CBCS NME

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

17EC563

Fifth Semester B.E. Degree Examination, 1)ec.2019/ ..fart,2020
8051 Microcontroller

Time: 3 hrs. Max. Marks: 100

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

Module-1

1 a. Write the comparison between Microprocessor and Microcontroller. **(05 Marks)**
b. Define Embedded System and write the characteristics of an Embedded System. **(05 Marks)**
c. Write and explain the Architecture of 8051 Microcontroller and also explain the PSW, RAM memory organization. **(10 Marks)**

OR

2 a. Write and explain the pin diagram of 8051 Microcontroller. (10 **Marks)**
b. Explain the Interfacing of 16K EPROM and 8K RAM to 8051 Microcontroller. **(10 Marks)**

Module-2

3 a. Write and explain the Addressing modes of 8051 Microcontroller with an example. (10 **Marks)**
b. Explain the following instructions with an example:
(i) DJNZ R,,, rel
MOVC A, @A+DPTR
(iii) RRC A
(iv) PUSH 02
(v) DAA **(10 Marks)**

OR

4 a. Explain Call and Jump Instructions. **(06 Marks)**
b. Explain any four directives. **(04 Marks)**
c. Write and explain an Assembly Language Program to divide the data in RAM location in 38H by data in 15H and store the quotient in 70H and remainder in 71 H. **(10 Marks)**

Module-3

5 a. Write and explain an Assembly Language Program to transfer five 8-bit of data from starting memory location 30H to other memory starting at 40H. **(08 Marks)**
b. Write and explain an Assembly Language Program to find largest 8-bit number form the given five 8-bit numbers. **(08 Marks)**
c. Write and explain an Assembly Language Program to toggle all the bits of port 1, with a time delay between toggling. **(04 Marks)**

OR

6 a. Write and explain an Assembly Language Program to read the lower nibble of data by P 0 is to be displayed on LEDS are connected to upper 4-bits of P 1. (10 **Marks)**
b. Write and explain an Assembly Language Program to Add two 32-bit numbers. The numbers are stored from RAM location 40H and 50H respectively. Store the result from RAM location 60H. **(10 Marks)**

Module-4

7 a. Explain TMOD and TCON registers. **(08 Marks)**

b. Write and explain an Assembly language program to toggle P1.5 every 1 second. Use Timerl in model . Assume crystal oscillator frequency is 11.0592 MHz. **(08 Marks)**

c. Explain SCON register. **(04 Marks)**

OR

8 a. Write and explain a C program and assembly to generate a square wave of frequency 10 kHz on Pin 1.4. Use timer() in model with a crystal frequency of 22 MHz. (10 **Marks)**

b. Write and explain a C program and assembly to transfer "VTU" serially with a baud rate of 9600. Assume crystal oscillator frequency is 11.0592 MHz. (10 **Marks)**

Module-5

9 a. Explain IE register. **(04 Marks)**

b. Write and explain a C program and assembly to generate a square wave on P2.4 with high of 1 ms and low portion of 2 ms using timerl in interrupt mode with a crystal oscillator frequency of 11.0592 MHz and also read the value of port° and display is on port'. **(08 Marks)**

c. Write and explain an assembly language program to do the following:

(i) Reads data from port P1 and writes it to P. continuously.

(ii) Also the data at P1 is transferred serially.

(iii) The data received serially is displayed at **P0.**

Assume 11.0592 MHz crystal frequency 9600 baud rate. **(08 Marks)**

OR

10 a. Write and explain a C program and assembly to interface an ADC 0804 to 8051 Microcontroller and display on **P2.** **(10 Marks)**

b. Write and explain a C program and assembly to monitor the status of a switch SW connected to Pin P2.7 and perform the following:

(i) If SW = 0, the stepper motor rotates clockwise.

(ii) If SW = 1, the stepper motor rotates in anticlockwise.

Use the wave-drive 4-step sequence. **(10 Marks)**