Exam Date & Time: 19-May-2022 (10:00 AM - 01:00 PM)

MANIPAL INSTITUTE OF TECHNOLOGY
MANIPAL
(A constituent unit of MAHE, Manipal)

SIXT SEMESTER B.TECH END SEMESTER EXAMINATIONS, MAY 2022

AUTOTRONICS [AAE 4040]

Marks: 50 **Duration: 180 mins.**

A

Answer all the questions.

Instructions to Candidates:
Missing data may be suitably assumed

1) With suitable sketch, explain the functions and features of types of optical encoders used in identifying the position of the rotating objects. (4)

A)

B) Explain the parameters need to be considered for the selection of sensors and transducers. (2)

C) Explain the principle of piezo electric sensors and with necessary sketch show the application of theses sensors in measuring engine knocking. (4)

2) With necessary sketch, explain the use of relay in vehicle horn actuation system. (2)

A)

B) List the types of DC motors based on the position of armature and field coil and with necessary block diagram explain the important features of these motors. (4)

C) Identify the different components of lead acid battery and explain the important features of individual components. (4)

3) Why voltage regulation is important in alternator. With suitable circuit diagram, explain the process of voltage regulation in alternator. (3)

A)

B) Explain the features of pull-in and hold-in windings of starter solenoid. (2)

C) Classify the types of vehicle horn and with suitable sketch explain the features of the same. (5)

4) Identify the components of air bag system and with suitable sketch explain the working of an air bag system for a vehicle. (3)

A)

B) Sketch the layout of electronic traction control system and illustrate the features of 3 modes of ECS system. (3)

C) With suitable block diagram, explain the features of multiplexing and LIN communication system for a modern vehicle. (4)

5) With necessary diagrams, explain the features of different types of headlight deflectors used in vehicles. (3)

A)

B) With suitable sketch, explain the features and function of a pressure regulator in common rail direct injection system. (3)

C) Differentiate between the types of fuel pump layouts used in fuel injection system suitable block diagrams. (4)

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