Code No.: CS8233PE

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CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
I–M.TECH–II–Semester End Examinations (Regular) - September- 2022
PARALLEL COMPUTING
(CSE)

[Time: 3 Hours]   **[Max. Marks: 70]**

Note: 1. Answer any _FIVE_ questions. Each question carries 14 marks.
        2. All questions carry equal marks.
        3. Illustrate your answers with NEAT sketches wherever necessary.

                                                             5X14=70

1.   a)   Discuss the various Parallel Programming Models in detail.   [7M]
    b)   What are the problems encountered in Superscalar Architecture? Discuss.   [7M]

2.   a)   What are the various principles required to design the Parallel Algorithms? Explain in brief.   [7M]
    b)   Elaborate on the following performance analysis tools: [7M]
        i. Visualization.
        ii. Communication Matrix.

3.   a)   Define MPI. Discuss the features of MPI-1 and MPI-2.   [7M]
    b)   How synchronization is achieved through Wait Protocol and Sole Access Protocol? Discuss.   [7M]

4.   a)   Explain Radix Sort Algorithm.   [7M]
    b)   Explain Matrix -Matrix Multiplication.   [7M]

5.   a)   With the help of a diagram, illustrate the concept of sorting using Comparators for the unsorted list having the following elements: 4, 5, 9, 11, 95, 7, 23, 46, 39, 12, 6, 18.   [7M]
    b)   Explain Dijkstra's Algorithm using suitable example.   [7M]

6.   a)   Explain the following MPI functions with their syntax: [7M]
        i. Scatter( )
        ii. Gather( )
        iii. Reduce( )
    b)   Discuss the PRAM model. Which PRAM model can be used to execute any other PRAM algorithm and how it can be used?   [7M]

7.   a)   Explain the various classifications of parallel computers in detail.   [7M]
    b)   What are the factors causing the presence of overheads in Parallel Computers? Elaborate it.   [7M]

8.   a)   Why do you require Synchronization? How is low level synchronization Implemented?   [7M]
    b)   Discuss the following with respect to the recent trends in Parallel Computing: [7M]
      • Hyper-threading
      • Shared memory model
      • Message passing model
      • Grid computing.

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