Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India

(Autonomous College Affiliated to University of Mumbai)

Re Examination

July 2019

Max. Marks: 100 | **Duration: 3 Hrs**

Class: SE | **Semester: IV**

Course Code: IT42 | **Branch: IT**

Name of the Course: Computer Organization and Architecture

Instructions:

(1) All questions are compulsory

(2) Assume suitable data if necessary

(3) Draw neat diagram wherever required.

Q No.		Max. Marks	CO
Q.1 A	With neat diagram, describe the general structure of IAS computer.	10	CO1
Q.1 B.	Describe Harvard Architecture. Compare it with Von Neumann Architecture.	10	CO1
Q.2 A.	Draw the flowchart and Multiply 9 x -3 using Booth's Algorithm **OR** Draw the flowchart and Divide 14 by 3 using Non-Restoring Division algorithm.	10	CO2
Q.2 B.	How IEEE 754 Floating point represents number in Single and Double Precision? Give one example of each.	10	CO2
Q.3 A.	Explain different stages of Instruction cycle.Draw the Instruction cycle state diagram.	10	CO3
Q.3 B.	Explain any two methods for systematic design of hardwired control logic **OR** Compare RISC and CISC Processor. What are the applications of RISC	10	CO3
Q.4 A.	Consider a reference string: 4, 7, 6, 1, 7, 6, 1, 2, 7, 2. the number of frames in the memory is 3. Find out the number of page faults respective to Optimal Page Replacement Algorithm and LRU Page Replacement Algorithm.	10	CO4

Q.4 B.	Consider a computer with a 4-ways set-associative mapped cache of the following characteristics: a total of 1 MB of main memory, a word size of 1 byte, a block size of 128 words and a cache size of 8 KB. Compute the number of bits in the TAG, SET and WORD fields respectively. **OR** Consider six memory partitions of size 200 KB, 400 KB, 600 KB, 500 KB, 300 KB and 250 KB. These partitions need to be allocated to four processes of sizes 357 KB, 210 KB, 468 KB and 491 KB in that order. Perform the allocation of processes using Worst Fit Algorithm and Best Fit Algorithm.	10	CO4
Q.5 A.	What are the different types of Bus allocation Policies	10	CO6
Q.5 B.	Explain Data hazards with example. What are the types of data hazards? **OR** Explain Flynn's Classification in detail.	10	CO5