CBCS SCHEME

USN | | | | | | | | | | | 17EE52

Fifth Semester B.E. Degree Examination, July/August 2021
Microcontroller

Time: 3 hrs.   Max. Marks: 100

Note: *Answer any FIVE full questions.*

1 a. Distinguish between microprocessor and micro controller's. **(04 Marks)**
   b. Briefly discuss the features of 8051 microcontroller. **(06 Marks)**
   c. With neat diagram, explain the internal architecture of 8051. **(10 Marks)**

2 a. Identify the addressing mode's of the following instruction and byte-size:
      (i)   XCHD A, @ R_0
      (ii)   MOVC A, @A+DPTR
      (iii) SUBB A, #55H
      (iv)   DA A.
      (v)   MOV A, @R_0 **(10 Marks)**
   b. Explain the bit pattern of P.S.W **(05 Marks)**
   c. Interface 8051 to external ROM and RAM and explain how 8051 access them. **(05 Marks)**

3 a. What are assembler directives? Explain them with an example. **(06 Marks)**
   b. Briefly explain about what are the steps for assembly and running of 8051 program. **(06 Marks)**
   c. Write an 8051 assembly program to find average of 5 numbers stored from internal data memory address 40 h. **(08 Marks)**

4 a. Explain the following instruction with an example:
      (i)   CJNE A, #n, radd
      (ii)   SWAP A
      (iii) RRC A **(06 Marks)**
   b. Consider 10 bytes of data from data RAM location 45h to 54h. Add 02 to each of them and save the result, in data RAM location 79h to 70h. **(06 Marks)**
   c. Write an ALP to subtract two 16 bit no's. **(08 Marks)**

5 a. Explain the different data type's supported by 8051 microcontroller. **(08 Marks)**
   b. Write an 8051C program to toggle. The bit of P_1 ports continuously with 250 msec delay. **(06 Marks)**
   c. Write an 8051C program to convert packed BCD no's of 29 to ASCII and display the bits on P_1 and P_2. **(06 Marks)**

6 a. Explain Mode-2 programming on 8051 timer. Describe the different steps to program in Mode-2. **(10 Marks)**
   b. Write an ALP in 8051 which generate and a square wave of frequency 10 kHz on P1.2 using timer 1 mode 1. Assume crystal frequency of 11.0592 MHz. **(10 Marks)**

7 a. What is the need for serial communication? Explain simplex, half duplex and full duplex transmission with the help of figures. **(08 Marks)**
   b. Briefly explain about DB-9 connector pins function. **(06 Marks)**
   c. Write a C program for the 8051 to transfer. The letter 'C' serially at 9600 baud rate continuously. Use 8-bit data and one stop bit. **(06 Marks)**

8 a. What is an Interrupt? List the various interrupts of the 8051 with their corresponding vector address. **(08 Marks)**

b. Explain the bit status of IP Register. **(06 Marks)**

c. Write the steps required for programming 8051 to receive data serially. **(06 Marks)**

9 a. Draw the block diagram to show how 8051 is connected to DAC 0808 at Port 1, using output buffer for DAC and explain. **(10 Marks)**

b. Write an 8051 C-program to send letter's M, D and E to the LCD using delay's. **(10 Marks)**

10 a. Explain how a Stepper. Motor can be connected to 8051 micro controller with neat diagram. **(10 Marks)**

b. Write a program of switch SW is connected to pin P0.0. Write a program to do the following:

    (i)   When SW = 0, the DAC output give's stair case waveform.

    (ii)   If SW = 1, the DAC output gives a triangular waveform. **(10 Marks)**

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