CBCS SCHEME

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15EC563

Fifth Semester B.E. Degree Examination, Aug./Sept.2020
8051 Microcontroller

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. Differentiate between Microprocessor and Microcontroller. **(03 Marks)**

b. Mention the details of dual functions of the PORT-3 of 8051. **(04 Marks)**

c. With the help of diagram explain how to interface External ROM and RAM and how 8051 access them. **(09 Marks)**

OR

2 a. Explain the internal RAM organization of 8051. **(06 Marks)**

b. Write the block diagram of 8051 micro controller and explain the function of each block in detail. **(10 Marks)**

Module-2

3 a. Explain different Addressing modes of 8051 and give an example for each one of them. **(08 Marks)**

b. If A = 53H write output after executing each of the following instruction 2 times. Assume CY = 1.
(i) RR A (ii) RLC A (iii) RRC A (iv) RL A **(08 Marks)**

OR

4 a. (i) Explain the jump instructions of 8051. Indicate their range.
(ii) Explain any two conditional byte jump instructions available in 8051 with examples. **(08 Marks)**

b. Ten numbers are stored in RAM locations 50H onwards. Write an ALP to find the smallest number and store it in 60H. **(08 Marks)**

Module-3

5 a. Write an ALP using 8051 Instructions
(i) To get X value from P_1 and send X^2 to P_2, X value can range from 0 to 9.
(ii) To subtract two 16 bit numbers. Assuming that numbers are to be subtracted are stored in consecutive memory locations in RAM. **(10 Marks)**

b. Explain the sequence of events on executing subroutine CALL and RET in 8051. **(06 Marks)**

OR

6 a. Write an ALP to add N 8 bit numbers stored in internal memory starting with address 10H. Store the 16-bit sum after the last data. **(06 Marks)**

b. Write an ALP to move 8 bytes of data stored in RAM location 40H onwards to RAM location 50H onwards. **(06 Marks)**

c. Explain the operation of PUSH and POP instructions with examples. **(04 Marks)**

Module-4

7 a. Write an 8051 ALP program using Timer1 in mode 2 to create frequency of 2500Hz on Pin 2.7. Assume XTAL frequency as 11.0592 MHz. **(08 Marks)**

b. Write an 8051 ALP/Embedded C program to send message "WELCOME" serially at baud rate of 4800 with 1 stop bit 8 data bits. Crystal frequency = 11.0592 MHz. **(08 Marks)**

OR

8 a. Write an ALP program to generate a square wave of 50 ms ON time and OFF time on P1.4 using Timer 0 mode 1. **(08 Marks)**

b. Explain the principles of operation of 8051 serial Port of 8051 to Transmit or Receive a character serially. **(06 Marks)**

c. How to double the baud rate without changing the THI value? **(02 Marks)**

Module-5

9 a. (i) Explain the different interrupts of 8051 (External and Internal)
(ii) Explain the sequence of operation when interrupt call occurs in 8051. **(08 Marks)**

b. Write a C program using 8051 interrupts to do following task:
(i) Receive data serially and send it to PO
(ii) Generate 5 KHz square wave on P2.1 using timer 0, mode 1.
Assume frequency = 11.0592 MHz, Baud rate = 4800. **(08 Marks)**

OR

10 a. Interface 8051 to stepper motor write an ALP program to rotate it 4 steps clockwise. **(08 Marks)**

b. Interface an LCD to 8051 and write an ALP program to display "Good". **(08 Marks)**

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