CBCS SCHEME

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17CS72

Seventh Semester B.E. Degree Examination, Dec.2023/Jan.2024
Advanced Computer Architecture

Time: 3 hrs. Max. Marks: 100

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Illustrate Flynn's classification with suitable diagrams. **(10 Marks)**

b. Distinguish the following with respect to node degree and diameter with an example:
i) Chordal ring and Barrel shifter
ii) Hypercubes and cube connected cycles. **(10 Marks)**

OR

2 a. Identify the mismatch between hardware and software parallelism when you have 4 loads and 4 arithmetic operations. **(10 Marks)**

b. List and explain the speedup performance laws with respect to parallel processing. **(10 Marks)**

Module-2

3 a. Compare architectural distinction with respect to characteristics of CISC and RISC architectures. **(10 Marks)**

b. Demonstrate register window overlapping in SUN Microsystems SPARC with diagram. **(10 Marks)**

OR

4 a. Explain Hierarchical memory technology with respect to 5 parameters with diagram. **(10 Marks)**

b. Explain paging and show how translation look-aside buffer is used to access page with diagram. **(10 Marks)**

Module-3

5 a. Draw backplane multiprocessor system and illustrate it with board and bus connections and usage. **(10 Marks)**

b. Distinguish the following with respect to master and slave communication with a timing diagram.
i) Broad call and broadcast
ii) Synchronous and Asynchronous timing. **(10 Marks)**

OR

6 a. Demonstrate block replacement of caches by direct mapping cache method with diagram. **(10 Marks)**

b. Define memory interleaving, with diagram. Explain m-way interleaving with respect to low order and high-order. **(10 Marks)**

Module-4

7	a.	Explain cross-point switch design with neat diagram.	(10 Marks)
	b.	Distinguish Omega networks without blocking and with blocking.	(10 Marks)

OR

8	a.	Illustrate synchronization mechanism using state diagram by write through, write back.	(10 Marks)
	b.	List and explain vector instruction types.	(10 Marks)

Module-5

9	a.	Briefly explain 5 programming models used in parallel programming.	(10 Marks)
	b.	In detail explain optimizing compilers for parallelism.	(10 Marks)

OR

10	a.	Discuss a model of a typical processor with diagram.	(10 Marks)
	b.	Demonstrate Tomasulo's algorithm with suitable example.	(10 Marks)

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