

GRID COMPUTING

Paper Code: ETIT-425
Paper: Grid Computing

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INSTRUCTIONS TO PAPER SETTERS:

MAXIMUM MARKS: 75

1. Question No. 1 should be compulsory and cover the entire syllabus. This question should have objective or short answer type questions. It should be of 25 marks.
2. Apart from Question No. 1, rest of the paper shall consist of four units as per the syllabus. Every unit should have two questions. However, student may be asked to attempt only 1 question from each unit. Each question should be of 12.5 marks.

Objective: To enable students to understand the basic concepts of Grid computing with performance issues, Web services, monitoring, optimization, security and resource management.

UNIT I

Fundamentals: Overview of Distributed Systems and its variants like grid computing, cloud computing, Cluster Computing etc. Introduction to Grid Computing, its components (Functional View, A Physical View, Service View), key issues and benefits, Characterization and Architecture of Grid, Grid - Types, Topologies, Components, Layers. Grid Computing Standards and Applications.

[T1, T2] [No. of Hours: 11]

UNIT II

Web Services and Grid Monitoring: OGSA and WSRF: Overview, Services, Schema and architecture. Grid Monitoring Systems: Overview, architecture, GridICE, JAMM, MDS and Other monitoring Systems (Ganglia and GridMon), Grid portals.

[T1, T2] [No. of Hours: 11]

UNIT III

Grid Security and Resource Management:

Grid Security: A Brief Security Primer, PKI, X509 Certificates, Grid Security

Grid Scheduling and Resource Management: Scheduling Paradigms, Working principles of Scheduling, A Review of Condor, SGE, PBS and LSF-Grid Scheduling with QoS.

[T1, T2] [No. of Hours: 11]

UNIT IV

Data Management and Grid Middleware-

Data Management: Categories and Origins of Structured Data, Data Management, Challenges, Database integration with grid, Architectural Approaches-Collective Data Management Services, Federation Services . Grid Middleware: List of globally available Middlewares, Globus Toolkit.

[T1, T2] [No. of Hours: 11]

Text Books:

[T1] Maozhen Li, Mark Baker, The Grid Core Technologies, John Wiley & Sons.

[T2] Joshy Joseph & Craig Fellenstein, "Grid Computing", Pearson 2004.

[T3] Ian Foster & Carl Kesselman, The Grid 2 – Blueprint for a New Computing Infrastructure, Morgan Kaufman – 2004.

References Books:

[R1] C.S. R. Prabhu, "Grid and Cluster Computing", PHI 2014

[R2] Barry Wilkinson, "Grid Computing", CRC Press.

[R3] Joel M. Crichlow, "Distributed Systems – Computing over Networks", PHI, 2014.

[R4] RajKumar Buyya, "High Performance Cluster Computing – Volume I Architectures and Systems", Pearson, 2013.