CBCS SCHEME

USN | | | | | | | | | | |

15EE52

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021
Mircocontroller

Time: 3 hrs. Max. Marks: 80

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

Module-1

1 a. With a neat block diagram, explain the function of each block of 8051 micro controller. **(10 Marks)**

b. Explain the memory organization in 8051. **(06 Marks)**

OR

2 a. What is stack? Explain the instructions used to access them. **(10 Marks)**

b. Explain the different addressing modes of 8051. Any three give an example for each of them. **(06 Marks)**

Module-2

3 a. Explain the following instructions of 8051 with examples:
i) XCHD A, @R_i ii) MOVC A, @A+PC iii) RL A iv) MUL AB v) DA A. **(10 Marks)**

b. What are assembler directives? Explain the functions of the assembler directives with an example for each. **(06 Marks)**

OR

4 a. Write 8051 ALP which checks whether the ten numbers stored from external RAM memory address, 2000H are odd/even. The program should store accordingly OOH/FFH from internal location 30H onwards. **(10 Marks)**

b. Write an ALP to toggle all bits of port 1 every 200ms. Assume that the crystal frequency is 11.0592MHz of 8051. **(06 Marks)**

Module-3

5 a. Write an 8051C program to read the content of port P_1. If it is greater than 200, wait for 250msec and send the data to port P_2. Otherwise wait for 150Msec and send the data to Port P0. **(10 Marks)**

b. Discuss the data types in 8051C. **(06 Marks)**

OR

6 a. Write an assembly language program to generate 2kHz square wave on port 1.0 using timer 1, mode 1. Assume oscillator frequency of the μc is 12MHz. **(10 Marks)**

b. Mention the difference between counter mode and timer mode of operation. With necessary format, explain the various bits of TMODSFR. **(06 Marks)**

Module-4

7 a. Explain how 8051 transmits the character serially using its UART. **(06 Marks)**

b. Write 8051 C program to transmit serially the message "SWITCH ON' or 'SWITCH OFF' depending on the status of the simple switch connected to pin 1.2. Use 2400 baud rate, 1 stop bit, 8 data bit format and assume XTAL frequency as 11.0592 MHz. **(10 Marks)**

OR

8 a. Explain the interrupts of 8051 clearly mentioning the vector address and priorities. **(06 Marks)**

b. Write AL program that continuously gets 8 bit data from P_0 and sends it to P_1 while simultaneously creating a square wave of 200μs period on pin P2.1. Use timer 0, mode 2 to create the square wave. Assume that XTAL = 11.0592MHz. **(10 Marks)**

Module-5

9 a. Explain the features of ADC 0804. Also draw the pin diagram of the same mentioning the various pins. **(06 Marks)**

b. Write a C program to rotate the stepper motor in the clock wise for 4 steps and in the antilock wise for 6 steps. Show the relevant calculations. **(10 Marks)**

OR

10 a. Draw the block diagram to show how 8051 is connected to DAC 0808 at port P_1, using O/P buffer for DAC. Write an 8051 C program to generate a ramp signal **(10 Marks)**

b. Explain the any two modes of operation of 8255 along with control word format. **(06 Marks)**

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