



# CBCS SCHEME

15MN44

Fourth Semester B.E. Degree Examination, Dec.2019/Jan.2020

## Mine Mechanization - I

Time: 3 hrs.

Max. Marks: 80

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

### Module-1

- 1 a. Define i) Compressed Air ii) Air Pressure iii) Boyle's law iv) Charle's law. (08 Marks)  
b. With a neat sketch, explain the working principle of Jack hammer. (08 Marks)

OR

- 2 a. With a neat sketch, explain the working principle of Rocker shovel. (08 Marks)  
b. Explain the factors to be considered for techno – economic indices of Mine transport system. (08 Marks)

### Module-2

- 3 a. With a neat sketch, explain the procedure of Split Capel with rivet method of Socketing. (08 Marks)  
b. With a neat sketch, explain the method of Splicing a rope. (08 Marks)

OR

- 4 a. With a neat sketch, explain the direct rope haulage with single drum system. (08 Marks)  
b. 650 tons of coal shift will have to be hauled up from an incline 1000m long. Calculate the size of the rope and the coal carried per effective pay journey on the basis of the following data : Tare weight = 1.25 tons , Capacity / car = 3 tons of coal , Speed = 20km/hr , Inclination = 1 in 10 , Coefficient of friction of cars = 1/56 , Factor of safety = 10. Effective hauling time is 6.5 hours during a shift. (08 Marks)

### Module-3

- 5 a. With a neat sketch, explain the working principle of Cable belt conveyor. (08 Marks)  
b. With a neat sketch, explain the working principle of Belt Conveyor. (08 Marks)

OR

- 6 a. With a neat sketch, explain about trolley wire locomotive. (08 Marks)  
b. Write a note on diesel locomotive and explain the hazards due to diesel locomotive. (08 Marks)

### Module-4

- 7 a. With a neat sketch, explain about the skip winding. (08 Marks)  
b. With a neat sketch, explain the ground mounted Koepe winding. (08 Marks)

OR

- 8 a. With a neat sketch, explain the Cylinder shape of drum. (08 Marks)  
b. What are the advantages and disadvantages of multi – rope winding? (08 Marks)

### Module-5

- 9 a. Explain about the electrical braking and write a note on plugging system of electrical braking. (08 Marks)  
b. What are the purposes of safety devices of winders and write a note on safety brakes? (08 Marks)

OR

- 10 a. Explain the shunt back system with pit top layout. (08 Marks)  
b. Write a note on track laying and maintenance. (08 Marks)

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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.