CBCS Scheme

USN | | | | | | | | | | 15EE52

Fifth Semester B.E. Degree Examination, Dec.2017/Jan.2018
Microcontroller

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. Discuss the need for stack memory in microcontroller. How stack is operated in 805 μc? What is the default location of stack? **(06 Marks)**

b. With an example explain the various addressing modes used in 8051 μc (any four). **(06 Marks)**

c. Compare RISC and CISC micro controllers. **(04 Marks)**

OR

2 a. Explain the bit pattern of program states word. **(06 Marks)**

b. With a neat diagram, explain the steps to interface 8K bytes of program RDM and 6 K bytes of data ROM to 8031 based system. **(06 Marks)**

c. Identify the addressing modes of the following instructions:
i) MOV C, A , @ A+DPTR
ii) MOV DPTR, #1234
iii) MOV A, 4
iv) CLR C **(04 Marks)**

Module-2

3 a. Write a program to find the square root of a given number. **(06 Marks)**

b. With a neat diagram explain the range of JUMP and CALL instructions. **(08 Marks)**

c. Explain the following instructions: i) DA A, ii) ANL C, P2.5 **(02 Marks)**

OR

4 a. What are assembler directives? Explain any four of them with an example. **(06 Marks)**

b. Assume that register 'A' is loaded with number 'N' (any integer value from 0 to 255). Write a program to count the number of ones in even numbered bits of accumulator. **(05 Marks)**

c. Write a program to complement the content of accumulator 62500 times. **(05 Marks)**

Module-3

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

b. Write a program to create a square wave of 100 Hz with a duty cycle of 80% on port 1.1. Use timer '0' and operate that timer '0' in mode '1'. Assume XTAL f_{mov} = 12 MHz. **(08 Marks)**

OR

6 a. A switch is connected to pin P1.2. Write on 8051 C program to monitor 'SW' and create the following frequencies on pin P1.7.
SW = 0 : 500 Hz
SW = 1 : 750 Hz
Use timer '0', mode '1' for both of them. Assume crystal frequency = 11.0592 MHz. **(08 Marks)**

b. Write an 8051C program to them bit P1.5 ON and OFF 50000 times. **(03 Marks)**

c. Write a program for counter '1' in mode '2' to count the clock pulse and display the state of the TL, count on P2. **(05 Marks)**

Module-4

7 a. Write a program to retrieve the data serially and put them in P1. Set the band rate at 4800, 8-bit data and one stop bit. **(06 Marks)**

b. Write an 8051C program to transfer the message "INDIA" serially at 9600 band rate, 8 bit data and one stop bit, continuously. **(06 Marks)**

c. Explain the importance of TI and RI flags. **(04 Marks)**

OR

8 a. What is an interrupt? List the various interrupts of the 8051 with their corresponding vector address. **(06 Marks)**

b. Write a program that continuously gets 8-bit data from 'P0' and sends it to 'P1' where simultaneously creating a square wave of 200 μs period on pin P2.1. Use timer '0' to create square wave. Assume KTAL = 11.0952 MHz. **(07 Marks)**

c. Explain simplex, half duplex and full duplex serial data transfer. **(03 Marks)**

Module-5

9 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 clock wise.

ii) If SW = 1 : the stepper motor moves counter clock wise. **(10 Marks)**

b. Explain the control word format of 8255. **(06 Marks)**

OR

10 a. Explain the various modes of 8255 and find the control word for following configurations:

i) All ports of A, B and C are O/P ports (mode '0')

ii) PA = IN, PB = OUT, PCL = OUT and PCH = OUT. **(08 Marks)**

b. Explain the steps to interface ADC 0808 to the 8051 microcontroller. **(08 Marks)**

* * * * *