



C14-AEI-304

4217

**BOARD DIPLOMA EXAMINATION, (C-14)**  
**SEPTEMBER/OCTOBER - 2020**  
**DAEI—THIRD SEMESTER EXAMINATION**  
**DIGITAL ELECTRONICS**

Time : 3 hours ]

[ Total Marks : 80

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**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. State De Morgan's theorems.
2. Covert the hexadecimal number 9A3B, A32C into binary number.
3. Draw full-adder using two half-adders and OR gate.
4. List any three applications of decoders.
5. Draw the diagram of T-flip-flop and write its truth table.
6. Distinguish between synchronous and asynchronous sequential logic circuits.
7. Define modulo-N counter.
8. State the use of shift register as memory.

- \* 9. Compare static RAM and dynamic RAM.
10. Define the terms resolution and setting time of D/A converter.

**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. Develop AND, OR, NOT operations using NAND, NOR gates.
12. (a) Simplify  $\overline{A}\overline{B}\overline{C}$   $\overline{A}BC$   $A\overline{B}\overline{C}$   $ABC$  using Karnaugh map method. 5  
 (b) Prove that  $A \overline{\overline{A}B} = A \overline{B}$  using Boolean algebra. 5
13. Explain the operation 4 1 multiplexer with diagram.
14. Explain the working of 4 2 encoder.
15. Construct S-R flip-flop using NAND gates.
16. Explain the working of ring counter with diagram and list its applications.
- \* 17. Explain the working of serial in serial out, and parallel in parallel out registers.
18. Explain D/A conversion using R-2R ladder network.

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