Code : 15EC42T

Register Number

IV Semester Diploma Examination, April/May-2019

MICROCONTROLLERS & APPLICATIONS

Time : 3 Hours]   [Max. Marks : 100

Instructions : (i) Answer any **six** questions from Part – A. (5 × 6 = 30 marks)

(ii) Answer any **seven** questions from Part – B. (7 × 10 = 70 marks)

PART – A

1. Define Microcontroller. List any four applications of Microcontroller. 5

2. List all 8051 addressing modes with an example. 5

3. Write an ALP to transfer a block of data from one portion of internal RAM to another portion. 5

4. Write a C program to read $P^{1.2}$ and send it to $P^{2.3}$ after inverting it. 5

5. List the steps involved in executing an interrupt. 5

6. List the steps for generating time delay using timer. 5

7. Explain the operation of timer ϕ in mode 2. 5

8. Explain the interfacing of LCD to 8051. 5

9. Explain the schematic for interfacing a stepper motor to 8051 Microcontroller. 5

PART – B

10. Sketch a neat block diagram of 8051 microcontroller architecture and explain. 10

11. (a) Explain the significance of PSW of 8051.

    (b) Describe the method of interfacing 8K PROM to 8051.

12. (a) Explain the following 8051 µC instruction with an example.   **5**
   (i) DJNZ Ro, addr
   (ii) SWAP A

    (b) Write an ALP to convert hexadecimal to ASCII.   **5**

13. Write an ALP to find the largest of an 8 bit numbers array.   **10**

14. Explain the different data types available in 8051 C.   **10**

15. (a) Write a 8051 C program to convert ASCII digit '4' and '7' into packed BCD and to display on part P_1.   **5**

    (b) List any three advantages and any two disadvantages of using 8051 C.   **5**

16. (a) Discuss the sequence in which the interrupts are serviced after the execution of MOV IP, #00001100B   **5**

    (b) List different interrupts of 8051 µC with their vector address.   **5**

17. Write an algorithm and C program to monitor the door sensor connected to the pin P1.1 when the door opens sound the buzzer connected to P1.7. The buzzer is to be sounded by sending a square wave of 100 Hz.   **10**

18. Write an ALP to transmit the message "Yes" serially at the baud rate of 9600, 8 bit data, 1 stop bit.   **10**

19. Write the schematic, algorithm and a program to interface a DAC to 8051 µC and to generate a triangular waveform.   **10**

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