CS-64

BACHELOR OF COMPUTER APPLICATIONS
(BCA) (Pre-Revised)
Term-End Examination

00945   **June, 2018**

CS-64 : INTRODUCTION TO COMPUTER
ORGANISATION

Time : 3 hours   *Maximum Marks : 75*

Note : *Question number* **1** *is* **compulsory.** *Attempt any* **three** *questions from the rest.*

1. (a) Simplify the Boolean expression given below using K-map :

$F(x, y, z, w) = x \cdot y \cdot z \cdot w + \bar{x} \cdot y \cdot \bar{z} \cdot w + \bar{x} \cdot y + x \cdot \bar{y} \cdot z + x \cdot \bar{w}$

Also draw the logical circuit for the simplified Boolean expression.   *5*

(b) What is a Full Adder ? Write the truth table for a full adder and draw its logic diagram.   *6*

(c) What are Instructions ? Explain the factors considered while deciding the instruction length. What are variable length instructions ?   *4*

(d) Explain the steps involved in the fetch cycle of an instruction execution using micro-operations.   *5*

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(e) Write a program using 8086 assembly language that compares two numbers of size one byte each and moves the larger number into the DL register. Assume that both the numbers are stored in two consecutive memory locations. *6*

(f) Explain the purpose of addressing modes in the context of instruction set of a computer. *4*

2. (a) Do the following conversions : *10*

Note : Subscripts represent the base of the respective number.

(i) $(230 \cdot 5)_{10} \rightarrow (?)_2$

(ii) $(1011100)_2 \rightarrow (?)_8$

(iii) $(732 \cdot 24)_8 \rightarrow (?)_{10}$

(iv) $(2FF9)_{16} \rightarrow (?)_2$

(v) $(624)_{10} \rightarrow (?)_8$

(b) What are Counters ? Explain the ripple counter. *5*

3. (a) Explain the functioning of Wilkes Control Unit with the help of a diagram. *6*

(b) What is Random Access Memory (RAM) ? Explain the working of RAM with the help of its logic diagram. *5*

(c) Explain any four Bit Manipulation instructions of 8086 microprocessor. *4*

4. Explain any *five* of the following with the help of examples/diagrams : 5×3=15

   (a) Arithmetic Micro-operations

   (b) Control Memory

   (c) Subroutine Call

   (d) Segment Registers in 8086 Microprocessor

   (e) DOS Function Calls in 8086 Microprocessor

   (f) Flags in 8086 Microprocessor

5. (a) Using 2's complement notation, perform the following arithmetic operations using 8-bit register(s) : 10

      (i)   25 + (– 12)

      (ii) 17 – 6

      (iii) – 18 – 16

      (iv) – 8 + (18)

      (v)   12 – (– 19)

   (b) What are the different external memories ? Explain seek and latency time in respect to a hard disk. 5

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