



**Fifth Semester B.E. Degree Examination, Jan./Feb. 2021**  
**Automotive Electronics**

Time: 3 hrs.

Max. Marks: 80

*Note: Answer any FIVE full questions, choosing ONE full question from each module.*

**Module-1**

- 1 a. Briefly explain the four stroke cycle of an IC engine, with neat diagrams. (08 Marks)  
b. What is drive train? With neat diagram, explain the planetary gear system. (08 Marks)

**OR**

- 2 a. Discuss the motivation for electronic engine control. (08 Marks)  
b. What is Engine Mapping? Discuss the effect of spark timing on performance. (08 Marks)

**Module-2**

- 3 a. Explain the working of Mass Air Flow (MAF) sensor with relevant diagram. (08 Marks)  
b. What is ignition system? With neat block diagram, explain the ignition system. (08 Marks)

**OR**

- 4 a. Explain the working of optical crank shaft position sensor. (08 Marks)  
b. Explain EGR actuator control with a relevant diagram. (08 Marks)

**Module-3**

- 5 a. Explain with neat block diagram, components of electronically controlled engine. (08 Marks)  
b. What are various modules of control unit software? Explain them briefly. (08 Marks)

**OR**

- 6 a. What is system diagnosis used on digital engine control system? Explain briefly. (08 Marks)  
b. What is use of secondary air? With the help of a diagram, explain how the secondary air is controlled. (08 Marks)

**Module-4**

- 7 a. Explain with a neat diagram, digital speed sensor. (08 Marks)  
b. What are CAM protocol layers? What are the four different frames? Write the message format. (08 Marks)

**OR**

- 8 a. Explain Digital Cruise control system with the help of relevant diagram. (08 Marks)  
b. Explain the Antilock braking system with relevant diagrams. (08 Marks)

**Module-5**

- 9 a. What is occupant protection system? Explain the accelerometer based airbag system. (08 Marks)  
b. With neat block diagram, explain the Radio Navigation. (08 Marks)

**OR**

- 10 a. Discuss the Heads Up Display and speech synthesis of a future automotive system. (08 Marks)  
b. Write a brief note on On-board-Diagnostics and Off-board Diagnostics. (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.