



C09-AEI-305

**3215**

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

**MARCH/APRIL—2014**

**DAEI—THIRD SEMESTER EXAMINATION**

**DIGITAL ELECTRONICS**

*Time : 3 hours ]*

*[ Total Marks : 80*

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**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 given number 36 into excess-3 code.
2. State De Morgan's theorems.
3. Compare the performance of serial adder and parallel adder.
4. List any three applications of decoder.
5. Explain *T* flip-flop with the help of truth table with diagram.
6. Explain the working SR latch using NAND gates only.
7. Explain the working of ring counter with figure and truth table.
8. List different types of ROM.
9. Draw the diagram of *J-K* flip-flop and truth table.
10. Define the terms resolution and monotonicity of a D/A converter.

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**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) Simplify the following expression using Boolean expressions : 5

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

(b) Simplify the following expression using K-map : 5

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

**12.** (a) Convert the given binary number into gray number : 5

$$(1001101)_2$$

(b) Subtract  $(1000)_2$  from  $(1100)_2$  in 2's compliment method. 5

**13.** Explain the working of 3 8 decoder with diagram. 10

**14.** Draw and explain the operation of 4 1 multiplexer. 10

**15.** Explain the working of asynchronous ripple counter with diagram. 10

**16.** (a) State the need of preset and clear inputs. 5

(b) Explain the concept of modulo-N counter. 5

\* **17.** Explain the working of SISO, PIPO, SIPO, PISO. 10

**18.** Explain the A/D conversion of successive approximation method. 10

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