# SOUTH EASTERN UNIVERSITY OF SRI LANKA

## FIRST EXAMINATION IN BACHELOR OF INFORMATION AND COMMUNICATION TECHNOLOGY - 2017/2018

## SEMESTER – I, DECEMBER 2019

## CIS11031 (R) –Logic Designing & Computer Organization

**Answer all Questions** **Time: 01 hour**

**Question 01**

a) Convert the following numbers to their respective bases

| | | |
|---|---|---|
| I. | $3C7D_{16}$ | Binary |
| II. | $761_8$ | Hexadecimal |
| III. | $EA_{16}$ | Decimal |
| IV. | $1000111011_2$ | Octal |
| V. | $129_{10}$ | Binary |

(25 Marks)

b) Represent the following numbers in **Two's complement form**

I. -9

II. -25

(20 Marks)

c) Convert the following **fractional numbers** to their corresponding **binary number**

I. $123.0625_{10}$

II. $100.245_{10}$

(20 Marks)

d) Convert **$-118.125_{10}$** in **32-bit Single Precision** IEEE 754 Binary Floating Point Standard
(20Marks)

e) Write down the truth table of **Full Adder.** Implement a full adder using **two Half Adders**

(15 Marks)

**[100 Marks]**

Question 02

a) Show that,

I. $ABC + \bar{A}B + AB\bar{C} = B$

(10 Marks)

II. $AC\bar{D} + \bar{A}\,B\bar{C}\,D + \bar{A}\bar{B}D + A\bar{B}CD = D\,(\bar{C} + \bar{B})$

(10 Marks)

b) $X = \bar{A}BC + B\,\bar{C} + \bar{B}\,\bar{C} + ABC$

I. Minimize the above expression in **SOP (Sum-of-Products)** format using a **K-map**

(10 Marks)

II. Draw the circuit for the **minimized expression**.

(10 Marks)

c) Express the following Boolean Equations in **POS (Product-of-Sums)**

I. $A + \bar{A}\,B + \bar{A}\,C$

II. $AB + ABC + A\,\bar{B}\,\bar{C} + A\,\bar{C}$

(20 Marks)

d) Briefly explain the following access methods in computer memory with **a suitable example.**

I. Sequential or Serial Access

II. Direct Access

(20 Marks)

e) Differentiate **RISC** from **CISC** in computer organization.

(20 Marks)

**[100 Marks]**