



C14-AEI-304

4217

BOARD DIPLOMA EXAMINATION, (C-14)
MARCH/APRIL—2018
DAEI—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. Draw the logic symbols of AND, OR, NOT gates.
2. Perform binary addition $(11011)_{(2)}$ $(11000)_{(2)}$ $(?)_{(2)}$.
3. Draw the truth table of full adder.
4. Write a short note on serial adder.
5. List the differences between Synchronous and Asynchronous sequential circuits.
6. State race-around condition in a JK flip-flop.
7. What is a Modulo-N counter?
8. Mention the need for registers.
9. Distinguish between RAM and ROM in any three aspects.
10. State the need of A/D conversion.

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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. (a) Subtract $(1100)_{(2)}$ from $(1010)_{(2)}$ using 2's complement method. 5

(b) Explain the importance of parity bit with an example. 5

12. Simplify the following expression using Boolean laws :

$$\overline{ABC} \quad \overline{A}BC \quad \overline{A}\overline{B}C \quad \overline{A}B\overline{C} \quad \overline{A}B\overline{C}$$

13. (a) Realise a half-adder circuit using NAND gates only. 8

(b) List any two applications of multiplexer. 2

14. Draw a 4-bit parallel-adder circuit using full adder and explain its working.

15. Explain JK flip-flop with a neat sketch and draw its truth table.

16. Explain the working of ring counter and list any two applications. 8+2=10

17. Draw and explain the working of shift-left and shift-right registers.

18. Explain the principle of D/A conversion using R-2R ladder network.
