

Exam Date & Time: 07-May-2024 (02:30 PM - 05:30 PM)



MANIPAL ACADEMY OF HIGHER EDUCATION

IV SEMESTER B.TECH END SEMESTER EXAMINATIONS, MAY 2024

AUTOTRONICS [AAE 2229]

Marks: 50

Duration: 180 mins.

A

Answer all the questions.

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

- 1) Elaborate on the factors impacting the capacity of a variable capacitance sensor and its application within a push-pull capacitor setup. (3)
 - A)
 - B) Explain the network topology involved and features of a vehicle Bluetooth communication system. (4)
 - C) Illustrate the operation and attributes of a brushless DC motor alongside its relevant applications in the automotive sector. (3)
- 2) Elucidate the significance and definition of Ampere-hour capacity, Reserve Capacity, and Cold Cranking Amps within the vehicle battery system. (3)
 - A)
 - B) Examine the elements and significance of various winding configurations and elucidate the operation of three-phase alternators. (3)
 - C) Classify the types of electrical instrumentation used in vehicle and suitable sketch explain the working of balancing coil type instrument gauge. (4)
- 3) Distinguish between batch and sequential type of fuel injection system. (3)
 - A)
 - B) Sketch the arrangement of the Bosch Motronic fuel injection system and elaborate on the significance of its diverse sensors and components. (5)
 - C) Distinguish the characteristics of various types of bulbs utilized in vehicles according to their specific applications. (2)

- 4) Using an appropriate block diagram, analyze the function of the ABS control loop system in initiating the activation of the ABS module. (4)
- A)
- B) Analyse the use of electronic stability program module in understeer and oversteer driving conditions. (3)
- C) With neat sketch, explain the throttle actuator system of a vehicle cruise control module. (3)
- 5) Determine the various pollutants and their causes emitted by a spark ignition (SI) engine. (3)
- A)
- B) Explain the importance and filtration process involved in Diesel Particulate Matter Filtration system of a CI Engine. (4)
- C) Explain the features and function of the sensor unit and actuator unit of a Sensotronic Braking System. (3)

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