



# CBCS SCHEME

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15AU71

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

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 following :
- Earth return and insulated systems
  - 6 volts and 12 volts system
  - Automobile cables and symbols used in electrical systems
- (08 Marks)
- b. Describe with a neat sketch, the typical wiring system for passenger car lighting system. (08 Marks)

OR

- 2 a. List the different types of batteries. Explain briefly the working principle of Lead Acid Battery with a neat sketch. (08 Marks)
- b. What is Battery Testing? Explain the Hydrometer test with a neat sketch. (08 Marks)

### Module-2

- 3 a. Describe the construction and working principle of alternator with a neat sketch. (08 Marks)
- b. Explain the construction and working of Cut-Out relay. (08 Marks)

OR

- 4 a. List out the different types of starting motor drives. Explain anyone of them with a neat sketch. (08 Marks)
- b. i) Mention the characteristics of series motor.  
ii) List out the considerations affecting size of motor. (08 Marks)

### Module-3

- 5 a. With a neat sketch explain Battery Ignition system used in S.I. engine and list out the advantages of it. (08 Marks)
- b. Sketch and explain the centrifugal spark advance mechanism in full and no advance positions. (08 Marks)

OR

- 6 a. Describe the Head Light Aiming and leveling with necessary sketches. (08 Marks)
- b. Explain the following with circuit :
- Electric Horn
  - Fuel gauge
  - Dim-Dip light
- (08 Marks)

### Module-4

- 7 a. Describe with block diagram complete control system of vehicle. (08 Marks)
- b. Write a short notes on :
- Hybrid vehicle
  - Fuel cells
  - Dwell Angle.
- (08 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 :  
i) Antilock Braking System (08 Marks)  
ii) Seat Belt Pretensioner (08 Marks)
- b. Explain the Traction control system with a neat block diagram.

Module-5

- 9 a. Mention the components of Electrical Vehicle. Explain briefly. (08 Marks)  
b. List out the advantages and disadvantages of Electrical Vehicles. (08 Marks)

OR

- 10 a. Define Transducer. Explain the working principle of transducer used in Automobile vehicle. (08 Marks)
- b. Discuss the following in detail :  
i) Proximity sensor  
ii) Light sensor  
iii) Hall effect sensor (08 Marks)

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