



CBCS SCHEME

18MN56

USN PAU18MT006

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021

Mine 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 any 10 Indian electricity rules applicable to mining. (10 Marks)
b. Explain the scope and importance of electrical engineering in mining. (05 Marks)
c. List out the difference between AC and DC derives. (05 Marks)

OR

- 2 a. With a neat block diagram, explain the parts of an electric drive. (10 Marks)
b. Explain with a neat sketch coal mine shaft. Explain the electric winder system. (10 Marks)

Module-2

- 3 a. Briefly explain series, shunt and compound DC shunt motor. (10 Marks)
b. Explain the various methods of speed control for a DC shunt motor. (10 Marks)

OR

- 4 a. Explain briefly Rheostatic, plugging and regenerative braking of a DC shunt motor. (06 Marks)
b. A 500V shunt motor runs at its normal speed of 250rpm, when the armature current is 200A. The resistance of armature is 0.12Ω . Calculate the speed when a resistance is inserted in the field, reducing the shunt field to 80% of normal value and the armature current is 100A. (10 Marks)
c. Derive the torque equation of a DC motor. (04 Marks)

Module-3

- 5 a. With neat diagram, explain the construction and working principle of a three phase induction motor. (10 Marks)
b. List the methods employed for speed control of induction motors and explain any two methods. (10 Marks)

OR

- 6 a. With a neat sketch, explain the working principle of a synchronous motor. (10 Marks)
b. Explain with neat diagram the working of an alternator. (10 Marks)

Module-4

- 7 a. Explain with a neat diagram the working principle of oil circuit breaker. (10 Marks)
b. Explain the types of motor enclosures in mining. (10 Marks)

OR

- 8 a. Draw a single line diagram of surface power distribution in underground mines explain in brief. (10 Marks)
b. Differentiate between flame proof apparatus and intrinsically safe apparatus. (10 Marks)

Module-5

- 9 a. Write a note on general lighting in underground and surface mines. (10 Marks)
b. Explain the standards for mine lighting. (10 Marks)

OR

- 10 a. Write a note on LED lighting, giving its advantages over other types of lighting. (10 Marks)
b. Define the following terms related to illumination
i) Lumen ii) Candle power iii) Glare iv) MHCP v) Solid angle. (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.