



C16-AEI-303

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BOARD DIPLOMA EXAMINATION, (C-16)
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. State De Morgan's theorems.
2. State the importance of parity bit.
3. Define combinational logic circuit.
4. List the applications of multiplexer.
5. Distinguish between synchronous and asynchronous sequential logic circuit.
6. Define modulus of the counter.
7. State the need for preset and clear inputs.
8. Define the term register.
9. List the types of ROM.
10. Define accuracy and monotonicity 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. (a) Simplify the Boolean expression

$$\overline{A}\overline{B}\overline{C} \quad \overline{A}\overline{B}C \quad \overline{A}B\overline{C} \quad A\overline{B}\overline{C} \quad ABC \quad 5$$

(b) Prove the result by simplifying the Boolean expression using reduction method. 5

12. Develop AND, OR logic operators using NAND gate only and NOR gate only. 5+5

13. Explain the operation of a 4×1 multiplexer circuit.

14. Explain the 2's complement parallel adder/subtractor circuit.

15. Explain the working of a ring counter and list its applications.

16. Explain the operation of JK master-slave flip flop circuit with truth table and diagram.

17. Explain the working of shift right register circuit.

18. Explain about D/A conversion using R-2R ladder network.
