



C14-AEI-304

4217

**BOARD DIPLOMA EXAMINATION, (C-14)**  
**OCT/NOV—2017**  
**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 into binary number system (a)  $(89A2)_{16}$  and  $(3570)_8$ .
2. Compare weighted and unweighted codes.
3. Draw half-adder circuit and write its truth table.
4. List any three applications of multiplexers.
5. Draw the D flip-flop with its truth table.
6. Differentiate between synchronous and asynchronous counters in any three aspects.
7. State the need for preset and clear inputs.
8. List various types of memories.
9. Define register and state the need of register.
10. Define monotonicity and settling time of D/A converter.

**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) Explain ASCII and EBCDIC codes.  
(b) Explain the working of NAND gate using truth table.
- 12.** (a) Simplify the following Boolean expression by applying Boolean laws :  
$$\overline{A}\overline{B}\overline{C} \quad \overline{A}\overline{B}C \quad \overline{A}B\overline{C} \quad A\overline{B}\overline{C} \quad ABC$$
  
(b) State De-Morgan's theorems.
- 13.** Draw 4-bit parallel adder circuit using full adders and explain its working.
- 14.** (a) Draw and explain the operation of  $4 \times 1$  multiplexer.  
(b) Compare the performance of serial and parallel adders in any three aspects.
- 15.** (a) Draw and explain S-R flip-flop with NAND gates.  
(b) Draw and explain the working of a J-K flip-flop with the help of truth table.
- 16.** Explain the working of decade counter with a neat diagram.
- 17.** (a) Explain the working of shift right register.  
(b) Compare between static RAM and dynamic RAM.
- 18.** Explain A/D conversion using successive approximation method.

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