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Reg. No. : | | | | | | | | | | | | |

Question Paper Code : 50403

B.E./B.Tech. DEGREE EXAMINATION, NOVEMBER/DECEMBER 2017
Eighth Semester
Computer Science and Engineering
CS 6801 – MULTI-CORE ARCHITECTURES AND PROGRAMMING
(Regulations 2013)

Time : Three Hours | Maximum : 100 Marks

Answer ALL questions

PART – A **(10×2=20 Marks)**

1. Differentiate symmetric memory architecture and distributed memory architecture.
2. What are multiprocessor systems and give their advantages.
3. What are conditions under which a deadlock situation may arise ?
4. Define thread. Mention the use of swapping.
5. Define message queue.
6. What is termed as initial task region ?
7. List the restrictions to work sharing constructs.
8. Write the performance evaluation methods is distributed memory programming.
9. What is race condition ?
10. What are the features of distributed memory ?

PART – B **(5×16=80 Marks)**

11. a) Explain in detail , the SIMD and MIMD systems. Discuss briefly the performance issues of multi-core processors.

(OR)

b) Define Cache Coherence Problem. What are the 2 main approaches to cache coherence ? Describe working of snooping cache coherence and explain describe directory based coherence.

12. a) Explain the various approaches to Parallel Programming.

(OR)

b) What is a data race ? What are the tools used for detecting data races ? How to avoid data races ?

13. a) Illustrate an OpenMP execution model with an example.

(OR)

b) Explain in detail about the handling loops in parallel operations.

14. a) What is MPI ? Write a program "hello, world" that makes some use of MPI. How to compile and execute MPI programs ?

(OR)

b) Differentiate collective and point-to-point communication and draw the architecture for tree structured communication.

15. a) What does the n-body problem do ? Give the pseudocode for serial n-body solver and for computing n-body forces.

(OR)

b) How will you parallelize the reduced solver using OpenMP ? How will you parallelize the reduced solver using OpenMP ?