(3 Hours)   Total Marks-80

NB: - Question No.1 is compulsory.
Solve **any three** questions from remaining.
Assume suitable data wherever necessary.

Q.1   Answer **any four** questions:

a) An 8-bit D/A converter has V_{ref}=5V. What is the output voltage when   05
   B_{in}=10110100? Also find V_{LSB}.
b) Explain term Sensor and Actuator with examples.   05
c) Explain PID Control with reference to Automotive Electronics.   05
d) Compare microprocessor and microcontroller.   05
e) What do you understand by Onboard Diagnostic system?   05

Q.2   a) What do you understand by term Electric Vehicle? Explain the main   10
          components of Electric vehicle in detail.
       b) Explain Hybrid Electric vehicle architecture in detail.   10

Q.3   a) Explain in detail electronically controlled Automatic transmission   10
          system.
       b) Explain basic sensor arrangement in automobiles? Also explain   10
          Lambda sensor and Throttle position sensor in detail with neat sketch.

Q.4   a) Explain different parameters to be controlled in SI and CI engine with   10
          reference to Automotive Electronics.
       b) Explain acceleration and full load enrichment. Also explain   10
          deceleration fuel cutoff with reference to Digital Engine control.

Q.5   a) Explain engine exhaust gas components and engine cooling system   10
          with diagram
       b) Explain in details any three actuators used in Automobiles with neat   10
          diagram.

Q.6   Write short notes on following with neat labeled diagrams :

a) Interfacing with Sensors in Automobiles   05
b) Different types of memories in microprocessor   05
c) Different methods of Analog to Digital Convertor.   05
d) Vehicle speed sensor   05

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