

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.

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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