C09-AEI-305

# 3215

## BOARD DIPLOMA EXAMINATION, (C-09)

## OCT / NOV-2015

## DAEI - THIRD SEMESTER EXAMINATION

DIGITAL ELECTRONICS

*Time* : 3 hours ] [ *Total Marks* : 80

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**PART - A** 3 X 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.** Draw the symbols and truth tables for AND and OR gates.

**2.** State any two postulates of Boolean algebra.

**3.** Draw full adder using two half adders and OR gate.

**4.** Draw the block diagram of serial-adder.

**5.** State the need for preset and clear inputs.

**6.** Draw T flip-flop with truth table.

**7.** Draw 3-bit asynchronous counter.

**8.** List the types of data transfer in register.

**9.** List the numbers of different RAM ICs.

**10.** State the need for an A/D conversion.

## PART - B

10 X 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 and NOT oprations using NAND gates.

(b) Simplify the expression f = $A\bar{B}\bar{C} + \bar{A}\bar{B}C + A\bar{B}\bar{C} + A\bar{B}C$ using K-map.

**12.** Perform binary addition, subtraction, multiplication and division for 1011.11 and 1001.01.

**13.** (a) Draw and explain the $4 \times 1$ multiplexer circuit with truth table.

(b) Differentiate between series adder and parallel adder in any three aspects.

**14.** a) Explain the working of 4 2 encoder with truth table.

b) State the need for tri-state buffer.

**15.** Explain 5-bit asynchronous up/down counter with truth table.

**16.** (a) Draw and explain SR flip-flop using NAND gates.

(b) Differentiate between synchronous SLC and asynchronous SLC.

**17.** (a) Draw and explain the working of ring counter.

(b) List any three applications of ring counter.

**18.** Explain D/A conversion using weighted resistors.

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