



C09-AEI-305

**3215**

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

**OCT/NOV—2016**

**DAEI—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 :
  - (a)  $(176)_{10}$  to binary
  - (b)  $(573)_8$  to hexadecimal
2. Write binary equivalent for 11011 in BCD, EXCESS-3, GRAY codes.
3. Define combinational logic circuit. Give the examples.
4. Draw 4 2 encoder with truth table.
5. Define modulus of the counter. Determine the possible no. of states if the number of flip-flops is 4.
6. Draw T flip-flop with truth table.
7. Draw the decade counter using JK flip-flops.
8. Mention the different types of ROM.
9. Draw the 3-bit shift left register.
10. Draw the D/A conversion circuit using weighted resistors.

**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) Develop AND, OR operations using NAND gates. 6  
(b) Simplify the expression  $f = A\bar{B}\bar{C} + \bar{A}\bar{B}C + A\bar{B}C + \bar{A}BC$  using K-Map. 4
- 12.** (a) Explain AND, OR, NOT operators with truth table. 7  
(a) Simplify  $(A + \bar{B})(\bar{A} + B)(\bar{A} + \bar{B})$ . 3
- 13.** (a) Draw and explain the 4 to 1 multiplexer circuit with truth table. 7  
(b) List any three applications of decoder. 3
- 14.** (a) Explain the working of serial adder with block diagram. 6  
(b) Draw the 4-bit parallel adder circuit using full adders. 4
- 15.** (a) Draw and explain RS latch. 5  
(b) Explain RS latch as a debouncing switch. 5
- 16.** (a) State the need for preset and clear inputs. 3  
(b) Explain race around condition and mention the remedies for it. 7
- 17.** (a) List the various types of memory. 5  
(b) Differentiate between ROM and RAM. 5
- 18.** (a) Explain A/D conversion using counter method. 7  
(b) State the need for D/A conversion. 3

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