



C16-EC-303

6234

**BOARD DIPLOMA EXAMINATION, (C-16)**  
**OCT/NOV—2018**  
**DECE—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. Convert  $(10110.01)_2$  into decimal number system.
2. Subtract  $101101$  from  $110101$  using 2's complement method.
3. What is the importance of parity bit?
4. List different logic families.
5. Write the differences between serial adder and parallel adder.
6. List the applications of decoders.
7. State the need for preset and clear inputs of a flip-flop.
8. Draw NAND latch with truth table.

- \* 9. Write the differences between synchronous and asynchronous counters.
10. Define access time and word length of a memory chip.

**PART—B**

10×5=50

**Instructions** : (1) Answer *any five* questions.

(2) Each question carries **ten** marks.

(3) The 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 AND, OR and NOT gates with truth tables.  
(b) Minimize  $ABC + \bar{A}BC + A\bar{B}C + ABC\bar{C}$  using Karnaugh map.
12. (a) Explain SOP and POS representations for logical functions.  
(b) Multiply binary numbers 101.01 and 10.1.
13. Explain the working of totem pole output TTL NAND gate with circuit diagram.
14. Explain the working of 4-bit parallel adder using full adders.
15. (a) Draw and explain the operation of 4×1 multiplexer.  
(b) What is the need of tri-state buffer?
16. Draw and explain the working of 4-bit asynchronous counter with timing diagram.
- \* 17. Explain the working of JK flip-flop and race around condition.
18. Draw and explain the working of 4-bit shift left register with timing diagram.

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