



C16-AEI-303

6215

BOARD DIPLOMA EXAMINATION, (C-16)

JUNE—2019

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. Convert  $(1A8)_{16}$  into decimal and binary number systems.
2. State De Morgan's theorems.
3. State the function of full adder.
4. List any three applications of decoders.
5. Define counter.
6. List the conditions for eliminating the race around condition.
7. Distinguish between synchronous and asynchronous sequential logic circuits.
8. List any three applications of registers.
9. Compare static RAM and dynamic RAM in any three aspects.
10. State the need for D/A converter.

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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) Explain the working of NAND and NOR gates using truth table.

(b) Simplify  $Y = \overline{ABC} + A\overline{B}C + AB\overline{C} + ABC$  using Boolean laws.

12. (a) Perform  $(11100)_2 - (11110)_2$  using 2's complement method.

(b) Write the Boolean expression for the truth table given below :

A	B	C	Output
0	0	0	0
0	0	1	0
0	1	0	0
0	1	1	1
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	1

13. (a) Realise a half adder using NOR gates only.

(b) Explain the working of  $4 \times 2$  encoder.

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

(b) Draw and explain the operation of  $4 \times 1$  multiplexer.

15. Explain JK flip-flop with the help of truth table.

16. Explain asynchronous ripple counter (MOD-16) with the help of flip-flops and timing diagrams.

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17. (a) Explain basic principle of working of ROM.

(b) Explain the working of serial in parallel out register.

18. Explain A/D conversion using counter method.

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