C16–EC–502

6630

BOARD DIPLOMA EXAMINATION, (C–16)

NOVEMBER—2020

DECE—FIFTH SEMESTER EXAMINATION

MICROCONTROLLERS

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. List the features of microcontrollers.

2. State the basic function of :

(a) Program counter

(b) DPTR

(c) Stack pointer

3. Write the instruction format of 8051.

4. Explain the following instructions :

(a) MOV A, R3

(b) CLR A

(c) ADD A, B

5. List the various symbols used in drawing flow charts.

6. State the status of CY, AC and P flags while adding two bytes 32H and 1FH.

7. Mention the reasons for the popularity of LCDs.

8. Draw the interfacing diagram to interface pushbutton switch to 8051.

9. List RS232 pins of DB-9 pin connector.

10. Write an ALP to generate a delay of 1ms using Timer 1 in mode 1 with XTAL frequency of 11.0592 MHz.

PART—B

10×5=50

Instructions **:** (1) Answer *any* **five** questions.

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

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

11. Draw the pin out diagram of 8051 and explain the function of each pin.

12. State and explain the various addressing modes of 8051.

13. Explain the Data Transfer Instructions with examples.

14. Explain the principle of single step and break point debugging techniques.

15. Write a program to copy the value 36H into memory locations 50H to 55H using register indirect addressing mode without loop and with a loop.

16. *(a)* Draw interfacing diagram to interface common cathode seven segment display.

(b) Write a program to display digit '9' in a common cathode seven segment display.

17. Write a program to generate a square wave with an ON time of 2 ms and an OFF time of 5 ms on pin P3.2. The crystal frequency of 8051 is 11.0592 MHz and timer in timer 0 and mode 1 operation.

18. *(a)* Draw an interfacing circuit to interface a stepper motor --- (5M).

(b) Write a program to run a stepper motor continously --- (5M).

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