



C09-EC-305

**3237**

**BOARD DIPLOMA EXAMINATION, (C-09)**

**OCT/NOV—2014**

**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) Answer should be brief and straight to the point and shall not exceed *five* simple sentences.

1. Mention three uses of alphanumeric codes.
2. List three digital logic families.
3. Divide the binary number  $1100_2$  by  $100_2$ .
4. Realize a half-adder circuit using NOR gates only.
5. Draw decimal to BCD encoder.
6. Draw a level clocked *T* flip-flop.
7. Write a short note on registers.
8. Draw NAND latch.
9. Draw the circuit of A/D converter using counter method.
10. Compare static RAM and dynamic 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. (a) Draw the sum of products circuit for the equation  $Y = (\bar{A} + B)(A + B)$  and simplify the equation. 5

- \* (b) Write Boolean expressions of sum of minterms from the following truth table and simplify :

5

<i>Inputs</i>			<i>Output</i>
<i>A</i>	<i>B</i>	<i>C</i>	<i>X</i>
0	0	0	0
0	0	1	1
0	1	0	1
0	1	1	0
1	0	0	0
1	0	1	1
1	1	0	1
1	1	1	0

- 12.** (a) Explain AND, OR and NOT gates with truth tables. 6  
 (b) Explain NAND and NOR gates using truth tables. 4
- 13.** Draw a two-bit digital comparator circuit and explain.
- 14.** Draw and explain the logic circuit of 4 to 1 multiplexer.
- 15.** Explain the working of *J-K* flip-flop using truth table.
- 16.** Draw and explain asynchronous three-bit up-down counter.
- 17.** (a) Explain the terms—resolution, accuracy and monotonicity of converter. 5  
 (b) Draw *R-2R* ladder network D/A converter. 5
- 18.** Explain the basic principle of working of diode ROM with a neat figure.

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