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BOARD DIPLOMA EXAMINATION, (C–09)
MARCH/APRIL—2016
DCE—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. State De Morgan's theorems.

2. Convert the following hex numbers into decimal :

   (a) $2B8_{16}$

   (b) $1C_{16}$

   (c) $3CA_{16}$

3. List different digital logic families.

4. State the need for a tristate buffer.

5. What is a combinational logic circuit?

6. Mention any three applications of flip-flops.

7. Write about race around condition.

8. Distinguish between synchronous counter and asynchronous counter.

9. List any three memory modules used in a computer.

10. Write any three differences between ROM and RAM.

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. Draw the logic circuits for the realization of AND, OR and NOT operations using NAND and NOR gates.

12. *(a)* Subtract decimal number 45 from 87 using 2's complement method. 4

(b) Compare between weighted and unweighted codes. 3

(c) Explain the use of parity bit. 3

13. Draw and explain the logic circuit of 4-to-1 multiplexer.

14. Draw and explain a 4-bit parallel adder using full-adders with one example.

15. Draw and explain the working of a 4-bit shift-right register.

16. *(a)* Draw and explain the operation of NAND latch. 5

(b) Write about level triggering and edge triggering. 5

17. Explain D/A conversion using binary weighted resistors with circuit diagram.

18. *(a)* Distinguish between EEPROM and UVPROM. 5

(b) Draw and explain the working of a basic dynamic MOS RAM cell. 5

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