CS/BCA(N)/EVEN/SEM-2/BCAN-201(N)/2018-19

Maulana Abul Kalam Azad University
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MAULANA ABUL KALAM AZAD UNIVERSITY OF TECHNOLOGY, WEST BENGAL

Paper Code : BCAN-201(N)

COMPUTER ARCHITECTURE

Time Allotted : 3 Hours   Full Marks : 70

The figures in the margin indicate full marks.

Candidates are required to give their answers in their own

words as far as practicable.

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for any *ten* of the
   following :   10 × 1 = 10

   i)   The 8085 instruction to transfer a data to a register
        in immediate mode is
        a)   MOV   b)   MVI
        c)   LOAD   d)   None of these.

   ii) A multiplexer is also known as a/an
        a)   Encoder   b)   Data selector
        c)   Decoder   d)   Register.

   iii) 9's complement of 546700 is
        a)   483270   b)   453299
        c)   32955   d)   669290.

iv) The number of multiplexer required to construct a common bus for 8 registers with 16 bits each is
   a) 8
   b) 16
   c) 4
   d) 2.

v) The components that form a multiprocessor system is/are
   a) CPU's
   b) Memory Unit
   c) IOps
   d) All of these.

vi) CISC stands for
   a) Clock Instruction Set Computer
   b) Complex Instruction Set Computer
   c) Control Instruction Set Computer
   d) None of these.

vii) PC points to the
   a) Address of present instruction
   b) Address of next instruction
   c) Address of previous instruction
   d) Topmost element of stack.

viii) ROR is a
   a) Program control instruction
   b) Shift instruction
   c) Logical instruction
   d) Data transfer instruction.

ix) DMA stands for
   a) Digital Memory Address
   b) Direct Memory Access
   c) Digital Memory Array
   d) Dual Memory Arithmetic.

x) A processor performing fetching and decoding of different instruction during the execution of another instruction is

    a) Cache   b) Parallel Processing

    c) Pipelining   d) All of these.

xi) In case of, Zero-address instruction method the operands are stored in

    a) Register

    b) Stack

    c) Both (a) and (b)

    d) Push down and stack.

xii) Physical memory is divided into set of finite size

    a) Frame   b) Pages

    c) Block   d) Vector.

GROUP – B

(Short Answer Type Questions)

Answer any *three* of the following.   3 × 5 = 15

2. Write an assembly language program to add two numbers.

3. Briefly describe an instruction execution cycle with proper timing diagram.

4. What are the different hazards ? Explain How do we avoid them ?

5. What is locality of reference in cache memory ? What are the differences between L1 cache and L2 cache ?

                                            2 + 3

6. What is bootstrap loader ? Explain its functionality.

                                            2 + 3

GROUP – C

(Long Answer Type Questions)

Answer any *three* of the following. $3 \times 15 = 45$

7. How many addressing modes are found in 8085 microprocessor ? What are they ? What do you know about SIM and RIM instructions ? How many types of data transfer schemes are there ? Describe any one among them. $5 + 5 + 2 + 3$

8. What is parallel processing ? What is arithmetic pipelining ? What is vector processing ? Explain how matrix multiplication is performed using vector processing. Discuss Booth's algorithm for multiplication using the example of multiplication of two signed numbers + 13 and – 11. $3 + 3 + 1 + 3 + 5$

9. a) Perform $X = (A + B / C) \times (D \times E - F)$
   Using the following addressing mode :
   i) Two Address
   ii) One Address
   iii) Zero Address.
   b) Explain Sub routine call with example.
   c) Compare direct and set associative mapping technique. $6 + 4 + 5$

10. Write short notes on any *three* of the following : 3×5
    a) CAM   http://www.makaut.com
    b) Virtual Memory
    c) Register stack and memory stack
    d) Asynchronous data transfer.
    e) Memory Interleaving.

11. a) Draw the flowchart of Booth's multiplication algorithm.
    b) Explain your algorithm for – 7*3.
    c) Differentiate between paging and segmentation. $5 + 5 + 5$