

**CMR ENGINEERING COLLEGE: : HYDERABAD  
UGC AUTONOMOUS**

**I–M.TECH–I–Semester End Examinations (Supply) - February- 2026  
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) Identify the need for the concept of Virtual Organizations. [1M]
- b) What is the role of the Globus GT3 Toolkit in Grid Computing? [1M]
- c) What is the role of Shared-Address Space Platforms? [1M]
- d) Differentiate between Data Parallelism and Task Parallelism. [1M]
- e) Identify key components required to set up a Beowulf cluster. [1M]
- f) Define Cluster Computing. [1M]
- g) What are the traditional communication mechanisms used in clusters? [1M]
- h) Explain the importance of latency and bandwidth in communication performance. [1M]
- i) What are the key features of pervasive computing infrastructure? [1M]
- j) What are the major hardware technologies used in pervasive computing? [1M]

**PART-B****(50 Marks)**

2. Explain Grid Computing Architecture and its relation to Distributed Technologies. [10M]
- OR**
3. Describe the various components of the Globus GT3 Toolkit. [10M]
4. Analyze the impact of communication overhead on parallel performance. [10M]
- OR**
5. Explain different types of Parallel Computing architectures. [10M]
6. Describe the architecture of a low-cost parallel computing cluster. [10M]
- OR**
7. Compare and contrast Cluster Computing with Grid Computing. [10M]
8. Analyze the trade-offs between batch scheduling and real-time scheduling in clusters. [10M]
- OR**
9. Describe the architecture of job and resource management systems. [10M]
10. Demonstrate the working of a real-time pervasive computing system. [10M]
- OR**
11. Compare different security mechanisms used in pervasive computing environments. [10M]

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