6234

BOARD DIPLOMA EXAMINATION, (C-16)

JUNE/JULY—2022

DECE - THIRD SEMESTER EXAMINATION

DIGITAL ELECTRONICS

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

PART—A $3 \times 10 = 30$

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 $(234)_{10}$ into *(a)* octal and *(b)* hexa-decimal.

2. What is the importance of parity bit?

3. Realize $Y = AB + BC + AC$ using basic logic gates.

4. List different logic families.

5. Draw half-adder circuit using basic logic gates with truth table.

6. Draw the block diagram of 4×1 multiplexer.

7. What is a sequential logic circuit?

8. Draw the logic circuit of clocked D flip-flop with truth table.

9. List any three commonly used IC numbers in digital circuits.

10. Distinguish between ROM and RAM .

PART—B

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

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

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

11. (a) Subtract 1010.101 from 1001.001 using 2's complement method. 4

(b) Simplify $Y = A\bar{B}\bar{C} + A\bar{B}C + AB\bar{C} + ABC$ using Karnaugh's map. 6

12. (a) Draw XOR gate with NOR gates. 4

(b) List various postulates of Boolean algebra. 6

13. Draw and explain CMOS NAND gate. 10

14. Draw and explain 4-bit 2's complement adder/subtractor. 10

15. Draw and explain the working of two-bit digital comparator. 10

16. Draw and explain the working of clocked RS flip-flop with timing diagrams. 10

17. Draw and explain the working of MOD-10 counter with timing diagrams. 10

18. (a) Draw and explain diode ROM. 7

(b) Distinguish between flash ROM and NV RAM. 3

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