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**Seventh Semester B.E. Degree Examination, July/August 2022**

**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. What do you understand by the term cable color-codes? Explain them briefly. (10 Marks)  
b. Explain earth return and insulated systems. (06 Marks)

**OR**

- 2 a. What is the necessity of battery in automobile? Classify the batteries in detail. (06 Marks)  
b. Discuss with neat sketch the principle of operation of head acid battery. (10 Marks)

**Module-2**

- 3 a. Explain the construction and working principle of D.C. generator. (10 Marks)  
b. Explain cutout relay with a neat sketch. (06 Marks)

**OR**

- 4 a. With a neat sketch, explain the construction and working of a series starter motor in brief. (08 Marks)  
b. Enlist different types of starting motor drives. Explain any one of them with neat sketch. (08 Marks)

**Module-3**

- 5 a. What are the types of ignition systems? With a diagram explain battery coil ignition system. (10 Marks)  
b. Write a note on : (i) Spark plug (ii) Ballast resistance. (06 Marks)

**OR**

- 6 a. Explain with a sketch, construction and working of, (i) Sealed beam lamp (ii) Wind screen wiper. (08 Marks)  
b. With a neat sketch explain the working principle of electrical fuel pump. (08 Marks)

**Module-4**

- 7 a. Discuss about engine management in detail. (08 Marks)  
b. Explain the various engine design parameters for exhaust emission control. (08 Marks)

**OR**

- 8 Write a short note on:  
(i) Antilock brakes (ABS) (ii) Central locking  
(ii) Traction control system (iv) Air bags. (16 Marks)

**Module-5**

- 9 a. What are the different components of an Electrical vehicle, explain in brief. (10 Marks)  
b. What are the advantages and disadvantages of Electrical Vehicles (EVs). (06 Marks)

**OR**

- 10 a. Define a transducer. Explain the working principle and application of,  
(i) Primary sensor (ii) Hall effect sensor. (08 Marks)  
b. Explain the working principle of light sensor and mention their applications. (08 Marks)

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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.