M.E. First Semester (Computer Science & Infor. Tech.) (New-CGS)

13179 : Advanced Computer Architecture : 1 RNME 1

P. Pages : 2 | **AW - 3870**

Time : Three Hours | Max. Marks : 80

Notes : 1. Due credit will be given to neatness and adequate dimensions.
2. Assume suitable data wherever necessary.
3. Illustrate your answer necessary with the help of neat sketches.
4. Use of pen Black ink/refill only for writing the answer book.

1.	a)	Give Flynn's classification of various computer architectures. Clearly explain the features of each with conceptual diagrams.	7
	b)	Explain how memory addresses are specified and interpreted.	7
		OR	
2.	a)	Explain DLX architecture considering the register data types, addressing modes, operations and effectiveness.	7
	b)	Explain Locality of Reference and Memory Hierarchy.	7
3.	a)	Give the limitations of delayed branch scheduling and explain how do they arise?	7
	b)	Explain MIPS R 4000 performance.	6
		OR	
4.	a)	Compare control flow verses dataflow mechanism.	7
	b)	Explain how DLX pipeline can be extended to handle floating point operations.	6
5.	a)	Explain the software pipelining technique for uncovering parallelism among instructions.	7
	b)	What is dynamic scheduling? Explain it in brief with a scoreboard.	6
		OR	
6.	a)	Explain hardware based speculations. What are its advantages over software based speculations?	7
	b)	Differentiate between software pipelining and hardware pipelining.	6
7.	a)	Differentiate between. i) Cache and virtual memory & ii) Static & Dynamic RAM	4+4
	b)	How are virtual addresses mapped to a physical address? What is paging?	6
		OR	

8. a) Explain the following miss Rate reduction techniques. **14**

   i) Large Block size

   ii) Higher Associativity

   iii) Victim Caches

   iv) Pseudo - Associative caches

   v) Hardware prefetching of instruction and data

9. a) How are the buses classified? Describe bus arbitration mechanism in detail. **6**

   b) Explain the concept of virtual DMA. What are the problems associated with DMA using physically mapped I/O? **7**

OR

10. a) Explain the performance of Unix file system on different factors. **7**

    b) State and explain Little's law. **6**

11. a) Differentiate between **8**

    i) Connection oriented communication and connectionless communication.

    ii) Packet switching and circuit switching.

    b) What is a protocol suite? Explain TCP/IP an internetworking standard. **5**

OR

12. a) Differentiate between **6**

    i) Shared and switched media

    ii) Gateways and Bridges

    b) Discuss the performance parameter of interconnection networks. **7**

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