CBCS SCHEME

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17MN32

Third Semester B.E. Degree Examination, Jan./Feb. 2021
Mining Electrical Engineering

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 scope and importance of Electrical Engineering in Mining. **(10 Marks)**

b. Mention the Indian electricity rules applicable to mining industry. **(10 Marks)**

OR

2 a. Explain the qualification of officers appointed to assist the inspectors for the electrical drives in mining. **(10 Marks)**

b. Explain the factors required for selection of electrical drives. **(10 Marks)**

Module-2

3 a. Explain Electrical braking of DC motor. **(10 Marks)**

b. Explain briefly rheostatic, Field and voltage control of a DC shunt motor. **(10 Marks)**

OR

4 a. Briefly explain series, shunt and compound DC motors. **(10 Marks)**

b. A 220V shunt motor with an armature resistance of 0.5Ω is excited to give constant main field. At full load the motor runs of 500 revolution, per minute and takes an armature current of 30A. If a resistance of 1.0Ω is placed in the armature circuit, find the speed at i) full load torque ii) Double full load torque. **(10 Marks)**

Module-3

5 a. With neat diagram, explain the construction and working principle of a three phase induction motor. **(10 Marks)**

b. Write the methods employed for speed control of Induction motors and explain any two methods. **(10 Marks)**

OR

6 a. Explain the working principle of synchronous motors. **(10 Marks)**

b. Explain the working principle of an alternator. **(10 Marks)**

Module-4

7 a. Explain the types of motor enclosures in mining. **(10 Marks)**

b. Explain with a neat diagram, the working principle of Air Break Circuit Breaks. **(10 Marks)**

OR

8 a. Explain power distribution in mining with a neat diagram. **(10 Marks)**

b. Explain with a neat diagram, the working principle of Air Break switches (isolators). **(10 Marks)**

Module-5

9 a. Define : i) Radiant efficiency ii) Reduction factor iii) Reflection ratio iv) Specific output of a lamp v) MSCP vi) MHSCP vii) Candela viii) Luminous flux ix) Lumen hour x) Lumen. **(10 Marks)**

b. Explain the standards for mine lighting at different places in a mine. **(10 Marks)**

OR

10 a. Write the design steps for lighting in underground and opencast mines. **(10 Marks)**

b. Write a note on LED lighting, giving its advantages over other types of lighting. **(10 Marks)**

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