Sardar Patel Institute of Technology

Bhavan's Campus, Munshi Nagar, Andheri (West), Mumbai-400058, India
(Autonomous College Affiliated to University of Mumbai)

End Semester Examination

Max. Marks: 60
Class: SE
Branch: DSE IT/COMPUTER
Name of the Course: Computer Architecture and Organization

Duration: 2 Hrs.
Semester: III

Instruction:
(1) All questions are compulsory
(2) Draw neat diagrams
(3) Assume suitable data if necessary

Q. No.		Max. Marks	CO
1 a)	Distinguish Pipelining from Parallelism. Compare Uniprocessors and Multiprocessors	5	CO1
1 b)	What are the approaches to achieve the Performance/speed of the processor? What are the issues when the clock speed and logic density increases?	5	CO1
1 c)	Evaluate branch taken and branch not taken in instruction execution.	5	CO3
2 a)	What is the difference between the restoring and non-restoring method of division? Divide 16 by 5 using restoring division Algorithm.	7	CO2
2 b)	Describe the Booth's Algorithm. List two attractive features of Booth's Algorithm. Give an example of worst case of Booths Algorithm.	8	CO2
3 a)	Explain the basic organization of micro programmed control unit and the generation of control signals using micro program. OR Analyze the hazards caused by unconditional branching statements and pipelining a processor with an example.	7	CO3

3 b) i	A 4-way set-associative cache memory unit with a capacity of 16 KB is built using a block size of 8 words. The word length is 32 bits. The size of the physical address space is 4 GB. The number of bits for the TAG field is?	4	CO4
ii	Consider a set-associative cache of size 2KB (1KB=2^{10} bytes) with cache block size of 64 bytes. Assume that the cache is byte-addressable, and a 32-bit address is used for accessing the cache. If the width of the tag field is 22 bits, the associativity of the cache is?	4	
4 a)	What do you mean by Virtual memory? Discuss how paging helps in implementing virtual memory.	7	CO4
4 b)	Describe the Flynn's Classification and identify an example for each class in Flynn's classification.	8	CO5