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 ?
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 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?