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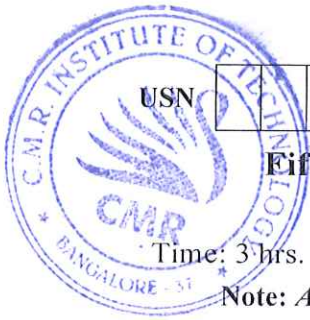**15EE52**

Fifth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Microcontroller

Time: 3 hrs.　　　　　　　　　　　　　　　　　　　　　　　Max. Marks: 80

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

Module-1

1　a. Explain the important features of 8051μc.　(04 Marks)
　b. Explain the working of stack and stack pointer.　(06 Marks)
　c. Explain any 4 addressing modes of 8051μc with an example　(06 Marks)

OR

2　a. Briefly explain the memory organization of 8051μc.　(07 Marks)
　b. Explain the pin functions of port 3 in 8051μc　(05 Marks)
　c. Compare microcontroller and microprocesses.　(04 Marks)

Module-2

3　a. Classify the CALL instruction in 8051. Explain each one.　(06 Marks)
　b. Write an ALP to generate 50 odd numbers from one (in BCD) and store them starting from location 30h.　(05 Marks)
　c. Write an ALP to load accumulator with the value 55h and complement the content of accumulator 900 times.　(05 Marks)

OR

4　a. Explain the working of DA A instruction with an example. Assume that data is 99h and 99h.　(05 Marks)
　b. Explain CJNE and JZ instruction with an example.　(06 Marks)
　c. Explain 5 assembler directives available in ALP.　(05 Marks)

Module-3

5　a. Explain mode 2 timer programming with neat sketch and specify the programming steps.　(06 Marks)
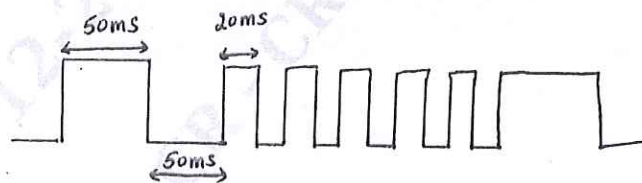　b. Write an ALP to generate the following waveform on P1.2.XTAL = 22MHz. Use timer 1 mode 1.

Fig Q5(b)　(10 Marks)

OR

6　a. Write a C program to get a bit from P1.0 and send it to P2.7 after inverting it.　(05 Marks)
　b. Explain different data types in 8051C.　(05 Marks)
　c. Write a C program to convert ASCII digits of '4' and '7' to packed BCD and display them on P1.　(06 Marks)

11 JAN 2020

Module-4

7 a. Explain RS232 handshaking signal and specify the purpose of MAX232 while interfacing.
(08 Marks)

b. Write an ALP to transfer serially the message "VTU BELGAUM" continuously at a band rate of 9600. Also write the importance of SCON register. (08 Marks)

OR

8 a. Write a C program using interrupts to do the following :
   i) Receive data serially and send it to P0
   ii) Read port P1, transmit data serially and give a copy to P2.
   iii) Make timer 0 generate a square wave of 5KHz frequency on P0.1.
   Assume XTAL = 11.0592 MHz. set the band rate 4800. (10 Marks)

b. Explain the significance of IE and IP register. (06 Marks)

Module-5

9 a. Explain interfacing of DC motor to 8051µc with a neat diagram and write a C program to monitor the status of SW and perform the following :
   i) If SW = 0, the DC motor moves with 50% duty cycle pulse.
   ii) If SW = 1, the DC motor moves with 25% duty cycle pulse. (10 Marks)

b. Draw the pin diagram of 8255 and briefly explain the signals. (06 Marks)

OR

10 a. Draw the block schematic of DAC 0808 interfaced to 8051 and write an C program to generate sine wave. (08 Marks)

b. With a neat diagram, show how a stepper motor in interfaced to 8051. Write a program to rotate stepper motor continuously. (08 Marks)

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