CBCS SCHEME

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

17MT43

Fourth Semester B.E. Degree Examination, July/August 2022
Microcontroller

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. List the difference between Harvard and Von Neumann CPU architecture with neat figure. **(08 Marks)**

b. With the neat sketch, explain the architecture of 8051 microcontroller. **(12 Marks)**

OR

2 a. List the difference between RISC and CISC CPU architectures. **(08 Marks)**

b. With a neat sketch demonstrate low to interface 4K RAM and 8K EPROM to 8051 micro controller. **(12 Marks)**

Module-2

3 a. Define addressing modes. Explain different addressing modes with example for each. **(10 Marks)**

b. Explain the junction of following instruction.
i) SETB C
ii) SWAP A
iii) MOV b, C
iv) DJNZ R2, back
v) DIV AB **(10 Marks)**

OR

4 a. With a neat sketch, explain the different ranges of JUMP and CALL instructions. **(10 Marks)**

b. Ten Hexa numbers are stored in RAM locations 50H onwards, Write a program to find the biggest number in the set and the biggest number should be saved in 60H. **(10 Marks)**

Module-3

5 a. List and explain the Data types of 8051C with example for each. **(10 Marks)**

b. Write an 8051 C program to toggle all the bits of P0 and P2 continuously with 250msec delay. Use Ex-OR operator. **(10 Marks)**

OR

6 a. Explain the steps involved in Mode 1 programming. Also write a assembly program to create a square wave of 50% duty cycle on P1.5 Timer 0 is used in Mode 1, XTAL = 11.0592MHz. **(12 Marks)**

b. Explain the bit configuration of i) TMOD ii) TCON Register. **(08 Marks)**

Module-4

7 a. Explain the handshake signals of RS232. Also explain the need of MAX232 in serial communication. **(12 Marks)**

b. Write a assembly program to take data in through Ports 0, 1 and 2, one after other and transfer this data serially, continuously use baud rate of 4800. **(08 Marks)**

OR

8 a. Explain importance of TI and RI flag. **(12 Marks)**

b. Write a program that displays a value "y" at port 0 and "N" at port 2 and also generates a square wave of 10KHz with Timer 0 in mode 2 at port pin P1.2 XTAL = 22MHz. **(08 Marks)**

Module-5

9 a. Write a C code to generate a sine wave using DAC interfacing. **(08 Marks)**

b. With a neat sketch, explain the major stages involved in key detection while interfacing 8051 with keyboard. Also write flow chart for the same. **(12 Marks)**

OR

10 a. Explain the pin description for LCD. **(08 Marks)**

b. A switch is connected to pin P2.7, write a program to monitor the status of SW and perform the following :
If SW = 0, the stepper motor moves clockwise
If SW = 1, the stepper motor moves counter clockwise. **(12 Marks)**

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