

(Time: 3 Hours)

Total Marks-80

- N.B.:** 1. Question No: 1 is compulsory.  
2. Solve any three questions out of remaining questions.  
3. Assume Suitable data where necessary.

- Q 1] a) Write a note on Code Warrior IDE. 05M  
b) What is Embedded system? Explain with one example from automobile. 05M  
c) Explain SPI and IIC with reference to Embedded system. 05M  
d) Explain different control modules in ECM. 05M
- Q 2] a) Explain modes of operations of MC9S12XD family. 10M  
b) What is ECU? Explain ECU algorithm, Engine maps and Lookup tables. 10M
- Q 3] a) Draw and explain block diagram of MC9S12XD family. 10M  
b) What do you mean by X by Wire Technology? Explain Drive by wire, Brake by wire and Throttle by wire with suitable example each. 10M
- Q 4] a) Explain CAN and FLEXRAY protocol for Automotive Embedded system. 10M  
b) Enlist sensors used in automobiles? Explain any two with neat sketch, principle of operation and location. 10M
- Q 5] a) Explain different memory options available in Microcomputer? What is difference between RAM, ROM and PROM? 10M  
b) Explain any two actuators used in automobiles with neat labelled diagram. 10M
- Q 6] a) Explain Signals of MC9S12XD family. 05M  
b) Explain Power Window with focus on Embedded technology. 05M  
c) Explain different classes of Multiplexing Communication Protocol? 05M  
d) Explain Antilock braking system 05M