

CBCS SCHEME

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Seventh Semester B.E. Degree Examination, Jan./Feb. 2023 Automotive Electrical and Electronic Systems

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 simple wiring diagram of the electrical system of an automobile, with neat sketch. (10 Marks)
b. With diagram, explain the different electrical symbols used in automobile system. (06 Marks)
c. What are the types of cables used in wiring system? Explain briefly. (04 Marks)

OR

- 2 a. Discuss the principle of operation of a lead acid battery with a neat sketch. (10 Marks)
b. List out the defects and remedies of batteries. (04 Marks)
c. Explain working principle of zinc air battery with neat sketch. (06 Marks)

Module-2

- 3 a. Explain the construction and working of DC generation, with neat diagram. (10 Marks)
b. With neat sketch, explain the construction and working of cutout relay. (10 Marks)

OR

- 4 a. Explain construction and working of starter motor with a neat sketch. (10 Marks)
b. With neat sketch, explain construction and working principle of Bendix drive. (10 Marks)

Module-3

- 5 a. With neat diagram, explain battery ignition system of the four cylinder SI engine. (08 Marks)
b. Explain the principle of an electronic ignition system, with schematic diagram. (08 Marks)
c. Compare Battery ignition system and Magneto ignition system. (04 Marks)

OR

- 6 a. With neat sketch, explain the Head light aiming and levelling. (04 Marks)
b. Explain the following with sketches:
i) Electrical Fuel Pump
ii) Wind Screen Wipers
iii) Electric Horn
iv) Speedometer. (16 Marks)

Module-4

- 7 a. With a block diagram explain, combined ignition and fuel control systems. (08 Marks)
b. Explain various timing devices used to adjust the timing of an engine. (06 Marks)
c. Write a short note on:
(i) Hybrid Vehicles
(ii) Fuel Cells (06 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.

OR

- 8 a. Explain the following with sketches:
i) Antilock Braking Systems (ABS) (12 Marks)
ii) Traction Control (08 Marks)
- b. Explain the importance of air bags and seat belt tensioners. (08 Marks)

Module-5

- 9 a. Explain the components of electrical vehicle and the layout. (08 Marks)
- b. Explain the construction and working of sodium sulphur battery for electric vehicles. (08 Marks)
- c. What are the merits and demerits of electric vehicles? (04 Marks)

OR

- 10 Explain the following : (20 Marks)
- a. Light sensors
- b. Proximity sensors
- c. Hall Effect sensors
- d. Internet of Things (IoT)
