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C09–AEI–**305**

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BOARD DIPLOMA EXAMINATION, (C–09)

OCT/NOV—2013

DAEI—THIRD SEMESTER EXAMINATION

DIGITAL ELECTRONICS

Time : 3 hours] [*Total Marks* : 80

PART—A

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. Explain AND, OR, NOT gates with truth table.

2. Compare between weighted and unweighted codes.

3. Explain the working of half adder with the help of diagram and truth table.

4. State the need for a tri-state buffer.

5. Construct SR flip-flop using NAND gates and write its truth table.

6. Explain the working of D flip-flop with truth table and diagram.

7. Write the meaning of modulo-*N* counter.

8. State the need for register.

9. List any three applications of ring counter.

10. Explain the basic principle of D/A converter.

PART—B

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 following expressions using K-map : 5

$$ABC \quad \overline{A}BC \quad AB\overline{C} \quad A\overline{B}\overline{C} \quad AC$$

(b) Explain the working of EX-OR gate with truth table. 5

12. *(a)* Subtract $(1101)_2$ from $(1000)_2$ in 2's compliment method. 5

(b) Simplify the following expression using Boolean laws : 5

$$\overline{AB}C \quad A\overline{B}C \quad \overline{A}BC \quad ABC \quad \overline{ABC}$$

13. Realize a half adder using NAND gates only. 10

14. Draw the working of 2's compliment of adder/subtractor and explain it. 10

15. Explain the working of up/down counter with diagram. 10

16. Explain the working of decade counter with diagram and truth table. 10

17. *(a)* Compare between ROM and RAM. 5

(b) Explain the working of static RAM. 5

18. Explain A/D conversion using counter method. 10

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