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17EC561

## Fifth Semester B.E. Degree Examination, Aug./Sept.2020 Automotive Electronics

Time: 3 hrs.

Max. Marks: 100

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

### Module-1

- 1 a. Explain with necessary diagrams, working of a four stroke IC engine. (10 Marks)
- b. Briefly explain motivation behind electronic engine control. (06 Marks)
- c. Write a note on Engine Mapping. (04 Marks)

OR

- 2 a. Explain spark plug configuration, spark pulse generation and ignition timing with relevant diagrams. (10 Marks)
- b. Explain the effect of Air/Fuel ratio in engine performance. (05 Marks)
- c. With neat diagram, explain Electronic Ignition system. (05 Marks)

### Module-2

- 3 a. Explain air flow rate sensor with neat diagram. (10 Marks)
- b. With neat schematic of solenoid, explain working of fuel injector and pulse mode fuel control with relevant diagram. (10 Marks)

OR

- 4 a. What is Hall effect? Explain with a neat diagram position sensor using principle of Hall effect. Compare it with magnetic reluctance sensor. (10 Marks)
- b. With neat diagram, explain EGR Actuator. (10 Marks)

### Module-3

- 5 What are seven modes of fuel control? Explain them in detail. (20 Marks)

OR

- 6 a. What is Idle speed control? Explain with a neat block diagram idle speed control system. (10 Marks)
- b. What is the use of secondary air? With the help of diagram, explain how the secondary air is controlled. (10 Marks)

### Module-4

- 7 a. Explain with neat diagram Antilock braking system. (10 Marks)
- b. Explain LIN and Most Bus. (10 Marks)

OR

- 8 a. Explain digital cruise control system with help of relevant diagram. (10 Marks)
- b. What are CAN Protocol layers? What are the four different frame? Write the message format. (10 Marks)

### Module-5

- 9 a. Explain Collision Avoidance Radar Warning system with relevant diagrams. (10 Marks)
- b. Explain Accelerometer based Airbag system with relevant diagrams. (10 Marks)

OR

- 10 a. Explain with neat diagram Radio Navigation system. (10 Marks)
- b. Explain the automatic driving control system with relevant diagram. (10 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.