

(3 Hours)

[Total Marks: 80]

- N.B: 1. Question No. 1 is compulsory.
2. Attempt any **three** questions from remaining.
3. Draw neat sketches wherever necessary.
- Q.1 a) Describe the components of Lead – Acid battery with neat sketch. Also write about its working with related chemical reactions inside the battery. 10
b) Explain Distributorless Ignition system with schematic diagram. Why it is called Waste spark method of ignition? State its advantages. 10
- Q.2 a) What are fuel cells? Describe construction and working of PEM fuel cell. State its applications and limitations. 10
b) Describe with neat sketch about the construction of sealed beam head lamps. Also write about its setting and control. 10
- Q.3 a) What is “Telematics” technology? Discuss about its advantages, disadvantages and applications. 10
b) How do you classify Starter motor drives? Describe the working of any two types of Starter motor drives with neat sketch. 10
- Q.4 a) Describe the working of any three types of Sensors with suitable diagrams. 10
b) What is ECM? Describe about operating modes of ECM. Also discuss about inputs required and output signals from ECM. 10
- Q.5 a) Describe the working of any three types of Actuators with suitable diagrams. 10
b) Describe the types of Cables, their sizes, colour-codes and wiring harness systems used in automotive vehicles. 10
- Q.7 Write short-notes on any four the following: 20
a) Air management system
b) Proposed Architecture of 42 V Technology
c) ABS and TCS
d) Electric fuel gauge
e) Battery Ratings