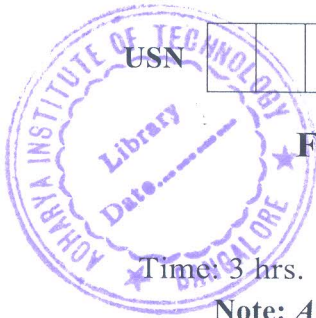


CBCS SCHEME

15EC561



Fifth Semester B.E. Degree Examination, Aug./Sept. 2020 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. With a schematic of the ignition circuit and primary current waveform. Explain the generation of spark pulse in a conventional automobile system. (10 Marks)
- b. With relevant graphs analyze the effect of air-fuel ratio on the engine performance. (06 Marks)

OR

- 2 a. List the functions of a differential. With a neat diagram explain the working of disk brake system. (10 Marks)
- b. Outline the desired functions of a catalytic converter. With a graphical representation analyze the effect of air-fuel ratio on the performance of a Three-way-catalytic converter. (06 Marks)

Module-2

- 3 a. With relevant diagrams, explain the working of an optical crankshaft position sensor. (08 Marks)
- b. With a neat diagram, explain the working of an exhaust gas recirculation actuator. (08 Marks)

OR

- 4 a. What are the desirable characteristics of an EGO sensor? Draw and explain the switching characteristics of a typical EGO sensor. (08 Marks)
- b. Explain the working of fuel injector and pulse mode fuel control signal with relevant diagrams and waveforms. (08 Marks)

Module-3

- 5 a. Briefly explain the different modes of fuel control. (07 Marks)
- b. What are the various features of control unit software? Explain them briefly. (09 Marks)

OR

- 6 a. With a relevant diagram, explain how the spark advance is calculated in a distributorless ignition system. (07 Marks)
- b. Draw a general block diagram of the control unit hardware and explain its different functional modules. (09 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.

Module-4

- 7 a. With diagrams, explain two types of gateway structures for the coupling of networks. (08 Marks)
b. Explain digital cruise control system with the help of a relevant diagram. (08 Marks)

OR

- 8 a. With a diagram, briefly explain the CAN protocol layers. Write the CAN message format. (08 Marks)
b. With a neat diagram, explain the working of a vacuum operated throttle actuator. (08 Marks)

Module-5

- 9 a. Write brief notes on On-Board-Diagnostics and Off-Board-Diagnostic systems. (08 Marks)
b. With the help of a relevant diagram, explain low tire pressure warning system. (08 Marks)

OR

- 10 a. With a block diagram, explain the timing light used to measure and set the ignition timing. (08 Marks)
b. With a relevant block diagram, explain the concept of platooning in automatic driving control system (08 Marks)

* * * * *