CBCS SCHEME

4F-24
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USN | | | | | | | | | | |

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.

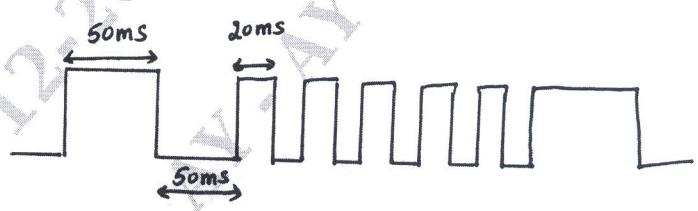

Fig Q5(b) **(10 Marks)**

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)**

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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