



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Sixth Semester, B.E. - Automobile Engineering

Make-up Examination; March/April - 2022

Automotive Electrical and Electronics

Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

- 1 a. Explain electrical power supply in conventional vehicle electrical system and future electrical system with neat sketches. 10
- b. Explain in brief the history of vehicle electric system and discuss the characteristics of electrical power supply in conventional vehicle electrical system. 10
- 2 a. With neat sketch, explain the construction and working of lead acid battery and mention the chemical reaction. 10
- b. State the various methods of battery testing and explain any two in brief. 10

UNIT - II

- 3 a. Name the different types of starting drives with a neat sketch explain any one. 10
- b. What is the necessity of generator output control? Discuss the various methods of achieving the same. 10
- 4 a. Explain the method of selecting the stator motor to start the engine. 10
- b. With neat sketch, explain the construction and working of AC generator and mention the advantages of alternator over generator. 10

UNIT - III

- 5 a. With a neat sketch, explain front and rear lighting system. 10
- b. Draw the wiring diagram of typical passenger car lighting system. 10
- 6 a. With help of neat diagrams, describe the working of stop light switch and direction signal. 6
- b. In detail, explain the method of mounting and adjustment of head lamps. 6
- c. State the function and explain the working principle of;
- i) Windscreen wiper 8
- ii) Electric horn

UNIT - IV

- 7 a. Explain in detail the history of development about automotive micro electronics 10
- b. List and explain electronic components. 10
- 8 a. With schematic diagram, explain of micro controller peripheral modules. 10
- b. Explain manufacture of semiconductor components and circuits. 10

UNIT - V

- 9 a. Discuss sensor application in the vehicle. 5
- b. Explain potentiometer type sensor and mention their advantages and disadvantages. 5
- c. With a neat sketch, explain ultrasonic sensor and fuel level sensor, 10
- 10. With a neat sketch, explain the following with applications:
 - i) Steering wheel angle sensor
 - ii) Hall effect phase sensor 20
 - iii) Sensor plate potentiometer
 - iv) Accelerator pedal sensor

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