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Question Paper Code : 70399

B.E./B.Tech. DEGREE EXAMINATIONS, NOVEMBER/DECEMBER 2021.

Eighth Semester

Computer Science and Engineering

CS 6801 – MULTI-CORE ARCHITECTURES AND PROGRAMMING

(Regulations 2013)

(Common to : PTCS 6801 – Multi-core Architectures and Programming for
B.E. (Part-Time) – Computer Science and Engineering – Seventh Semester
(Regulations– 2014))

Time : Three hours

Maximum : 100 marks

Answer ALL questions.

PART A — (10 × 2 = 20 marks)

1. Define Vector instructions.
2. What do you mean by snooping cache coherence?
3. How to avoid data races?
4. Define Critical Region.
5. State the trapezoidal rule in OpenMP.
6. What are loop-carried dependencies?
7. Give the commands for MPI.
8. Define Broadcast and butterfly MPI.
9. Differentiate collective vs. point-to-point communications.
10. Write the Pseudocode for a recursive solution to TSP using depth-first search.

PART B — (5 × 13 = 65 marks)

11. (a) (i) Outline the distributed shared-memory architecture with a diagram. (8)
(ii) Present an outline of parallel program design. (5)
Or
(b) Highlight the limitations of single core processors and outline how multicore architectures overcome these limitations. (13)
12. (a) Describe Synchronization primitive in detail.
Or
(b) Describe the Communication between Threads and Processes.
13. (a) Explain the Issues in Shared Memory Systems.
Or
(b) Explain in detail about the pseudocode for recursive solution and non recursive solution to TSP using depth first search.
14. (a) (i) Explain tree structured communication. (8)
(ii) What are the differences between point to point and collective communication? (5)
Or
(b) (i) Explain the performance evaluation of MPI programs. (8)
(ii) What are the performance issues in multi core processors? (5)
15. (a) (i) Describe collective vs. point to point communication. (8)
(ii) Describe the Parallelizing the tree-search program using OpenMP. (5)
Or
(b) Explain about tree search with Pseudo-code for a recursive solution to TSP using depth-first search.

PART C — (1 × 15 = 15 marks)

16. (a) Explain with program for point-to-point communication and collective communication.
Or
(b) Write the tree search program both in OpenMp and MPI.
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