19/8

Code No.: R22CS58111PE | R22 | H.T.No. | | | 8 | R | | | | | |

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
I–M.TECH–I–Semester End Examinations (Supply) - August- 2024
HIGH PERFORMANCE COMPUTING (PE-I)
(CSE)

[Time: 3 Hours] **[Max. Marks: 60]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 10 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART-A **(10 Marks)**

1. a) Provide examples of real-world projects or research initiatives that have utilized the Globus GT3 Toolkit. [1M]
   b) List the primary goals and functionalities of Data Grid. [1M]
   c) Define Parallel Computing. [1M]
   d) What are the challenges of Parallel Computing? [1M]
   e) Provide examples of commodity components commonly used in Clusters. [1M]
   f) List common challenges faced in Cluster administration. [1M]
   g) Define malleable jobs with dynamic parallelism. [1M]
   h) Give two examples of lightweight communication protocols. [1M]
   i) Why Java is a popular programming language for Pervasive Computing devices. [1M]
   j) What are the advantages and disadvantages of Pervasive Computing? [1M]

PART-B **(50 Marks)**

2. Discuss the challenges and strategies involved in managing and maintaining a virtual organization (VO). How do VOs enhance collaboration and resource sharing? [10M]

OR

3. Draw the Grid architecture and explain each layer in detail. [10M]

4. Describe the concept of hybrid Parallel Programming in detail. [10M]

OR

5. How do threads enable parallelism, and what are the key considerations in multithreading? [10M]

6. What are the fundamental design principles of scalable parallel computer architectures and elaborate in detail. [10M]

OR

7. Explain the different classifications of Cluster Computing systems in detail. [10M]

8. Explain why job management is crucial in Cluster Computing Environments? What are the primary challenges and requirements for effective job management? [10M]

OR

9. Compare traditional communication mechanisms with lightweight messaging systems. [10M]

10. Explain the importance of security in device connectivity for Pervasive Computing. What are the common security threats and vulnerabilities? [10M]

OR

11. Describe the key aspects of device management in Pervasive Computing. [10M]

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