Paper Code: BCA-203 **L T/P C**
Paper: Computer Architecture **3 1 4**
Paper ID : 20203
Pre-requisite :

- BCA 106 Digital Electronics

AimTo understand the concepts in modern computer architecture
Objectives

- To learn the design of Control Unit and ALU of a typical computer
- To learn about the memory, input –ouput organization of a typical computer
- To learn the concepts of pipelining and vector processing.

INSTRUCTIONS TO PAPER SETTERS: MAXIMUM MARKS: 75
1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be 12.5 marks.

UNIT-I
Register Transfer and Micro-operations:Register Transfer Language, Register Transfer, Bus and Memory Transfers, Arithmetic Micro-operations, Logic Micro-operations, Shift Microoperations, Arithmetic logic shift unit
Basic Computer Organizations and Design: Instruction Codes, Computer Registers, Computer Instructions, Timing and Control, Instruction Cycle, Memory-Reference Instructions, Register reference instructions, Input - Output Instructions, Design of Accumulator Logic **[T1]**

[No. of Hrs: 11]

UNIT-II
Design of Microprogrammed Control Unit
Central Processing Unit: Introduction, General Register Organization, Stack Organization, Instruction Formats, Addressing Modes. Difference between RISC and CISC .
Pipeline and Vector Processing: Arithmetic and Instruction pipeline, Vector operations, Matrix Multiplication, memory interleaving**.[T1,R2]**

[No. of Hrs: 11]

UNIT-III
Computer Arithmetic: Introduction, Multiplication Algorithms, Division Algorithms, for fixed point-members.[T1,R2]
Input-Output Organization: Peripheral Devices, Input-Output Interfaces, Asynchronous Data Transfer, Modes of Transfer, Priority Interrupt, Direct Memory Access (DMA**)[T1]**

[No. of Hrs: 11]

UNIT-IV
Memory Organization: Memory Hierarchy, Main Memory, Auxiliary Memory, Associative Memory, Cache Memory, Virtual Memory, Memory Management Hardware**[T1]**

[No. of Hrs: 11]

TEXT BOOKS :
[T1]. Morris Mano, Computer System Architecture, 3rd Edition, Prentice-Hall of India Private Limited, 1999.
REFERENCE BOOKS:
[R1]. WIliam Stallings, Computer Organization and Architecture, 4th Edition, Prentice Hall of India Private Limited, 2001

[R2]. Subrata Ghosal," Computer Architecture and Organization" , Pearson 2011
[R3]. Malvino, "Digital Computer Electronics: An Introduction to Microcomputers", McGraw Hill,