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C16–CM–302

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BOARD DIPLOMA EXAMINATION, (C–16) MARCH/APRIL—2018

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. Convert the following binary numbers into hexadecimal :

   (a) $(10100010)_2$

   (b) $(1110011)_2$

   (c) $(00111011)_2$

2. Represent the decimal number 5286 using 8421 code.

3. State any three Boolean postulates.

4. List IC numbers of two input logic gates.

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5. Realize full adder using two half adders and an OR gate.

6. State the need for a tristate buffer.

[*Contd...*

7. Draw the logic circuits of NAND and NOR latches.

8. State the need for preset and clear inputs of flip-flops.

9. Define modulus of a counter. What is the modulus of 4-bit counter.

10. Distinguish between EEPROM and UVEPROM.

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. Explain the basic logic gates (AND, OR, NOT gates) with truth tables.

12. Write the Boolean expression of sum of minterms from the following truth table and simplify it using K-map :

Input			Output
A	*B*	*C*	*Y*
0	0	0	0
0	0	1	1
0	1	0	0
0	1	1	1
1	0	0	1
1	0	1	0
1	1	0	1
1	1	1	0

13. Explain the working of open collector TTL NAND gate with circuit diagram. 5+5

14. Draw 4-bit parallel adder/2's complement subtractor circuit and explain its working. 5+5

[*Contd...*

15. Draw the circuit diagram of BCD to decimal decoder and explain its working. 5+5

16. *(a)* Explain the operation of level clocked D flip-flop with circuit diagram and truth table. 7

(b) State the concept of edge triggering in flip-flops. 3

17. Draw and explain the working of 4-bit synchronous counter. 5+5

18. Draw and explain the working of 4-bit shift left register. 5+5 HHH

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