SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES (AUTONOMOUS)

QUESTION BANK

Year / Semester: III B.Tech VI Semester **Regulation: R23**

Subject and Code: CLOUD COMPUTING (23CSE361T)

SYLLABUS

UNIT-1:BASICS OF CLOUDCOMPUTING (9)
Introduction to cloud computing: Introduction, Character is tics of cloudcomputing, Cloud Models, Cloud Services Examples, Cloud Based services and applications Cloud concepts and Technologies: Virtualization, Load balancing, Scalability and Elasticity, Deployment, Replication, Monitoring, Software defined, Network function virtualization, Map Reduce, Identity and Access Management, services level Agreements, Billing. Cloud Services and Plat forms: Compute Services, Storage Services, Data, base Services, Application services, Content delivery services Analytics Services, Deployment and Management Services, Identity and Access Management services, Open SourcePrivate Cloud software.

UNIT – 2 : HADOOP AND PYTHON (9)
Hadoop Map Reduce: Apache Hadoop, Hadoop Map Reduce Job Execution, Hadoop Schedulers, Hadoop Clusterset up. Cloud Application Design: Reference Architecture for Cloud Applications, Cloud Application Design Methodologies, Data Storage Approaches. Python Basics: Introduction, Installing Python, Python data Types & Data Structures,Controlflow,Function,Modules,Packages,Filehandling,Date/Time Operations, Classes.

UNIT -3 : PYTHON FOR CLOUD COMPUTING (9)
Python for Cloud: Python for Amazon web services, Python for Google Cloud Platform, Python for windows Azure, Python for Map Reduce, Python packages of Interest, Python web Application Frame work, Designing a REST ful web API. Cloud Application Developmentin Python: Design Approaches, Image Processing APP, Document Storage App, Map Reduce App, Social Media Analytics App.

UNIT – 4: BIG DATA, MULTIMEDIA AND TUNING (9)
BigDataAnalytics:Introduction,ClusteringBigData,ClassificationofBigdata Recommendation of Systems. MultimediaCloud:Introduction,CaseStudy:LivevideoStreamingApp,Streaming Protocols, case Study: Video Trans coding App.
Cloud Application Bench marking and Tuning: Introduction,WorkloadCharacter is tics, Application Performance Metrics, Design Considerations for a Bench marking Methodology, Bench marking Tools, Deployment Prototyping, Load Testing & Bottleneck Detection case Study, Hadoop bench marking case Study.

UNIT-5: APPLICATIONS AND ISSUES IN CLOUD (9) Cloud Security: Introduction, CSA Cloud Security Architecture, Authentication, Authorization, Identity Access Management, Data Security, Key Management, Auditing. Cloud for Industry, Health care & Education: Cloud Computing for Health care, Cloud computing for Energy Systems, Cloud Computing for Transportation Systems, Cloud Computing for Manufacturing Industry, Cloud computing for Education. Migrating in to a Cloud: Introduction, Broad Approaches to migrating into the cloud, the seven– step model of migration in to a cloud. Organizational readiness and Change Management in The Cloud Age: Introduction, Basic concepts of Organizational Readiness, Drivers for changes: A frame work to comprehend the competitive environment, common change management models, change management maturity models, Organizational readiness self– assessment Legal Issues in Cloud Computing: Introduction, Data Privacy and security Issues, cloud contracting models, Jurisdictional issues raised by virtualization and at a location, commercial and business considerations, Special Topics.

Prepared by **R. ESWAR REDDY**

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES
(AUTONOMOUS)

QUESTION BANK

Year / Semester: III B.Tech VI Semester **Regulation: R23**

Subject and Code: CLOUD COMPUTING (23CSE361T)

Max Marks: 10

S.No.	CO	Questions	BT
Unit I: (BASICS OF CLOUDCOMPUTING)			
1	**1**	**a.** Explain the essential characteristics of cloud computing as defined by NIST. **b.** Compare on-demand self-service and broad network access with suitable examples.	**L4**
2	**1**	Analyze the differences between public, private, hybrid, and community cloud deployment models, highlighting advantages and challenges for each.	**L4**
3	**1**	Evaluate the role of virtualization in enabling cloud computing, discussing types of virtualization (server, network, storage) and their impact on resource utilization.	**L5**
4	**1**	Explain how load balancing and auto-scaling contribute to elasticity and scalability in cloud environments, with examples from real cloud platforms.	**L3**
5	**1**	Design a scenario where Software-Defined Networking (SDN) and Network Function Virtualization (NFV) can be applied in a cloud data center to improve efficiency.	**L5**
6	**1**	Analyze the importance of Service Level Agreements (SLAs) in cloud services, including key metrics like availability, performance, and penalties for violations.	**L4**
7	**1**	Compare compute, storage, database, and analytics services offered by major cloud providers (e.g., AWS, Azure, GCP), citing specific examples.	**L4**
8	**1**	Evaluate the suitability of open-source private cloud software (e.g., OpenStack, Eucalyptus) for an enterprise compared to proprietary solutions.	**L5**
9	**1**	a. Discuss the billing mechanisms in cloud computing (pay-as-you-go, reserved instances) b. analyze their impact on cost management for organizations.	**L4**
10	**1**	Apply the concepts of replication and monitoring to ensure high availability in a cloud-based application, explaining tools and strategies.	**L3**
11	**1**	Analyze how Identity and Access Management (IAM) services enhance security and compliance in multi-tenant cloud environments.	**L4**

Prepared by **R. ESWAR REDDY**

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES
(AUTONOMOUS)

QUESTION BANK

Year / Semester: III B.Tech VI Semester **Regulation: R23**

Subject and Code: CLOUD COMPUTING (23CSE361T)

S.No.	CO	Questions	BT
Unit II: (HADOOP AND PYTHON)			
1	**2**	**a.** Describe the architecture and components of Apache Hadoop. **b.** Explain the MapReduce job execution flow with a diagram.	**L4**
2	**2**	Analyze the role of Hadoop schedulersin managing resources in a multi-user cluster environment.	**L4**
3	**2**	Briefly explain Hadoop cluster. including hardware considerations, configuration, and common challenges.	**L5**
4	**2**	Compare different data storage approaches (e.g., HDFS vs. cloud object storage) for cloud applications in terms of scalability and fault tolerance.	**L4**
5	**2**	Design a reference architecture for a scalable cloud application using Hadoop, incorporating data ingestion, processing, and output layers.	**L5**
6	**2**	Explain key Python data structures (lists, dictionaries, sets, tuples) and apply them to solve a data processing problem relevant to cloud/big data.	**L3**
7	**2**	Analyze the use of functions, modules, and packages in Python for building modular code in cloud application development.	**L4**
8	**2**	Evaluate Python's file handling and date/time operations for processing log data in a cloud-based analytics application.	**L5**
9	**2**	Discuss object-oriented programming in Python and its application in designing cloud utilities.	**L4**
10	**2**	Apply control flow statements and exception handling in Python to implement a script for monitoring cloud resource usage.	**L3**
11	**2**	Compare Python installation methods and analyze their suitability for cloud development environments	**L4**

Prepared by **R. ESWAR REDDY**

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES
(AUTONOMOUS)

QUESTION BANK

Year / Semester: III B.Tech VI Semester **Regulation: R23**

Subject and Code: CLOUD COMPUTING (23CSE361T)

S.No.	CO	Questions	BT
Unit III: (PYTHON FOR CLOUD COMPUTING)			
1	**3**	a. Explain how Python SDKs (Boto3, Google Cloud Client Library) are used to interact with AWS and GCP services. b. Provide code snippets for basic operations.	**L4**
2	**3**	Analyze the differences in using Python for AWS, Azure, and Google Cloud Platform in terms of APIs, authentication, and service coverage.	**L4**
3	**3**	Evaluate Python packages (e.g., Boto3, google-cloud-storage, azure-storage-blob) for cloud storage and compute task.	**L4**
4	**3**	Design a RESTful web API using a Python framework for a cloud-based microservice	**L5**
5	**3**	Apply Python for MapReduce-style processing compare it to native Hadoop MapReduce.	**L3**
6	**3**	Develop approaches for building an image processing app in Python on cloud (using Pillow/OpenCV and cloud storage)	**L5**
7	**3**	Evaluate the implementation of a social media analytics app in Python using cloud services for data ingestion and processing.	**L4**
8	**3**	Discuss Python web frameworks (Django/Flask) for cloud application development and their deployment considerations.	**L5**
9	**3**	Apply Python scripting to automate deployment and management of cloud resources (e.g., via Terraform or cloud SDKs).	**L4**
10	**3**	Compare serverless vs. traditional approaches for Python cloud apps and analyze cost/performance trade-offs.	**L3**
11	**3**	Analyze design patterns for a document storage application in Python integrated with cloud object storage (S3/GCS/Blob).	**L4**

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES
(AUTONOMOUS)

QUESTION BANK

Year / Semester: III B.Tech VI Semester **Regulation: R23**

Subject and Code: CLOUD COMPUTING (23CSE361T)

S.No.	CO	Questions	BT
Unit IV: (BIG DATA, MULTIMEDIA AND TUNING)			
1	**4**	**a.** Explain clustering and classification techniques in big data analytics. **b.** Discuss their applications in recommendation systems.	**L4**
2	**4**	Analyze the architecture and challenges of multimedia cloud computing for live video streaming.	**L4**
3	**4**	Evaluate streaming protocols (HLS, DASH) and their role in a live video streaming app on cloud.	**L5**
4	**4**	Design a video transcoding application on cloud, discussing tools, parallelism, and cost optimization.	**L5**
5	**4**	Apply performance metrics (throughput, latency, CPU utilization) to evaluate cloud application benchmarking.	**L3**
6	**4**	Analyze workload characteristics and their impact on designing a benchmarking methodology for cloud apps.	**L4**
7	**4**	Discuss popular benchmarking tools (e.g., Apache JMeter, YCSB) for load testing cloud applications.	**L4**
8	**4**	Evaluate bottleneck detection techniques during load testing and prototyping in cloud deployments	**L5**
9	**4**	Compare Hadoop benchmarking case studies (e.g., HiBench, BigBench) and their relevance to performance tuning.	**L4**
10	**4**	Apply deployment prototyping strategies to identify and resolve performance issues in a big data cloud app.	**L3**
11	**4**	Analyze design considerations for tuning big data applications (e.g., parameter optimization in Hadoop/Spark) on cloud.	**L4**

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES
(AUTONOMOUS)

QUESTION BANK

Year / Semester: III B.Tech VI Semester **Regulation: R23**

Subject and Code: CLOUD COMPUTING (23CSE361T)

S.No.	CO	Questions	BT
Unit V: (APPLICATIONS AND ISSUES IN CLOUD)			
1	**5**	**a.** Explain the CSA Cloud Security Architecture reference model. **b.** Discuss key controls for authentication and authorization.	**L4**
2	**5**	Analyze data security and key management challenges in cloud environments, with mitigation strategies.	**L4**
3	**5**	Evaluate the application of cloud computing in healthcare (e.g., EHR storage, telemedicine) and associated benefits/risks.	**L5**
4	**5**	Discuss how cloud supports energy, transportation, manufacturing, and education sectors with case examples.	**L4**
5	**5**	Design the seven-step model for migrating an on-premise application to the cloud, evaluating each step.	**L5**
6	**5**	Analyze organizational readiness factors and change management models for adopting cloud technologies.	**L4**
7	**5**	Apply a change management maturity model to assess an organization's preparedness for cloud transformation.	**L3**
8	**5**	Evaluate legal issues in cloud computing, including data privacy, jurisdictional challenges, and contracting models.	**L5**
9	**5**	Discuss auditing and compliance in cloud security, including tools and best practices.	**L4**
10	**5**	Analyze broad approaches to cloud migration (rehost, refactor, etc.) and recommend one for a legacy enterprise system.	**L4**
11	**5**	Evaluate special topics in cloud legal issues (e.g., data sovereignty, vendor lock-in) and propose mitigation frameworks.	**L5**

Note: L1-Remembering, L2-Understanding, L3-Applying, L4-Analyzing, L5-Evaluating, and L6-Creating

Prepared by **R. ESWAR REDDY**

SREENIVASA INSTITUTE OF TECHNOLOGY AND MANAGEMENT STUDIES (AUTONOMOUS)

QUESTION BANK

Year / Semester: III B.Tech VI Semester **Regulation: R23**

Subject and Code: CLOUD COMPUTING (23CSE361T)

Instruction to Faculty Members:

The Six Levels of Bloom's Taxonomy:

1. **Remembering:** Retrieving, recognizing, and recalling relevant knowledge from long-term memory (e.g., list, define, name, locate).
2. **Understanding:** Constructing meaning, explaining ideas, or concepts (e.g., summarize, interpret, classify, compare).
3. **Applying:** Using information in new situations or implementing procedures to solve problems (e.g., solve, use, demonstrate, implement).
4. **Analyzing:** Breaking material into constituent parts, determining how the parts relate to one another and to an overall structure (e.g., contrast, categorize, distinguish, diagram).
5. **Evaluating:** Making judgments based on criteria and standards through checking and critiquing (e.g., judge, critique, justify, defend, argue).
6. **Creating:** Putting elements together to form a coherent or functional whole; reorganizing elements into a new pattern or structure (e.g., design, construct, develop, formulate).

91,60,95, 87