

Exam Date & Time: 06-May-2024 (02:30 PM - 05:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

VI SEMESTER B.TECH END SEMESTER EXAMINATIONS, MAY 2024
AUTOTRONICS [AAE 4040]

Marks: 50

Duration: 180 mins.

A

Answer all the questions.

Instructions to Candidates: Answer ALL questions Missing data may be suitably assumed

- 1) Briefly explain the working of light sensor used in Automatic headlamp systems of a vehicle. (3)
 - A)
 - B) Classify the electrical actuation system. With suitable diagram, explain the use of solenoid operated valves in ABS module. (3)
 - C) Classify the vehicle sensor system based on their application. With suitable sketch explain the working and application of Hot wire Anemometer. (4)
- 2) Explain the working of electromagnetic fuel injector and illustrate the amount of fuel supplied based on ECU activation signal. (3)
 - A)
 - B) Sketch the layout of common rail diesel injection system and explain the important features and function of an individual components. (5)
 - C) Explain the importance of Hall effect pulse generator in vehicle ignition system. (2)
- 3) With suitable block diagrams explain the cell voltage process of a lead acid battery. (3)
 - A)
 - B) Explain vehicle starting safety switch system with the help of suitable circuit diagram. (3)
 - C) With the aid of suitable block diagram explain the features of LIN system. Also explain the implementation of LIN system in windshield-wiper of a vehicle. (4)
- 4) Explain the importance, feature and types of vehicles wiring harness and circuit breakers. (3)

- A)
 - B) Sketch the layout of traction control system for a 4-wheel drive vehicle and explain the working of the system in different modes. (3)
 - C) Sketch the layout of control system involved in the vehicle adaptive cruise control system and explain the different control modes of the adaptive cruise control module. (4)
- 5) Identify and elaborate on the techniques implemented by vehicles to enhance stability through the electronic stability control module. (3)
- A)
 - B) Sketch the layout of Sensotronic braking system and explain the function and features of individual components as per the requirement of vehicle. (4)
 - C) Explain the application of Relay unit in vehicle by considering suitable electrical circuit. (3)

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