Exam Seat No._____

KADI SARVA VISHWAVIDYALAYA

BE SEMESTER-IV (New) Examination October-2023

Subject Code: CT403-N
Subject Name: Computer Organization & Architecture
Date: 30-10-2023 **Time: 12:00 pm to 03:00 pm** **Total Marks: 70**

Instructions:
1. Answer each section in separate answer sheet.
2. Use of scientific calculator is permitted.
3. All questions are Compulsory.
4. Indicate clearly, the option you attempt along with its respective question number.
5. Use the last page of main supplementary of rough work.

Section-I

Q-1	(A)	Define list of register as below for the basic computer with respect to its functionality (DR,AR,AC,IR,PC,TR,INPR,OUTR)	[5]
	(B)	Explain register transfer with the help of block diagram	[5]
	(C)	Design and explain common bus system using three state bus buffers	[5]
		OR	
	(C)	What is EA? Explain direct address and indirect address access from memory	[5]
Q-2	(A)	Design of 4-bit binary adder-subtractor	[5]
	(B)	Design a circuit for logic microoperations	[5]
		OR	
	(A)	Explain the design of accumulator logic with example.	[5]
	(B)	List out arithmetic microoperations; also design a 4-bit binary adder.	[5]
Q-3	(A)	Draw a flowchart for Instruction Cycle	[5]
	(B)	Briefly discuss memory reference instructions.	[5]
		OR	
	(A)	Draw a flow chart for interrupt cycle	[5]
	(B)	What is the role of assembler? Explain first pass of assembler	[5]

Section-II

Q-4	(A)	What is Stack? Explain Register Stack using a block diagram of a 64-word stack. Also explain Push & Pop operations for the same.	[5]
	(B)	Explain addressing modes with an example	[5]
	(C)	List the three address, two address, one address, zero address instructions with its examples.	[5]
		OR	
	(C)	Write Assembly Language Program for 2's complement of number	[5]
Q-5	(A)	What is pipelining? Explain pipeline processing	[5]
	(B)	Short note on Main memory: (RAM and ROM)	[5]
		OR	
	(A)	Draw four segment CPU pipeline	[5]
	(B)	What is Flynn's taxonomy? Explain it in brief	[5]
Q-6	(A)	Explain types of interrupt	[5]
	(B)	Explain Characteristics of RISC	[5]
		OR	
	(A)	Define Subroutine and Explain with example.	[5]
	(B)	What are the three types of mapping process? Explain any one of them	[5]

-- Good Luck --

Exam Seat No._____

KADI SARVA VISHWAVIDYALAYA

BE SEMESTER-IV(New)Examination May-2023

Subject Code: CT403-N

Subject Name: Computer Organization & Architecture

Date: 12/05/2023 **Time: 10:00am to 01:00pm** **Total Marks: 70**

Instructions:

1. Answer each section in separate answer sheet.
2. Use of scientific calculator is permitted.
3. All questions are Compulsory.
4. Indicate clearly, the option you attempt along with its respective question number.
5. Use the last page of main supplementary of rough work.

Section-I

Q-1	(A)	Explain Different Registers available of basic computer.	[5]
	(B)	Draw and explain Block Diagram of input-output configuration of basic computer.	[5]
	(C)	Design and explain a common bus system for four register.	[5]
		OR	
	(C)	Explain General Register Organization with help of Control word.	[5]
Q-2	(A)	Draw 4-bit combinational circuit shifter and explain in detail.	[5]
	(B)	Explain the following MRI instructions: 1. LDA 2. STA 3. ADD 4. BUN 5. BSA	[5]
		OR	
	(A)	Draw and explain the flowchart for instruction cycle.	[5]
	(B)	List out pseudo instruction also discuss ii in briefly	[5]
Q-3	(A)	What is an Interrupt Cycle? Draw and Explain flow chart of it.	[5]
	(B)	Write a note on different Addressing modes.	[5]
		OR	
	(A)	List and Explain Shift instructions.	[5]
	(B)	Explain design of Accumulator Logic using suitable diagram.	[5]

Section-II

Q-4	(A)	Define stack? Explain 64 bit word stack using PUSH and POP Operations.	[5]
	(B)	Explain the Characteristics of RISC.	[5]
	(C)	Short note on Memory Hierarchy.	[5]
		OR	
	(C)	What is pipelining? Explain four-segment pipeline.	[5]
Q-5	(A)	Define Assembler? Explain First Pass of an assembler with flow chart.	[5]
	(B)	Write short note on subroutine with necessary programs.	[5]
		OR	
	(A)	Explain the Instruction Pipeline with example.	[5]
	(B)	Write a short note on Programming Loops.	[5]
Q-6	(A)	Explain magnetic disks and magnetic tape of auxiliary memory.	[5]
	(B)	Define cache memory and explain any one type of mapping of cache memory.	[5]
		OR	
	(A)	Draw and explain arithmetic pipeline.	[5]
	(B)	Explain the main memory in detail.	[5]