CBCS SCHEME

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15EE52

Fifth Semester B.E. Degree Examination, June/July 2019
Microcontroller

Time: 3 hrs. Max. Marks: 80

Note: *1. Answer any FIVE full questions, choosing ONE full question from each module.*
2. Missing data, if any, may be suitably assumed.

Module-1

1 a. With neat diagram, explain the internal architecture of 8051. **(10 Marks)**
b. Compare micro processor with microcontroller. **(06 Marks)**

OR

2 a. What is microcontroller? List out the differences between CISC and RISC. **(06 marks)**
b. Explain any five addressing modes of 8051 with examples for each. **(10 Marks)**

Module-2

3 a. What do you understand by assembler directives? Explain the following assembler directives : i) ORG ii) END iii) EQU. **(08 Marks)**
b. Briefly explain the steps involved to assemble and run an 8051 program. **(08 Marks)**

OR

4 a. Explain the following instructions with an example :
i) DIV AB ii) SWAPA iii) RRC A iv) XCHD A,@Rp. **(08 Marks)**
b. Write an ALP to find the value of P = N!/R! Using a subroutine which finds the value of factorial of a given number. The values of N and R are stored in locations 30H and 31H. Store P in 32H. **(08 Marks)**

Module-3

5 a. Explain the various data types in 8051C. **(08 Marks)**
b. Assume that XTAL = 11.0592MHz. What value do we need to load into the timer's registers if we want to have a time delay of 5ms? Write an ALP for timer 0 to create a pulse width of 5ms on P2.3. **(08 Marks)**

OR

6 a. Write an 8051C program to find the checksum byte of data stream 30H, 4AH, 65H and 10H. Convert the binary value of checksum into decimal and display the value of the BCD digits on ports P_0, P_1 and P_2. **(10 Marks)**
b. Assume that a 1–Hz external clock is being fed into pin T_0(P3.4). Write a C program for counter 0 in mode 1 to count the pulses and display the THO and TLO registers on P2 and p1 respectively. **(06 Marks)**

Module-4

7 a. What is serial data communication? Explain the significance of SCON register in detail. **(06 marks)**
b. Write an ALP to transfer letter "A" serially at 4800 baud continuously? **(06 marks)**
c. Write the steps to transfer data serially. **(04 Marks)**

OR

8 a. Explain the different interrupts of 8051 indicating their vector addresses. (06 marks)

b. Write a C program that continuously gets a single bit of data from P1.7 and sends it to P1.0, while simultaneously creating a square wave of 200μs period on pin P2.5. Use timer 0 to create the square wave. Assume that XTAL = 11.0592MHz. (10 Marks)

Module-5

9 a. Write an ALP to rotate the stepper motor 5 steps in clockwise direction and 10 steps in anticlockwise direction with a delay between each step. (10 Marks)

b. Explain with a diagram, the interfacing of DAC 0808 to 8051 chip. (06 Marks)

OR

10 a. Interface an LCD display to 8051 and write an 8051 C program to send letters 'M', 'D', and 'L' to the LCD using delays. (10 Marks)

b. With a block schematic explain the features of 8255 PI chip. (06 Marks)

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