BCA 4th Semester Exam., 2015

DIGITAL ELECTRONICS, COMPUTER
SYSTEM ARCHITECTURE AND
ORGANIZATION

Time : 3 hours   Full Marks : 60

Instructions :

(i) The marks are indicated in the right-hand margin.

(ii) There are **SEVEN** questions in this paper.

(iii) Attempt **FIVE** questions in all.

(iv) Question Nos. **1** & **2** are compulsory.

1. Write notes on any six of the following :

6×2=12

(a) Logic Gate

(b) Half Adder

(c) Number System

(d) ALU

(e) Register

(f) RISC

(g) Input-Output interface

(h) RAM

(i) Operand

(j) Microprogram

2. Answer any *three* questions from the following :   4×3=12

(a) What are the differences between computer architecture and computer organization?

(b) Given the two binary numbers X=1010100 and Y=1000011. Perform the subtraction (i) X-Y and (ii) Y-X using 2's complements.

(c) What is instruction set architecture?

(d) Give the logic diagram and graphic symbol for clocked R-S flip-flop.

(e) Explain instruction pipelining.

3. What are the essential components of the computer system? Draw the schematic diagram of the computer showing its essential components. Discuss the function of each component.   12

4. Assume a computer having 64-word RAM (assume 1 word=16 bits) and cache memory of 8 blocks (block size=32 bits). Find Main Memory Location 25 in cache if (a) Associative mapping, (b) Direct mapping and (c) 2-way set associative (2 blocks per set) mapping is used.   12

5. Explain the different Input-Output techniques.   12

6. What is Microprogrammed Control Unit? Explain the functioning of Microprogrammed Control Unit with diagram. Also write the advantages and disadvantages using of Microprogrammed Control Unit over hardwired control unit. akubihar.com   12

7. List the common types of instruction set operations. Describe each instruction set operation in terms of operation name.   12

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