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Paper Id: 231352 Roll No.

B.Tech.
(SEM VII) THEORY EXAMINATION 2022-23
HIGH PERFORMANCE COMPUTING

Time: 3 Hours *Total Marks: 100*

Note: Attempt all Sections. If you require any missing data, then choose suitably.

SECTION A

1. Attempt *all* questions in brief. **2x10 = 20**

(a) Discuss the importance of High-Performance Computing.
(b) Give the real and specific problem that underlies the Grid concept.
(c) List the two dominating programming language groups for HPC.
(d) Elaborate High Performance Application Development Environment.
(e) Determine the key services of Single System Image (SSI)
(f) Explain the goals of a cluster middleware.
(g) Give the issues in parallel and distributed paradigms.
(h) Examine the concept of multiprogramming.
(i) Describe cloud its models.
(j) Discuss the different services associated with clouds.

SECTION B

2. Attempt any *three* of the following: **10x3 = 30**

(a) Distinguish between Peer-to-Peer Computing and Internet Computing.
(b) Elaborate the architecture of Open Grid Services.
(c) Analyze Resource Management and Scheduling of cluster computing.
(d) Explain the application domains of Beowulf Cluster.
(e) Write short notes on:
  i) Cyber infrastructure
  ii) SLA
  iii) Virtualization
  iv) SIMD

SECTION C

3. Attempt any *one* part of the following: **10x1 = 10**

(a) Elaborate the different types of Grids along with their components.
(b) Describe the Grid Computing Model and its protocols. .

4. Attempt any *one* part of the following: **10 x1 = 10**

(a) Explain the significance of GLOBUS toolkit with applications.
(b) Describe various security considerations in Open Grid Services architecture.

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5. **Attempt any *one* part of the following:** **10x1 = 10**

(a) Describe Cluster Systems and its components. Explain its architecture.

(b) Explain various clusters classifications along with their applications.

6. **Attempt any *one* part of the following:** **10x1 = 10**

(a) Distinguish between PVM and MPI.

(b) Analyze the Beowulf cluster. Describe the Beowulf System Architecture in brief.

7. **Attempt any *one* part of the following:** **10x1 = 10**

(a) Explain how the Virtual Machines (VMs) constitute the basic building blocks of a cloud computing infrastructure?

(b) Illustrate Cloud Computing Architecture with its components in brief.

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