C14-EC-305

4240

BOARD DIPLOMA EXAMINATION, (C-14)

OCT/NOV—2016

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. List the universal gates and draw their symbols.
2. Convert $(367)_8$ into hexadecimal and binary number systems.
3. Divide $(1111)_2$ by $(101)_2$.
4. Compare the TTL, CMOS and ECL logic families.
5. Compare the performance of serial adder and parallel adder.
6. Write any three applications of de multiplexer.
7. State the need of a register.
8. Draw the logic symbol and truth table of *S-R* flip-flop.
9. List any three applications of flip-flops.
10. Compare static RAM and dynamic RAM.

[Contd..

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)* State different postulates of Boolean algebra. 5

(b) Subtract $(17)_{10}$ from $(19)_{10}$ by using 2's complement method. 5

12. *(a)* Implement AND, OR and NOT gates using NAND gates only. 6

(b) Write SOP and POS forms for the following truth table : 4

Inputs			Output
A	B	C	Y
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. Explain the working of TTL NAND gate with open-collector output with circuit diagram.

14. Explain the working of 2's complement parallel adder/subtractor circuit with logic circuit.

15. Draw and explain the operation of decimal to BCD encoder.

16. *(a)* Write the need of preset and clear inputs. 3

(b) Explain the operation of NAND and NOR latches. 7

17. *(a)* Explain the working of 4-bit shift left register with a circuit and timing diagram. 7

(b) Write the necessity of clock. 3

18. Draw and explain the working of 4-bit ring counter with timing diagram.

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