

CBCS SCHEME

USN

20SCS324

Third Semester M.Tech. Degree Examination, Jan./Feb. 2023

Multicore Architecture and Programming

Time: 3 hrs.

Max. Marks:100

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

Module-1

- 1 a. Explain classes of computers. (06 Marks)
b. Explain different trends in technology. (05 Marks)
c. Explain measuring, reporting and summarizing performance. (09 Marks)

OR

- 2 a. Explain system view of threads. (06 Marks)
b. Write a program to demonstrate use of threads using open MP. (08 Marks)
c. Explain different types of virtual environment virtualizations. (06 Marks)

Module-2

- 3 a. Explain major forms of decomposition. (06 Marks)
b. Explain parallel programming patterns. (10 Marks)
c. Write a 'C' program for error diffusion algorithm. (04 Marks)

OR

- 4 a. Explain different lock types. (08 Marks)
b. Explain condition variables and messages. (06 Marks)
c. Explain different types of dead locks. (06 Marks)

Module-3

- 5 a. Explain symmetric shared memory architectures. (06 Marks)
b. Explain state transition diagram for cache coherence protocol. (09 Marks)
c. Explain limitations in symmetric shared memory multiprocessors. (05 Marks)

OR

- 6 a. Explain cache coherence in distributed memory multiprocessor with a neat diagram. (10 Marks)
b. Explain issues in cache coherence, performance and synchronization. (10 Marks)

Module-4

- 7 a. Explain any 2 challenges in threading a loop. (10 Marks)
b. Explain Barrier and Nowait, Data copy in and out in performance oriented programming. (10 Marks)

OR

- 8 a. Explain openMP library functions with an example. (10 Marks)
b. Explain Task Execution model with a neat diagram. (10 Marks)

Module-5

- 9 a. Explain Data Races and Dead locks with an example. (10 Marks)
b. Explain solutions for heavily contended locks. (10 Marks)

OR

- 10 a. Write a 'C' program for lockless implementation of linked stack in ABA problem. (06 Marks)
b. Explain different memory issues. (09 Marks)
c. Explain False sharing in cache related issues. (05 Marks)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg, 42+8=50, will be treated as malpractice.
