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18EIE251

Second Semester M.Tech. Degree Examination, June/July 2019 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. Explain the working of a spark plug with a neat diagram. (05 Marks)
- c. With a neat diagram, explain the disk braking system of an automobile. (05 Marks)

OR

- 2 a. Write a short note on suspension in automobiles with neat figure. (08 Marks)
- b. Define measurement. Explain issues related to measurement. Also explain the errors occurred during measurement. (12 Marks)

Module-2

- 3 a. Explain Analog-to-Digital converter with neat figure. (10 Marks)
- b. Explain the architecture for typical automotive computer. (10 Marks)

OR

- 4 a. Explain digital to analog converter with necessary figures. (10 Marks)
- b. Explain automotive instrumentation architecture. (10 Marks)

Module-3

- 5 a. Explain the following engine performance parameters: (08 Marks)
 - i) BSFC
 - ii) Power
 - iii) Torque
 - iv) Volumetric efficiency
- b. Explain effect of air/fuel ratio on engine performance with necessary diagram. (06 Marks)
- c. Explain electronic ignition system. (06 Marks)

OR

- 6 a. Explain the working of fuel injector and pulse mode fuel control signals with relevant diagrams and waveforms. (10 Marks)
- b. Explain the working of EGO sensor with neat diagram. Also draw the ideal EGO switching characteristics and explain. (10 Marks)

Module-4

- 7 a. With a neat block diagram, explain the timing light used to measure and set ignition timing. (08 Marks)
- b. Explain ON-Board and OFF-Board diagnostics in detail. (12 Marks)

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.

OR

- 8 a. Explain accelerometer based Air Bag System. (08 Marks)
b. Explain Digital Speed Sensor. (08 Marks)
c. Write a short note on a typical cruise control system with neat block diagram. (04 Marks)

Module-5

- 9 a. Explain low tire pressure warning system with relevant diagrams. (06 Marks)
b. Explain multiplexing in automobiles with neat block diagrams. (08 Marks)
c. Explain Collision Avoidance Radar Warning System with relevant diagrams. (06 Marks)

OR

- 10 a. Explain the automatic driving control system with relevant diagrams. (10 Marks)
b. Explain:
i) Dead reckoning navigation
ii) Sign Post Navigation (10 Marks)
