IBT21CSL-034

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY, NAGPUR
Department of Computer Science and Engineering
CSL 203: **Computer System Organization**
Sessional Exam 1
Semester -III

Date: 25/08/2022 (Thursday)
Time: 11:00 AM to 12:00 noon

Duration: 1 Hours

Max. Marks: **15M**

Important Instructions:

- All the questions are compulsory.
- Maximum marks that can be obtained for a particular question are indicated in the brackets [ ] on the extreme right of the corresponding question
- Write all the subparts of each question together.

Q1-a. Write an assembly language code for evaluating the following expression:

M = (X + Y + Z) - (A + B + C)

All the symbols M, X, Y, Z, A, B and C are memory locations. The CPU has 4 General Purpose Registers. Addition and subtraction instructions can use only register operands.

[CO-4]

Q1-b. Explain the difference between Computer Architecture and Computer Organization with the help of example. **[CO-1]**

[3+2 = 5M]

Q2. Consider a computer system with the following properties:

(i) It has a large register set with 256 registers. Each register can contain 32 bits data.

(ii) Memory capacity is 64 GBytes and is byte addressable. Memory is capable of transferring a block of one word.

Answer the following:

1) Give a snapshot of the memory with the total number of memory locations.
2) Show the addressing using both big and little endian scheme.
3) A program reads ASCII characters entered at the keyboard and stores them at successive byte locations, starting at location 1000H. Show the contents of the two memory words (in Hex) at locations 1000 and 1004 after the word "CSOIIITN" has been entered. ASCII codes of A to Z ranges between 65 to 90.

[CO-3]
[1+2+2= 5M]

Q3-a) Assume registers R1 and R2 contain the decimal numbers 2000 and 3000 before each of the addressing is used to access the memory operand. What is the Effective Address (EA) in each of the following cases. Also write the instructions for each of the following EA. Memory is byte addressable and registers are 4 byte long.

(a) 14(R1)
(b) (R1, R2)
(c) 18(R1, R2)
(d) (R1) +
(e) - (R2)

[CO-4]

Q3-b) Compare and contrast the use of Relative addressing mode with that of Absolute (Direct) mode with the help of example.

[CO-4]
[2.5 + 2.5 = 5M]

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