GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER– IV EXAMINATION – SUMMER 2020

Subject Code: 2140707   **Date:28/10/2020**

Subject Name: COMPUTER ORGANIZATION

Time: 10:30 AM TO 01:00 PM   **Total Marks: 70**

Instructions:
1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

			MARKS
Q.1	**(a)**	Enlist the major components of CPU and explain each in brief.	**03**
	(b)	Briefly discuss 4-bit binary adder.	**04**
	(c)	Draw and explain flowchart for instruction cycle.	**07**
Q.2	**(a)**	Discuss three-state bus buffers in brief.	**03**
	(b)	Write the name of basic computer registers with their functionalities.	**04**
	(c)	Enlist various addressing modes and explain the same in brief with proper example(s).	**07**
		OR	
	(c)	Write a note on arithmetic pipeline.	**07**
Q.3	**(a)**	Draw a space-time diagram for a six-segment pipeline to process seven tasks.	**03**
	(b)	Write microoperations needed to execute the following instructions: - ADD - LDA	**04**
	(c)	Write three address and one address instructions program for the following arithmetic expression. $Z = (A + B) * (C – D / E) + F / G$	**07**
		OR	
Q.3	**(a)**	Explain any one pipeline conflicts.	**03**
	(b)	Draw the flowchart for first pass of assembler.	**04**
	(c)	Explain Booth algorithm. Support your answer by taking small example.	**07**
Q.4	**(a)**	What do you mean by pseudoinstruction? Give any three examples of pseudoinstructions.	**03**
	(b)	State differences between hardwired control organization and microprogrammed control organization.	**04**
	(c)	Write a brief note on peripheral devices.	**07**
		OR	
Q.4	**(a)**	Write assembly language program to add two numbers.	**03**
	(b)	Discuss mircroprogrammed control organization in brief with neat diagram.	**04**
	(c)	Explain associative memory in detail.	**07**
Q.5	**(a)**	Write the difference(s) between arithmetic shift left and logical shift left instruction. Support your answer with small example.	**03**

(b) Perform addition operation for the following numbers using signed magnitude number format. (Write necessary assumptions if required)   **04**

$A = +7$ and $B = +3$

(c) Discuss any two mapping procedures when considering the organization of cache memory.   **07**

OR

Q.5 **(a)** Write a brief note on memory hierarchy.   **03**

(b) Explain Input-Output Processor in brief.   **04**

(c) Elaborate cache coherence problem.   **07**

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