C23-CM-CIOT–**302**

23189

BOARD DIPLOMA EXAMINATION, (C-23)

OCTOBER/NOVEMBER—2024

DCME – THIRD SEMESTER EXAMINATION

DIGITAL ELECTRONICS

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. Subtract 1011 from 1111 using 2's complement method.

2. Write about excess-3 code with an example.

3. Write and state Demorgan's theorem.

4. Construct EX-OR gate using NAND gates only.

5. Differentiate between level clocking and edge triggering.

6. List different logic families.

7. Define Counter. Write its applications.

8. List the drawbacks of Ripple Counter.

9. Write the purpose of PLA.

10. Draw the logic symbol of 8 × 1 multiplexer.

PART—B

10×5=50

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

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

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

11. Explain the binary, octal, decimal and hexadecimal number system with suitable examples.

12. Draw and explain 4-bit parallel adder using full adders.

13. Give the steps how the 4-variable K-map reduces the given expression

$$Y = \sum m(2,4,5,7,8,10,12,15)$$

14. Draw and explain the operation of clocked RS flip-flop with truth table and timing diagram.

15. Draw the logic diagram and timing diagram for an edge triggered JK flip-flop. Explain its operation with truth table.

16. Draw and explain Decade Counter.

17. Explain the working universal shift register with diagram.

18. Draw and explain the operation of 4 to 10 line decoder circuit with a truth table.

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