



C14-EC-305

**4241**

**BOARD DIPLOMA EXAMINATION, (C-14)  
OCT/NOV—2018  
DECE—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 basic logic gates AND, OR, NOT Gates with Truth tables.
2. Convert  $(1101.101)_2$  into octal, hexa-decimal and decimal numbers.
3. State the need for a tristate buffer.
4. Write the importance of Parity bit.
5. List the important characteristics of Digital ICS.
6. State the need for a register.
7. Draw Half adder circuit with truth table.
8. Draw NAND Latch with Truth Table.
9. List any three applications of flip flops.
10. Distinguish between RAM and ROM.

**PART-B**

10×5=50

- Instructions :** (1) Answer *any five* questions.  
(2) Each questions carries **ten** marks.  
(3) Answers should be comprehensive and the criteria for valuation are the content but not the length of the answer.

**11.** Simplify the Boolean expression using k map and implement using basic Gates

$$F(A,B,C,D) = A'B'D'+ABC'D'+A'BD+ABCD'$$

**12.** Draw and explain TTL NAND Gate with Totem pole output.

**13.** State and explain De-Morgan's theorems.

**14.** Draw and explain 2's compliment parallel adder/subtractor circuit.

**15.** a) Draw and explain the operation of 4×1 multiplexer.  
b) List applications of multiplexer.

**16.** Draw and explain clocked SR flip flop using NAND Gates with truth table.

**17.** Explain the working of 4 bit shift left register with a circuit and timing diagram.

**18.** Draw and explain the working of 4 bit asynchronous counter.

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