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10MN751

Seventh Semester B.E. Degree Examination, June/July 2019
Advanced Surface Mining

Time: 3 hrs.

Max. Marks:100

Note: Answer any FIVE full questions, selecting atleast TWO questions from each part.

PART - A

- 1 a. Elaborate "Quality control of ore vis - a - vis conservation". (05 Marks)
b. Describe various methods of ore body delineation. (07 Marks)
c. How do you arrive at manpower required for a given output of an open cast mine where shovel - dumper system is deployed? Elaborate. (08 Marks)
- 2 a. Derive a mathematical expression to determine the number of benches for a given output of an opencast mine. Assume suitable conditions for this purpose. (08 Marks)
b. Identify and interpret the parameters / factors that influence the selection of site for initial box cut. (06 Marks)
c. What parameters / factors do you consider in designing the height of bench and why? (06 Marks)
- 3 a. Describe various aspects of pit layout design for a gently dipping coal seam. Illustrate your answer with the help of a schematic diagram. (14 Marks)
b. What is Calender plan and why does it require? (06 Marks)
- 4 a. What are the parameters / factors that affect the stability of slope and how? (08 Marks)
b. Describe conditions suitable for plane failure. (04 Marks)
c. Describe wedge failure with neat sketch. (08 Marks)

PART - B

- 5 a. Describe an expression to determine factor of safety (FOS) for wedge failure. Assume cohesion as zero. (08 Marks)
b. A high wall slope is found to have a bedding plane running through toe. A tension crack that occurs behind the crest of the slope is vertical and filled with water to certain depth. Water enters the bedding plane along the base of the tension crack and seeps along the bedding surface, escaping at atmospheric pressure. Derive factor of safety (FOS) assuming required parameters for the purpose. (12 Marks)
- 6 a. How do you select dragline for an opencast mine? Explain with the help of side cast diagram. (10 Marks)
b. Derive a mathematical formula to estimate number of dumpers required for a given annual production. Assume your own conditions and parameters. (10 Marks)
- 7 a. What are the causes and preventive measures for fly rocks in open cast mine? Explain. (08 Marks)
b. Illustrate "blasting design vis - a - vis blast induced ground vibration" with the help of USBM predictor model. (12 Marks)
- 8 a. What are the parameters / factor that you consider in assessing the stability of spoil dump? Explain. (10 Marks)
b. Describe safety beams and escape lane in relation to haul road in open cast mine. (10 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.