7649

BOARD DIPLOMA EXAMINATION, (C-20)

MAY/JUNE—2023

DEEE - FIFTH SEMESTER EXAMINATION

DIGITAL ELECTRONICS AND 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. Convert the following into decimal numbers :

    (a) $(BE.24)_{16}$

    (b) $(49.12)_8$

    (c) $(10101)_2$

2. State the importance of parity bit.

3. Draw the half-adder circuit and verify its functionality using truth table.

4. List any three applications of multiplexer.

5. Distinguish between synchronous and asynchronous counters.

6. Compare static and dynamic RAMs.

7. Define program status word in 8051.

8. List the timers and their associated SFRs of the 8051.

9. State the need for instruction set in 8051.

10. Define the terms opcode and operand of an instruction.

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)* Explain AND, OR, NAND and NOR gates with their truth tables.

(OR)

(b) Draw and explain standard TTL NAND gate with Totem pole output.

12. *(a)* Draw and explain 2's complement parallel adder/subtractor circuit.

(OR)

(b) Draw and explain BCD to decimal decoder.

13. *(a)* Construct level clocked JK flip-flop using SR flip-flop and explain it with its truth table.

(OR)

(b) Explain the working of ring counter and list any three applications.

14. *(a)* Draw the block diagram of 8051 microcontroller and explain the function of each block.

(OR)

(b) Explain internal memory and external memory of 8051.

15. *(a)* Explain various addressing modes of 8051.

(OR)

(b) Write an assembly language program for 8051 to find the sum of given N numbers.

PART—C

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 and explain the working of the logic circuit which is used to add the bits serially.

★★★