Sub.: Microcontrollers and Embeded Systems

TE/BM/VI/CBGS/MCES.

QP Code : 5100

19

(3 Hours) [Total Marks : 80

N. B. : (1) Question No. 1 is compulsory.
(2) Attempt any three out of remaining five questions.
(3) Draw neat and labelled diagrams wherever necessary.
(4) Programs can be written either in assembly or C.

1. (a) Define an embedded system. State a few examples. What are the trade-offs in designing an embedded system. 20
(b) Explain the Power down modes in 8051.
(c) Explain ACALL and LCALL instructions of 8051.
(d) What are the differences between real time operating systems & general purpose OS?

2. (a) Explain the memory organizations of 8051. 10
(b) Explain how serial communication is achieved in 8051. Explain serial communication using 'I²C', USB and CAN bus. 10

3. (a) Explain with examples the various addressing modes of 8051. 10
(b) Draw and explain the interfacing diagram of 8051 with stepper motor. 5
(c) Write a program to compare the contents of accumulator with the contents of internal RAM location 20H. If contents are equal store 00H in 21H else store FFH in 21H. 5

4. (a) Explain IP and IE SFR of 8051. Explain IVT. 10
(b) WAP to read data from port 1 and copy it to port 2, while simultaneously transmitting the copy of data to PC, serially at baud rate 9600. Assume crystal frequency as 11.0592 MHz. 10

5. (a) What is scheduler? Explain various types of schedulers. 10
(b) Interface 8051 with 16K × 8 ROM and 32K × 8 RAM. Also draw the memory mapping table. 10

6. (a) Interface DAC 0808 with 8051 and write a program to generate a sequare wave. 10
(b) Explain the TMOD register. Explain the timer modes. 10
