DECEMBER 2024 **P/ID 17602/PCA1B/ PCATB**

Time : Three hours Maximum : 80 marks

PART A — ($10 \times 2 = 20$ marks)

Answer any TEN questions.

1. What is meant by Excess-Three code?

2. Prove the theorem of Boolean algebra $x + 1 = 1$.

3. What is the value of Don't care condition in *K*-Map?

4. What are called combinational circuits?

5. What is PLA?

6. What do you mean by Triggering of Flip flops?

7. What is the purpose of excitation table?

8. Write a note on Ripple counter.

9. Write down the components of memory unit.

10. What are the effects of output carry?

11. List out the names of various Instruction formats.

12. What do you mean by Microprogrammed control?

PART B — ($5 \times 6 = 30$ marks)

Answer any FIVE questions.

13. Convert the following :

(a) $(127.85)_{10} = (?)_2$

(b) $(175.165)_8 = (?)_{10}$

(c) $(101111.1101)_2 = (?)_{10}$

(d) $(3C2.12)_{16} = (?)_2$

(e) $(11011.10)_2 = (?)_8$

14. Outline the features of basic logic gates with their truth table.

15. Explain about multilevel NAND and NOR circuits.

16. Construct Binary parallel adder circuit and explain it.

17. Explain the working principle of Edge triggered flip flop.

18. Give a brief account on the design of ALU.

19. Discuss about Hardwired control circuits.

PART C — ($3 \times 10 = 30$ marks)

Answer any THREE questions.

20. Illustrate the tabulation method for simplifying Boolean expression using suitable example.

21. Explain the working principle of Full subtractor with neat sketch.

22. Explain the construction of shift registers.

23. Explain about processor organization with neat sketch.

24. Design a circuit using PLA with four inputs and four outputs and explain how it works.

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