



CBCS SCHEME

15EC561

Fifth Semester B.E. Degree Examination, July/August 2021 Automotive Electronics

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions.

- 1 a. What are the drive trains? With neat schematic, explain the planetary gear system. (08 Marks)
b. With a neat block diagram, explain hybrid vehicle configuration. (08 Marks)
- 2 a. With a neat block diagram, explain oxidizing catalytic converter and The Three Way Catalyst. (08 Marks)
b. With a neat diagram, explain a typical shock absorber assembly. (08 Marks)
- 3 a. With neat diagrams, explain the working of magnetic reluctance position sensor. (08 Marks)
b. What is a solenoid? Explain the operation of solenoid control fuel injector. (08 Marks)
- 4 a. Explain with a neat block diagram a Typical Electronic Engine Control System. (08 Marks)
b. Discuss a brushless DC motor with diagrams, used in an Hybrid/Electric Vehicles. (08 Marks)
- 5 a. With neat diagrams, explain Idle Air Control. (08 Marks)
b. With neat diagram, explain the use of secondary air and how secondary air is controlled. (08 Marks)
- 6 a. What are the seven modes of fuel control? Explain and discuss all the seven modes briefly. (08 Marks)
b. Briefly discuss any four improvements in digital engine control which resulted in modern digital engine control. (08 Marks)
- 7 a. Discuss different Protocol layers in a CAN protocol. Also discuss the CAN message format. (08 Marks)
b. Discuss LIN bus structure with master and slave nodes using a block diagram. Also discuss Data Transmission System in LIN bus. (08 Marks)
- 8 a. With neat diagrams explain Vacuum-Operated Throttle Actuator. (08 Marks)
b. Explain Digital Cruise Control Configuration. Also explain the stepper motor actuator for cruise control. (08 Marks)
- 9 a. With neat block diagram, explain the timing light used to measure and set ignition timing. (08 Marks)
b. With neat flow chart and block diagram discuss expert systems. (08 Marks)
- 10 a. With block diagram discuss the low tyre pressure warning system. (08 Marks)
b. With block diagrams discuss generic Automatic Navigation System and Automotive Inertial Navigation System. (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.