C20-EC–502

7641

BOARD DIPLOMA EXAMINATION, (C-20)

MAY/JUNE—2023

DECE - FIFTH SEMESTER EXAMINATION

MICROCONTROLLERS AND APPLICATIONS

Time : 3 Hours] [*Total Marks* : 80

PART—A

3×10=30

Instructions : (1) Answer **all** questions.

(2) Each question carries **three** marks.

(3) Answers should be brief and straight to the point and shall not exceed five simple sentences.

1. State the function of PSW register of 8051 microcontroller.

2. Distinguish between machine cycle and T-state.

3. List various addressing modes of 8051.

4. State the use of NOP instruction in 8051.

5. List various symbols used in drawing flowcharts.

6. List the reasons for the popularity of LCD.

7. What is key bouncing program?

8. Classify PIC microcontrollers based on number of bits.

9. List any three differences between AR7 and ARM9.

10. Compare normal OS and RTOS.

PART—B

8×5=40

Instructions : (1) Answer **all** questions.

(2) Each question carries **eight** marks.

(3) Answers should be comprehensive and criterion for valuation is the content but not the length of the answer.

11. *(a)* Draw the pin diagram of 8051 microcontroller and state the function of each pin.

(OR)

(b) Explain the SFR's associated with timers/counters of 8051.

12. *(a)* Explain internal memory organization of 8051 with diagram.

(OR)

(b) Explain the SFR's associated with serial communication of 8051.

13. *(a)* Explain various arithmetic instructions of 8051 with examples.

(OR)

(b) Explain CALL and RET instructions of 8051.

14. *(a)* Write an ALP along with comments to add two 16 bit numbers 1234H and 6789H. Store the sum in external RAM locations 8000H and 8001H and carry in 8002H.

(OR)

(b) Define a subroutine and explain the sequence of program when subroutine is called and executed.

15. *(a)* Write a program to generate a time delay of 10 ms. Assume crystal frequency 12 MHz and timer 0 in mode 1.

(OR)

(b) Explain the principles of single step and break point debugging techniques.

PART—C

10×1=10

Instructions : (1) Answer the following question.

(2) The question carries **ten** marks.

(3) Answer should be comprehensive and the criterion for valuation is the content but not the length of the answer.

16. Draw a diagram to connect 8 LEDs to port 3 of 8051 and write an ALP to make all LEDs to blink continuously with a delay of 10 ms.

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