00161

B.TECH. COMPUTER SCIENCE AND ENGINEERING (BTCSVI)

Term-End Examination

December, 2012

BICS-022 : COMPUTER ARCHITECTURE

Time : 3 hours *Maximum Marks : 70*

Note : *Attempt **any seven** questions. All questions carry **equal** marks.*

1.	(a)	Discuss the difference between tightly coupled multiprocessors and loosely coupled multiprocessors.	**6**
	(b)	List the various memory issues in multicore processor based systems.	**4**
2.	(a)	Why does unrolling a loop often improve performance ?	**4**
	(b)	A hard disk with 20 platters has 4096 tracks/platter, 1024 sectors/track and 512 byte sectors. What is the total capacity ?	**6**
3.	(a)	Why is the data transfer slow in RAID level 6 scheme ?	**5**
	(b)	Why does a hypercube 64 processor network use a snoopy bus protocol and a 64 processor multistage network, a directory based protocol ?	**5**

4. (a) How many switch points are there in a cross-bar switch network that connects p processors to m memory modulus ? 5

(b) Why is it generally more convenient to use labels than actual addresses to specify the distinction of branch instructions ? 5

5. Show how a compiler would schedule the sequence of any operations for execution on a VL/W processor with 3 execution units. 10

6. (a) Show that there is a self routing with an example of fourth stage output 4 in a four stage delta-2 (means 2×2 switches) banyan network. 6

(b) Write a program loop, using a pointer and a counter, that clears to 0 the contents of hexadecimal locations 500 through 5FF. 4

7. (a) Describe in words and by block diagram how multiple matched words can be read out from an associative memory. 4

(b) Describe static scheduling with an example. 6

8. Show with timing diagrams instances of synchronous bus output to a slave from a bus master. 10

9. (a) Why is it important to differentiate between the peak bandwidth of a memory system and the actual bandwidth achieved during program execution ? 5

(b) Discuss various types of piplining hazards. 5

10. (a) Why do the majority of systems use virtual and physical page frames of same size ? 5

(b) Describe the general features of RISC and CISC instruction sets. 5