



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

(An Autonomous Institution affiliated to VTU, Belagavi)

Sixth Semester, B.E. - Automobile Engineering

Semester End Examination; May/June - 2018

Automotive Electrical and Autotronics

Time: 3 hrs

Max. Marks: 100

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

### UNIT - I

- |   |    |   |    |
|---|----|---|----|
| 1 | a. | Explain in brief the history of vehicle electrical systems.   | 5  |
|   | b. | With neat sketches, explain electrical power supply in conventional vehicle electrical systems and future electrical systems. | 10 |
|   | c. | List and explain in brief the assignments and requirements of plug-in connections.  | 5  |
| 2 | a. | Describe the construction and working of a lead acid battery giving the chemical reactions.                                   | 10 |
|   | b. | State the various methods of battery testing. Explain any two in brief.   | 10 |

### UNIT - II

- |   |    |   |    |
|---|----|---|----|
| 3 | a. | With a neat sketch, explain construction and working of AC generator.                   | 8  |
|   | b. | What are the advantages of alternator over generator?                                   | 4  |
|   | c. | With a neat circuit diagram, explain the working of combined current voltage regulator. | 8  |
| 4 | a. | Explain the method of selecting the starter motor to start the engine.                  | 10 |
|   | b. | What are the different starting motor drives? With a neat sketch, explain Bendix drive. | 10 |

### UNIT - III

- |   |    |  |    |
|---|----|--|----|
| 5 | a. | Explain the technical demands of automotive lighting system.   | 6  |
|   | b. | With a neat sketch, explain the front and rear-end lighting system.  | 8  |
|   | c. | List and explain about special purpose lamps.  | 6  |
| 6 | a. | With a neat sketch, discuss the constructional details of head light and write the procedure of head lamp mounting and adjustment. | 12 |
|   | b. | With a neat sketch, explain mechanical wiper mechanism.  | 8  |

### UNIT - IV

- |   |    |   |    |
|---|----|---|----|
| 7 | a. | Explain in detail the history of development about automotive microelectronics. | 10 |
|   | b. | List and explain electronic components.   | 10 |
| 8 | a. | Explain with schematic diagram of microcontroller peripheral modules.           | 10 |
|   | b. | Explain manufacture of semiconductor components and circuits.                   | 10 |

**UNIT - V**

- 9 a. Discuss sensors applications in the vehicle. 5
- b. Explain potentiometer-type sensors. Mention their advantages and disadvantages. 5
- c. With neat sketches, explain Ultra sonic sensor and fuel level sensor. 10
- 10. With neat sketch, explain the following : 20
  - a) Accelerator-pedal sensors
  - b) Sensor-plate potentiometer
  - c) Steering-wheel-angle sensors
  - d) Half-effect phase sensor

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