7235

BOARD DIPLOMA EXAMINATION, (C-20)

OCTOBER/NOVEMBER—2023

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. Convert $(6E)_{16}$ to decimal and binary forms.

2. Define 'BCD' coding scheme.

3. State De Morgan's theorems.

4. Draw the truth cable for NOR gate with symbol.

5. Define the terms multiplexer and demultiplexer.

6. Define positive and negative logic levels.

7. Differentiate between latch and flip-flop.

8. Define counter.

9. List the methods of data transfer in register.

10. Write any three applications of encoder.

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)* Convert the following numbers into binary form :

(i) $(256)_{10}$

(ii) $(453)_8$

(iii) $(41F)_{16}$

(iv) $(25.25)_{10}$

(OR)

(b) Explain the about gray code.

12. *(a)* Draw and explain half adder using an exclusive OR and an AND gate.

(OR)

(b) Explain the working of a serial adder with a block diagram.

13. *(a)* Explain the working of D flip-flop with a block diagram and waveforms.

(OR)

(b) Draw and explain the need for a Master-Slave flip-flop.

14. *(a)* Draw and explain the operation of a 4-bit ring counter.

(OR)

(b) Explain the working of serial-in-parallel-out register with a circuit diagram.

15. *(a)* Draw and explain the operation of 4 to 10 line decoder circuit with a truth table.

(OR)

(b) Explain the operation of multiplexer circuit diagram with a truth table.

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. Is overlapping allowed in K-map? Explain with example.

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