Important Note: 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.

USNITEOA

15EC561

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

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions.

- 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.
 - 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.
 - 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)
