite and marble Quarries. (10 Marks)

OR

- 8 a. List the applicability and limitations of in-pit crushing and conveying system. (10 Marks)
- b. Explain the various problems associated in the extraction of developed coal seams. (10 Marks)

Module-5

- 9 a. Enumerate the factors influencing the stability of slopes in a surface mining. (10 Marks)
- b. Describe the different modes of failures in high wall slopes in a surface mining. (10 Marks)

OR

- 10 a. Describe the various slope stabilization and monitoring techniques in a surface mine. (10 Marks)
- b. Describe the various slope stability assessment techniques in a surface mine operation. (10 Marks)

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