CBCS SCHEME

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

15EC563

Fifth Semester B.E. Degree Examination, Jan./Feb. 2021
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. Write the difference between Microprocessor and Microcontroller. **(04 Marks)**
b. Explain the Architecture of 8051 Microcontroller, with neat block diagram. **(08 Marks)**
c. Define Embedded system and write the characteristics of an ES. **(04 Marks)**

OR

2 a. Explain briefly the Internal RAM memory organization in 8051 Microcontroller. **(04 Marks)**
b. Explain the Bit pattern of program status work register. **(04 Marks)**
c. Draw the Memory interfacing circuit to connect a 16K EPROM and an 8K RAM to 8051 Microcontroller. **(08 Marks)**

Module-2

3 a. Explain any five Addressing modes of 8051 Microcontroller with an example each. **(10 Marks)**
b. Explain the following instructions : i) ADD A, @ R1 ii) JNC label iii) DJN2 R_3, up. **(06 Marks)**

OR

4 a. Write and explain the Assembly language program to add two 16 – bit numbers. **(08 Marks)**
b. Explain the Rotate Instructions, with an example. **(08 Marks)**

Module-3

5 a. Explain the Operation of stack with an example. **(04 Marks)**
b. Write and explain an Assembly language program to add Five 8 – bit numbers. **(08 Marks)**
c. Explain any four Assembler directives of an 8051 Microcontroller. **(04 Marks)**

OR

6 a. Write and explain an Assembly Language program to find the smallest number among the given Five 8 – bit numbers. **(08 Marks)**
b. Write and explain an Assembly language program to monitor bit P1.3. Whenever it goes high send a low to high pulse on port P1.5. **(08 Marks)**

Module-4

7 a. Write and explain TMOD and TCON register. **(08 Marks)**
b. Write and explain a Assembly program to generate a square wave at frequency 10KHz on pin 1.4. use timer 0 in mode 2 with a crystal frequency of 22MHz. **(08 Marks)**

OR

8 a. Write and explain SCON register. **(06 Marks)**
b. Write and explain a program in Assembly to transmit a string "UNIVERSITY" serially. Set baud rate at 9600, 8 – bit data and 1 stop bit. **(10 Marks)**

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8 = 50, will be treated as malpractice.

Module-5

9 a. Define an interrupt and write an interrupt vector table. **(06 Marks)**

b. Write a C program using interrupt to generate a 10KHz frequency on P2.1 using Timer 0 in 8 – bit auto reload and count up a 1Hz pulse and display it on Po. The pulse is connected to INT1 pin. Assume that the crystal frequency is 11.0592 MHz **(10 Marks)**

OR

10 a. Write and explain an Assembly language program to display "VTU" on LCD. **(08 Marks)**

b. Write and explain a C program to rotate stepper motor clockwise when switch SW = 0 and rotate in Anti clockwise when switch SW = 1 continuously. **(08 Marks)**

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