CBCS SCHEME

USN | | | | | | | | | | |

18EE52

Fifth Semester B.E. Degree Examination, June/July 2024
Microcontroller

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. With a neat block diagram, explain the functions of each block of 8051 Microcontroller. **(10 Marks)**

b. Draw and explain 8051 connection to Interface External RAM and External ROM. **(10 Marks)**

OR

2 a. Write the features of Microcontroller. **(06 Marks)**

b. With an example, explain addressing modes of 8051 Microcontroller. **(08 Marks)**

c. Explain the PSW and flag bits. **(06 Marks)**

Module-2

3 a. What are assembler directives? Explain the functions of the assembler directives with an example for each. **(06 Marks)**

b. Explain the following instructions:
(i) MUL AB (ii) DA A (iii) MOV C A, @A + DPTR
(iv) LJMP label (v) SWAP A **(10 Marks)**

c. Explain Jump and CALL instruction. **(04 Marks)**

OR

4 a. Write an 8051 assembly program to find average of five numbers stored starting from internal data memory address 40 + 1. **(08 Marks)**

b. Write a program to complement the contents of accumulator 700 times. **(06 Marks)**

c. Explain with an example of instructions:
(i) ANL A, add (ii) XRL A, @ Rp (iii) SUBB A, Rr **(06 Marks)**

Module-3

5 a. Explain the different data types supported by 8051C Microcontroller. **(08 Marks)**

b. Write an 8051C program to toggle the bits of P_1 ports continuously with a 250 MS delay. **(06 Marks)**

c. Write an 8051 C program to convert packed BCD to ASCII and display the bytes on P_1 and P_2. **(06 Marks)**

OR

6 a. Explain TMOD Register. **(06 Marks)**

b. Find the values of TMOD to operate as time is in the following modes:
(i) Mode 1, Timer 1
(ii) Mode 2, Timer 0, Mode 2 Timer 1
(iii) Mode 0, Timer 1 **(06 Marks)**

c. Write an 8051 C program to toggle all the bits of port P_1 continuously with some delay in between. Use Timer-0, 16-bit mode to generate the delay. **(08 Marks)**

Module-4

7 a. Explain simplex, half duplex and free duplex. **(06 Marks)**

b. Explain how 8051 transmits the character serially using its UART. **(06 Marks)**

c. Write a C program for the 8051 to transfer the letter 'c' serially at 9600 band continuously, use 8-bit data and 1 stop bit. **(08 Marks)**

OR

8 a. Explain different interrupts of 8051 indicating their vector address. **(06 Marks)**

b. Write an 8051 C program to transfer the message 'ELECTRICAL' serially at 9600 band rate, 8-bit data, 1-stop bit. **(08 Marks)**

c. Explain the bit status of SCON register. **(06 Marks)**

Module-5

9 a. Explain the architecture and working of 14 pin LCD. Draw the Interface diagram of LCD with 8051 Microcontroller. **(10 Marks)**

b. Explain with neat diagram of interfacing of DC motor with 8051. **(10 Marks)**

OR

10 a. A switch is connected to pin P2.7. Write a C program to monitor the status of SW and perform the following:

(i) If SW = 0 ; The stepper motor moves clockwise.

(ii) If SW = 1; The stepper motor moves counter clockwise. **(08 Marks)**

b. Explain the pin diagram of 8255. **(06 Marks)**

c. Draw the block schematic of DAC 0808 Interfaced to 8051. **(06 Marks)**

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