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C14–CM–303/C14–IT–303

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BOARD DIPLOMA EXAMINATION, (C–14)

OCT/NOV—2015

DCME—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 symbols of NAND and AND gates along with truth table. 1½+1½=3

2. Draw the diagram of full adder. 3

3. Draw 4-bit parallel adder diagram using full adder. 3

4. Draw the symbol of D flip-flop along with truth table. 1½+1½=3

5. Define propagation delay and power dissipation of logic family. 1½+1½=3

6. Draw the NAND latch with truth table. 1½+1½=3

7. Draw the diagram of 4-bit ring counter. 3

8. State the need for a register. 3

9. Differentiate between static RAM and dynamic RAM. 1×3=3

10. List the applications of demultiplexer. 1×3=3

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 EX-OR gate with truth table. 5

(b) Simplify the following Boolean expression :

$AB \quad A(B \quad C) \quad B(B \quad C)$ 5

12. Draw and explain the working of 4-bit 2's complement adder and subtractor. 5+5

13. Draw and explain the clocked *R-S* flip-flop. 4+6

14. Draw and explain the operation of *T* flip-flop. 4+6

15. Draw and explain the operation of UP-DOWN counter. 4+6

16. Explain the working of universal shift register (74194). 10

17. Explain the data movement in the following registers : 5+5

(a) Serial-in-Parallel-out

(b) Parallel-in-Serial-out

18. *(a)* Explain the 4 1 multiplexer with diagram. 5

(b) Write any five applications of counter. 5

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