CBCS SCHEME

17MT43

Fourth Semester B.E. Degree Examination, Jan./Feb. 2023
Microcontrollers

Time: 3 hrs.   Max. Marks:100

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

Module-1

1 a. Differentiate between RISE and CISE architecture.   (06 Marks)
   b. Explain the bit configuration of PSW register.   (06 Marks)
   c. Explain the salient features of 8051 microcontroller.   (08 Marks)

OR

2 a. Interface 16K EPROM and 8K RAM to 8051.   (10 Marks)
   b. Explain Internal RAM memory organisation of 8051.   (06 Marks)
   c. Explain the following : i) ALE   ii) $\overline{EA}$.   (04 Marks)

Module-2

3 a. Define addressing mode. Explain different addressing modes with example. (11 Marks)
   b. Swap contents of R3 and R2 in register bank O using :
      i) XCH instruction ii) Stack iii) Direct addressing modes.   (09 Marks)

OR

4 a. Explain different ranges of Jump and call instructions, with a neat figure. (10 Marks)
   b. RAM location 50 – 59H contains 10 numbers, one of which is 35H. Lead the address of the number 35H in to R3.   (06 Marks)
   c. Find the syntax error in the instruction below if any, also write the correct instruction,
      i) PUSH R5   ii) XCHB R3, @ R0.   (04 Marks)

Module-3

5 a. Explain various data types of C with respect to 8051,   (08 Marks)
   b. Write an 8051 C program to toggle the bits of P1 continuously with 250msec delay.   (08 Marks)
   c. Mention the advantages of C code over assembly language.   (04 Marks)

OR

6 a. Explain the bit configuration of TMOD register.   (06 Marks)
   b. With a frequency of 22MHz, generate a frequency of 100KHz on pin P2.3. Use Timer 1 in mode 1. Use assembly code.   (08 Marks)
   c. Write an 8051 C program to create a frequency of 2500Hz an pin P2.7, use Timer 1, in mode 2 to create the delay XTAL = 11.0592MHz.   (06 Marks)

Module-4

7 a. Define Interrupt. List out the interrupts of 8051 with vector table. Also explain steps in executing in interrupt.   (10 Marks)
   b. Explain the handshake signals used in RS-232, Also mention role of MAX232 in serial communication.   (10 Marks)

OR

8   a.   Explain RS232 working with neat block diagram with handshaking signal.   (10 Marks)
    b.   Explain concept of Edge Triggered and level Triggered with help of TCON.   (10 Marks)

Module-5

9   a.   Define stepper motor. Explain the working of stepper motor with neat diagram with clockwise and anticlockwise concept.   (10 Marks)
    b.   Explain DAC interfacing of 8051 with suitable diagram along with an example of program.   (10 Marks)

OR

10 a.   Explain DC motor interfacing of 8051.   (10 Marks)
    b.   Explain different pins of LCD. Also write an ALP to display message 'Hello' on LCD.   (10 Marks)

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