00744 CS-64

BACHELOR OF COMPUTER APPLICATIONS
(BCA) (Pre-Revised)

Term-End Examination, 2019

CS-64 : INTRODUCTION TO COMPUTER ORGANISATION

Time : 3 Hours] [Maximum Marks : 75

Note : Question No. **1** is **compulsory**. Attempt **any three** questions from the rest.

1. (a) Simplify the Boolean function : [4]

$$F = \overline{(A + \overline{\overline{B}} + (\overline{\overline{A}} + B)}$$

and draw the logic diagram.

(b) Do the following conversion [6]

(i) $(1011011.1101)_2 \longrightarrow (\quad)_8$

(ii) $(736)_{10} \longrightarrow (\quad)_{16}$

(iii) Substract 45 from 85 using 2's complement notation.

(c) Suppose the value of registers R_1 & R_2 are [6]

R_1 = 1101 0110

R_2 = 1111 1001

Perform the following operations on R_1 using R_2

(i) Selective complement

(ii) Selective clear

(iii) Mask operation

(d) Explain the following 8086 assembly language commands : [6]

(i) ROL Bx, 01

(ii) SHR Bx, 01   if CF = 1

(iii) RCR Bx, 01

Where Bx = 1001 1101 1011 1010

(e) Discuss the use of flags in a computer system. [2]

(f) How a subroutine call is different from branch instruction? Explain using suitable example. [6]

2. (a) What are the key features of Von Neuman Architecture? Explain. [5]

(b) Explain the steps required for execution of an instruction. [5]

(c) A memory has a capacity of 64K x 16 lines. [5]

(i) How many data input and output lines does it have?

(ii) How many address lines does it have?

(iii) What is the capacity in bytes?

3. (a) Explain through an example, how does an associative cache mapping scheme works. [6]

(b) Explain the uses of interrupt INT21$_h$ in 8086 microprocessor. [4]

(c) Write an 8086 assembly language program to find whether two numbers stored in memory match or not. [5]

4. (a) Suppose the value of register R$_1$ is 1110 0011

Perform the following microoperations [4]

(i)   Arithmetic right shift

(ii)   Circular right shift

(b)   Explain the following 8086 assembly language directives :   [6]

     (i)   SEGMENT and ENDS

     (ii)   Data definition directive DW

(c)   How is central memory organized? Explain. [5]

5.   (a)   Write steps for calculating effective address for the following addressing modes of 8086 microprocessors :   [6]

     (i)   Based

     (ii)   Indexed

     (iii)   Based Index

(b)   Design a Half Adder. Draw its logic diagram. [5]

(c)   What is a multiplexer? Draw a logic diagram and truth table for a 2 x 1 multiplexer.   [4]

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