

CBCS SCHEME

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15MN32

Third Semester B.E. Degree Examination, Dec.2018/Jan.2019 Mining Electrical Engineering

Time: 3 hrs.

Max. Marks: 80

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

Module-1

- 1 a. Explain the scope and importance of Electrical Engineering in Mining. (06 Marks)
b. What are the roles and responsibilities of Electrical Inspectors in Mining Industry? (06 Marks)
c. List the advantages of Electric drives. (04 Marks)

OR

- 2 a. Describe the electrical drive system with a neat block diagram. (06 Marks)
b. Explain about the electrical drives used for mine winders. (10 Marks)

Module-2

- 3 a. Demonstrate how the speed of D.C. shunt motor is controlled by armature and field control methods. (08 Marks)
b. A 250V, D.C shunt motor has shunt field resistance of 250Ω and an armature resistance of 0.25Ω . For a given load torque and no additional resistance included in the shunt field circuit, the motor runs at 1500 rpm drawing an armature current of 20A. If a resistance of 250Ω is inserted in series with the field, the load torque remaining the same, find out the new speed and armature current. Assume the magnetization curve to be linear. (08 Marks)

OR

- 4 a. Outline the characteristics of D.C shunt generator. (08 Marks)
b. A 500V D.C. shunt motor has an armature and field resistance of 1.25Ω and 500Ω respectively. When running on no – load the current taken is 4A and the speed is 1000 rpm. Calculate the speed of the motor when it is fully load and drawing a supply current of 26A. Also estimate the speed at this load if a resistance of 2.3Ω is connected in series with armature. (08 Marks)

Module-3

- 5 a. Explain the construction and working of a 3 – phase Induction Motor. (08 Marks)
b. Why the synchronous motor don't start by itself? Explain any two methods used to start synchronous motor. (08 Marks)

OR

- 6 a. Explain about the plugging type of braking used for 3 – phase induction motor. (08 Marks)
b. Explain the construction and working of an alternator. (08 Marks)

Module-4

- 7 a. Define the Fuse. Write short notes on the different types of fuses. (06 Marks)
b. With Single line diagram, explain any two types of power distribution on surface mines. (10 Marks)

OR

1 of 2

- 8 a. Distinguish between flame proof apparatus and intrinsically safe apparatus. (05 Marks)
b. List the voltage levels used in mining industry as per Indian Electricity Rules 1956. (03 Marks)
c. Explain the construction and working of air break circuit breaker. (08 Marks)

Module-5

- 9 a. Explain about the mine lighting standards at various places in mines. (08 Marks)
b. Write about LED lighting for mine applications. (08 Marks)

OR

- 10 a. Define the following terms related to illumination : (10 Marks)
i) Illumination ii) MSCP iii) Candle power iv) Glare v) MHCP.
b. State and explain the laws of illumination. (06 Marks)

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