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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 number 1 is compulsory. Attempt any three questions from the rest.

1. (a) Using the K-map, simplify the following function:
[6]

$$F(A, B, C, D) = \sum (0, 2, 4, 5, 7, 10, 11, 13)$$

Also draw the logic circuit for the simplified expression.

- (b) (i) Subtract 11011011 from 10110101 using 2's complement. [2]
- (ii) Convert decimal 5527 into octal number [2]

- (c) Write an instruction sequence for evaluating $A*B - D/E$ using one address instruction scheme. [4]
- (d) 8086 microprocessor supports 20 address lines whereas all the register including the segment registers are of only 16 bits. How is this mapping from 16 bits to 20 bits is performed ? [5]
- (e) Write micro-operations for the Fetch Cycle. [4]
- (f) What are the uses of Flip-Flops ? [2]
- (g) Explain the following 8086 instructions : [4]
 - (i) DAA
 - (ii) ROL

SECTION-B

- 2. (a) What are the steps required for execution of an Instruction Cycle ? Also, explain which unit performs what operation during execution. [5]
- (b) Draw a truth table and a logic circuit for 3×8 decoder. [6]

- (c) Find the physical address of the following register segment offset for 8086 microprocessor. [4]

SS: SP : (4BCD)n : (3333)n

DS: BX : (7010)n : (2222)n

3. (a) Draw the block diagram of a 4-bit right shift register and explain its working. [5]

- (b) Write a program in 8086 assembly language to find the minimum of five given values stored in an array. The result should be stored in AX register. [6]

- (c) What features need to be considered for selection of instruction length. [4]

4. (a) What is hardwired control unit ? Explain its operation with help of the block diagram. [6]

- (b) Suppose the value of Register R_1 is 11011110
Perform the following micro-operations : [4]

(i) Clear all the bits of R_1

(ii) Logical left shift

Choose register R_2 values (if needed) to perform the above operation on R_1 register.

- (c) Explain the functioning of DMA controller with the help of a suitable diagram. [5]
5. (a) Write the steps for calculating effective address for the following 8086 addressing modes : [2]
- (i) Indexed
 - (ii) Base Indexed
- (b) What are the uses of the following tools for assembly language program execution : [2]
- (i) Linker
 - (ii) Loader
- (c) Explain any cache mapping scheme with the help of a suitable diagram. [6]
- (d) Explain the difference between DRAM and SRAM. Draw a cell of SRAM. [5]

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