

SRM VALLIAMMAI ENGINEERING COLLEGE

(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF INFORMATION TECHNOLOGY

QUESTION BANK



VII SEMESTER

1908701 – CLOUD COMPUTING

Regulation – 2019

Academic Year 2025-2026(Odd Semester)

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SUBJECT : 1908701-Cloud Computing

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UNIT I INTRODUCTION

Introduction to Cloud Computing – Definition of Cloud – Evolution of Cloud Computing – Underlying Principles of Parallel and Distributed Computing – Cloud Characteristics – Elasticity in Cloud – On-demand Provisioning.

PART – A

Q. No.	Questions	BT Level	Competence
1	Who are the leading cloud service providers in the industry?	BTL1	Remembering
2	What is Grid Computing?	BTL2	Understanding
3	Why do IT companies prefer Cloud Computing over traditional IT infrastructure?	BTL2	Understanding
4	Mention the four key elements in parallel and distributed computing.	BTL1	Remembering
5	List the most prominent parallel programming approaches.	BTL1	Remembering
6	Define Cloud Computing.	BTL1	Remembering
7	Compare Parallel Computing and Centralized computing.	BTL1	Remembering
8	What are the different types of cloud services?	BTL1	Remembering
9	What are the different types of parallelism in parallel computing?	BTL1	Remembering
10	Difference between the high-performance computing and high throughput computing.	BTL2	Understanding
11	Name the essential characteristics of cloud computing.	BTL1	Remembering
12	Give the advantages of cloud computing.	BTL2	Understanding
13	Highlight the importance of the term “cloud computing”.	BTL2	Understanding
14	Identify any two advantages of distributed computing.	BTL2	Understanding
15	Bring out the differences between private cloud and public cloud.	BTL2	Understanding
16	Infer the evolutionary trend towards distributed and cloud computing.	BTL2	Understanding
17	What are the characteristics of cloud architecture that separates it from traditional one?	BTL1	Remembering
18	How does cloud elasticity differ from cloud scalability?	BTL2	Understanding
19	Outline the elasticity in cloud.	BTL2	Understanding
20	Mention the difference between elasticity and scalability in cloud computing.	BTL2	Understanding
21	Specify few drawbacks of grid computing.	BTL2	Understanding
22	How is On Demand provisioning of resources applied in cloud computing?	BTL2	Understanding
23	Depict the importance of on demand provisioning in e-commerce applications.	BTL1	Remembering
24	Name the two types of resource provisioning used in on-demand provisioning.	BTL1	Remembering

PART – B				
Q. No.	Questions	Marks	BT Level	Competence
1	i) Describe about cloud components with neat diagram. ii) Explain in detail about hardware evolution in computer generations.	6 7	BTL3 BTL4	Applying Analyzing
2	Explain the concept of cloud computing. How is it different from traditional computing models?	13	BTL4	Analyzing
3	Illustrate about the elements of parallel computing with neat diagram.	13	BTL3	Applying
4	Explain in detail the evolution of Cloud Computing from traditional computing models. Highlight the key milestones and technological advancements that led to the development of modern cloud infrastructure.	13	BTL3	Applying
5	Illustrate the various hardware architectures used in parallel processing with a neat diagram. Analyze how each architecture supports parallel computation.	13	BTL3	Applying
6	Outline the differences between Distributed Computing and Parallel Computing. Explain each with neat diagram.	13	BTL3	Applying
7	i) Compare the on-premises data center management with cloud-based resource management and evaluate their pros and cons. ii) Apply the “house renting” analogy to differentiate SaaS, PaaS, and IaaS.	6 7	BTL3	Applying
8	i) Analyze the classification of elasticity solutions based on scope, policy, purpose, and method. ii) Examine the difference between horizontal and vertical scaling with block diagram support.	6 7	BTL4	Analyzing
9	Illustrate the working of elastic computing using any two real-time applications such as e-commerce, streaming, or ticket booking platforms.	13	BTL3	Applying
10	Illustrate the architecture of cloud computing with a neat diagram.	13	BTL3	Applying
11	Analyze the progression of Cloud Computing from traditional computing models. Discuss the key phases in its evolution and examine how each phase addressed limitations of the previous technologies.	13	BTL4	Analyzing
12	Explain in detail underlying principles of Parallel and Distributed Computing.	13	BTL4	Analyzing
13	Explain in detail about the trends towards Cloud Computing.	13	BTL4	Analyzing
14	Describe elasticity in cloud computing. How does it benefit organizations? Explain with real-time scenarios.	13	BTL3	Applying
15	Explain the importance of cloud computing and elaborate the different types of services offered by it.	13	BTL4	Analyzing
16	Explain in detail about characteristics of Cloud.	13	BTL4	Analyzing
17	Illustrate on-demand provisioning in cloud computing. Explain its types and benefits in modern applications.	13	BTL3	Applying
PART – C				
1	Explain in detail about hardware architecture of parallel processing with neat diagram.	15	BTL5	Evaluating
2	It is said, ‘cloud computing can save money’. What is your view? Can you name some open-source cloud computing platform databases? Explain any one database in detail.	15	BTL5	Evaluating
3	Design a cloud architecture for an enterprise-level application.	15	BTL6	Creating

4	Briefly explain each of the cloud computing services. Identify two cloud providers by company name in each service category.	15	BTL6	Creating
5	Evaluate the effectiveness of on-demand provisioning in cloud environments with a real-world use-case. Justify your evaluation with appropriate reasoning.	15	BTL5	Evaluating

UNIT II CLOUD ENABLING TECHNOLOGIES

Service Oriented Architecture – REST and Systems of Systems – Web Services – Publish-Subscribe Model – Basics of Virtualization – Types of Virtualizations – Implementation Levels of Virtualization – Virtualization Structures – Tools and Mechanisms – Virtualization of CPU – Memory – I/O Devices – Virtualization Support and Disaster Recovery.

PART – A

Q. No.	Questions	BT Level	Competence
1	List the four major characteristics to identify a service.	BTL1	Remembering
2	Define SOA.	BTL1	Remembering
3	Write the two major roles in SOA.	BTL2	Understanding
4	Define Web services.	BTL1	Remembering
5	Differentiate between service provider and service consumer.	BTL2	Understanding
6	Name the quality of service (QoS) aspects in SOA.	BTL1	Remembering
7	List the essential principles of SOA architecture.	BTL1	Remembering
8	Define REST and its working.	BTL1	Remembering
9	State the most relevant technologies supporting service computing.	BTL1	Remembering
10	What do you mean by systems of systems? Give examples.	BTL1	Remembering
11	Identify the role of Web services in cloud technologies.	BTL2	Understanding
12	State the purpose of Publish-Subscribe Model.	BTL2	Understanding
13	Specify the name of Web services tools.	BTL2	Understanding
14	Distinguish between physical and virtual clusters.	BTL2	Understanding
15	What are the benefits of virtualization in the context of cloud computing?	BTL1	Remembering
16	What is the need of virtualization need of multi-core processor?	BTL1	Remembering
17	How the data storage is classified in virtual environment?	BTL1	Remembering
18	Infer about Virtual machine monitor.	BTL2	Understanding
19	Mention the types of Virtualization.	BTL2	Understanding
20	“Although Virtualization is widely Accepted today, it does have its limits”. Comment on the statement.	BTL2	Understanding
21	How does the virtualization Support the Linux platform?	BTL1	Remembering
22	Outline the support of middleware for virtualization.	BTL2	Understanding
23	Differentiate Hardware Abstraction level and OS Level.	BTL1	Remembering
24	Define classification or taxonomy of virtualization at different levels.	BTL1	Remembering

PART – B

Q. No.	Questions	Marks	BT Level	Competence
1	Describe in detail about SOA and Web services.	13	BTL4	Analyzing
2	Classify the different types of virtualization used in cloud computing and explain how each type contributes to infrastructure efficiency and resource optimization.	13	BTL4	Analyzing
3	Classify the working of public subscribe model.	13	BTL4	Analyzing
4	Discuss in detail the components of SOA, including both functional and quality of service aspects, with a neat diagram.	13	BTL3	Applying
5	Explain how SOA facilitates platform independence and service reuse. Use relevant examples.	13	BTL4	Analyzing
6	Describe in detail about the REST a software architecture style for distributed systems.	13	BTL3	Applying

7	Explain in detail about para and full virtualization architectures.	13	BTL4	Analyzing
8	Analyze the importance of RESTful web services in cloud platforms such as AWS, Azure, and Google Cloud. How do they enhance interoperability and performance?	13	BTL4	Analyzing
9	Analyze the working of web services with suitable examples and explain the technologies involved (SOAP, WSDL, and UDDI).	13	BTL4	Analyzing
10	i) Explain about REST in detail. ii) Discuss fast deployment, effective scheduling and high performance virtual storage in detail.	7 6	BTL4	Analyzing
11	i) Illustrate in detail about the compiler support for para virtualization architecture. ii) Examine in detail about hardware support for virtualization and CPU virtualization.	6 7	BTL3 BTL4	Applying Analyzing
12	Explain in detail about virtualization tools and mechanism.	13	BTL3	Applying
13	Illustrate the migration steps and performance effects involved in live VM.	13	BTL3	Applying
14	Analyze in detail about the implementation level of virtualization.	13	BTL4	Analyzing
15	i) Explain how virtualization support can enhance disaster recovery process for a large enterprise. ii) Identify the support of virtualization Linux platform.	6 7	BTL4	Analyzing
16	Analyze how the virtualization technology supports the cloud computing.	13	BTL4	Analyzing
17	i) Point out the importance of memory virtualization. ii) Explain virtualization of I/O devices with an example.	6 7	BTL4	Analyzing
PART – C				
1	Evaluate how the Publish-Subscribe (Pub/Sub) model overcomes the limitations of synchronous message passing in distributed systems. Illustrate with a suitable real-time example.	15	BTL5	Evaluating
2	Explain the technologies available for the design of application by following Service Oriented Architecture (SOA).	15	BTL5	Evaluating
3	Explain the virtualization structure for i) Hypervisor and Xen Architecture ii) Binary Translation with Full Virtualization iii) Para-Virtualization with Compiler Support.	5 5 5	BTL5	Evaluating
4	Give the importance of Virtualization Support and Disaster Recovery.	15	BTL6	Creating
5	What is Virtualization? Describe full and para virtualization architectures. Compare and contrast them.	15	BTL5	Evaluating

UNIT III CLOUD ARCHITECTURE, SERVICES AND STORAGE				
Layered Cloud Architecture Design – NIST Cloud Computing Reference Architecture – Public, Private and Hybrid Clouds – IaaS – PaaS – SaaS – Architectural Design Challenges – Cloud Storage – Storage-as-a-Service – Advantages of Cloud Storage – Cloud Storage Providers – S3.				
PART – A				
Q. No.	Questions	BT Level	Competence	
1	Define public clouds.	BTL1	Remembering	
2	Write in brief on community cloud.	BTL1	Remembering	
3	Define IaaS.	BTL1	Remembering	
4	State the differences between PaaS and SaaS.	BTL1	Remembering	

5	Why do we need a hybrid cloud? Specify.	BTL1	Remembering
6	State the role of cloud auditor in cloud.	BTL1	Remembering
7	What are the different layers available in cloud architecture design?	BTL2	Understanding
8	What are the various components of NIST Cloud computing reference architecture?	BTL2	Understanding
9	Differentiate cloud consumer and cloud provider.	BTL2	Understanding
10	List out the methodologies of cloud disaster recovery.	BTL1	Remembering
11	What is the need for private cloud?	BTL2	Understanding
12	State the interaction between the Actors in the cloud computing.	BTL1	Remembering
13	Differentiate between software as a service and software plus service.	BTL2	Understanding
14	Why do we need cloud storage?	BTL2	Understanding
15	Examine the storage as a service.	BTL2	Understanding
16	List out the major activities of cloud provider.	BTL1	Remembering
17	Distinguish between service aggregation and service arbitrage.	BTL2	Understanding
18	List the benefits and drawbacks of using “Platform as a Service.	BTL2	Understanding
19	Outline the services in EaaS.	BTL1	Remembering
20	State the use of S3.	BTL1	Remembering
21	Give the architecture of a cloud is developed using three layers.	BTL2	Understanding
22	List the entities involved in the cloud platform.	BTL1	Remembering
23	Mention the major actors involved in NIST reference model.	BTL1	Remembering
24	What is service orchestration?	BTL2	Understanding

PART – B

Q. No.	Questions	Marks	BT Level	Competence
1	Explain the cloud deployment models and give a detailed note about them.	13	BTL4	Analyzing
2	Discuss in detail about the categories of cloud computing.	13	BTL3	Applying
3	Explain service and deployment models of a cloud computing environment with illustrations.	13	BTL4	Analyzing
4	Discuss about the Layered Cloud Architecture Design.	13	BTL3	Applying
5	Analyze about the NIST Cloud Computing Reference Architecture.	13	BTL4	Analyzing
6	Discuss the Infrastructure-as-a-Service, Platform as a service and Software as a service.	13	BTL3	Applying
7	Determine the features of software as a Service and explain in detail about SaaS with example.	13	BTL3	Applying
8	Explain the software distribution model in which applications are hosted by a vendor or service provider and made available to customers over a network, typically the Internet.	13	BTL3	Applying
9	i. Illustrate the features of Infrastructure as a Service. ii. Demonstrate in detail about PaaS with example.	5 8	BTL3	Applying
10	i. Give the diagram of Cloud Computing Reference Architecture. ii. Illustrate in detail about The Conceptual Reference Model of cloud.	3 10	BTL3	Applying
11	Analyze the challenges in architectural design of cloud.	13	BTL4	Analyzing
12	Compare and Contrast: Public, Private and Hybrid clouds.	13	BTL4	Analyzing

13	Explain in detail about Cloud Storage and Storage-as-a-Service – with advantages of Cloud Storage.	13	BTL4	Analyzing
14	Explain with neat diagram about the Cloud Storage Providers and Amazon Simple Storage Service S3.	13	BTL4	Analyzing
15	Explain in detail the various challenges faced while designing Architecture.	13	BTL4	Analyzing
16	Describe in detail the community cloud and give its benefits.	13	BTL3	Applying
17	Illustrate three principal layers: Physical infrastructure, Software management infrastructure and User interface with an example.	13	BTL3	Applying
PART – C				
1	Explain about any one of the cloud storage providers.	15	BTL5	Evaluating
2	Evaluate and contrast the merits and demerit of Cloud deployment models: public, private, hybrid.	15	BTL5	Evaluating
3	Evaluate about the architectural design of compute and storage clouds.	15	BTL5	Evaluating
4	Under what circumstances should you prefer to use PaaS over IaaS? Formulate it with an example.	15	BTL6	Creating
5	Summarize the storage structure of S3 bucket with neat sketch and write rules in order to make the bucket available for public access.	15	BTL5	Evaluating

UNIT IV RESOURCE MANAGEMENT AND SECURITY IN CLOUD				
Inter Cloud Resource Management – Resource Provisioning and Resource Provisioning Methods – Global Exchange of Cloud Resources – Security Overview – Cloud Security Challenges – Software-as-a-Service Security – Security Governance – Virtual Machine Security – IAM – Security Standards				
PART – A				
Q. No.	Questions	BT Level	Competence	
1	What are the six layers of cloud services?	BTL1	Remembering	
2	List the five application areas in SaaS applications.	BTL1	Remembering	
3	State the different Resource Provisioning Methods.	BTL1	Remembering	
4	List the cloud Differences in the perspectives of providers, vendors, and users.	BTL1	Remembering	
5	What are the security challenges in cloud computing?	BTL1	Remembering	
6	Define security governance.	BTL1	Remembering	
7	Differentiate over provisioning and under provisioning of resources with an example.	BTL2	Understanding	
8	Outline the demand resource provisioning with example. (VMs)	BTL2	Understanding	
9	Give the diagram for evolution of cloud services.	BTL2	Understanding	
10	Identify the ways with examples in which the many cloud computing companies have developed large-scale data storage systems to keep huge amount of data collected every day.	BTL2	Understanding	
11	Demonstrate any two storage services of cloud system.	BTL2	Understanding	
12	What is password assurance testing?	BTL2	Understanding	
13	Point out in which three basic cloud security enforcements are expected?	BTL2	Understanding	
14	Predict the different security threats in implementing SAAS.	BTL2	Understanding	
15	Examine whether the virtualization enhances cloud security.	BTL1	Remembering	
16	Differentiate the Physical and Cyber Security Protection at Cloud/Data Centers.	BTL2	Understanding	
17	Define virtual machine security in the context of cloud computing.	BTL1	Remembering	

18	“Virtual machine is secured”. Is it true? Justify your answer.		BTL2	Understanding
19	Write about the IAM.		BTL2	Understanding
20	Name the different Security Standards.		BTL1	Remembering
21	What is mutual authentication?		BTL2	Understanding
22	Why cloud environment need SSL/TLS?		BTL2	Understanding
23	Mention the IAM access methods.		BTL1	Remembering
24	What is the role of a hypervisor in virtualization?		BTL2	Understanding
PART – B				
Q. No.	Questions	Marks	BT Level	Competence
1	Explain in detail about the Inter-cloud resource management.	13	BTL4	Analyzing
2	Describe the Resource Provisioning and Platform Deployment.	13	BTL3	Applying
3	Explain in detail about virtual machine creation and management.	13	BTL4	Analyzing
4	Apply access control policies to enhance virtual machine security in a cloud environment.	13	BTL3	Applying
5	Analyze the global exchange of cloud resources.	13	BTL4	Analyzing
6	Explain in detail about Software-as-a-Service Security.	13	BTL4	Analyzing
7	i) Express in detail about the need of IAM. ii) Explain the challenges in IAM.	6 7	BTL4	Analyzing
8	Examine about Extended Cloud Computing Services with neat block diagram.	13	BTL3	Applying
9	Classify the principles of cloud security governance with suitable examples.	13	BTL3	Applying
10	Illustrate the following: i) Demand-Driven Resource Provisioning ii) Event-Driven Resource Provisioning iii) Popularity-Driven Resource Provisioning	5 5 3	BTL3	Applying
11	i) Explain in detail about security monitoring and incident. ii) Classify and explain different types of hypervisors with examples.	8 5	BTL4	Analyzing
12	What is the purpose of IAM? Describe its functional architecture with an illustration.	13	BTL4	Analyzing
13	Summarize the roles of brokers and auctioneers in the global exchange of cloud resources.	13	BTL3	Applying
14	i) Compose in detail about the aspects of data security. ii) Generalize on data security mitigation.	6 7	BTL4	Analyzing
15	Analyze the different resource provisioning methods used in cloud computing. How do these methods impact performance, scalability, and cost optimization?	13	BTL4	Analyzing
16	Illustrate Inter cloud architecture with a neat sketch.	13	BTL3	Applying
17	Illustrate the different types of inter-cloud resource management models. How do federation cloud and multi-cloud strategies differ in their implementation?	13	BTL3	Applying
PART – C				
1	Examine the implications of data sovereignty in the context of the global exchange of cloud resources across countries.	15	BTL5	Evaluating
2	Evaluate the security governance and virtual machine security.	15	BTL5	Evaluating
3	For a SaaS application, who will be responsible to provide security for the infrastructure? Will it be cloud service provider or the cloud service consumer? Who will be responsible to ensure	15	BTL5	Evaluating

	compliance with a privacy standard? Formulate your views about it.			
4	Describe the benefits of different cloud Security standards. (SAML OAuth, OpenID, SSL/TLS).	15	BTL6	Creating
5	Evaluate how IAM supports secure group and role-based access management in large-scale organizations.	15	BTL5	Evaluating

UNIT V CLOUD TECHNOLOGIES AND ADVANCEMENTS				
Hadoop – MapReduce – Virtual Box — Google App Engine – Programming Environment for Google App Engine — Open Stack – Federation in the Cloud – Four Levels of Federation – Federated Services and Applications – Future of Federation.				

PART – A				
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Q. No.	Questions	BT Level	Competence
1	Define MapReduce function.	BTL1	Remembering
2	List the usage of virtual box.	BTL1	Remembering
3	Give some of the applications of GAE.	BTL1	Remembering
4	List the functional models of GAE.	BTL1	Remembering
5	Name the different modules in Hadoop framework.	BTL1	Remembering
6	Give the formal notation of MapReduce dataflow.	BTL1	Remembering
7	What are the benefits of cloud federation?	BTL2	Understanding
8	What is use of the Google SDC Secure Data Connection?	BTL2	Understanding
9	Write about open stack compute and open stack storage.	BTL2	Understanding
10	List the open stack components.	BTL2	Understanding
11	How does the name node choose which data nodes to store replicas on?	BTL2	Understanding
12	What is Hadoop?	BTL2	Understanding
13	Define XMPP and give its advantages.	BTL2	Understanding
14	Differentiate name node with data node in Hadoop file system.	BTL2	Understanding
15	State which is better VMWare or Virtual Box?	BTL2	Understanding
16	Express the future of federations.	BTL2	Understanding
17	"HDFS is fault tolerant. Is it true? Justify your answer	BTL2	Understanding
18	List down the Federated applications.	BTL1	Remembering
19	Draw the data mutation sequence in GFS.	BTL1	Remembering
20	Give the diagram for Google cloud platform and its major building blocks.	BTL2	Understanding
21	List the key features of Oracle VirtualBox.	BTL1	Remembering
22	What is the use of VirtualBox?	BTL2	Understanding
23	List the components maintained in a node of Google cloud platform.	BTL1	Remembering
24	List the key services of OpenStack.	BTL1	Remembering

PART – B				
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1	Describe how the Open Solaris running on top of windows XP via Virtual Box with neat diagram.	13	BTL3	Applying
2	i) Examine the basic file system operation in Hadoop. ii) Tabulate the Hadoop file system in detail.	7 6	BTL4	Analyzing
3	State and Explain the basic of Google App Engine infrastructure programming model.	13	BTL3	Applying
4	Examine the architecture of Google File System (GFS).	13	BTL3	Applying
5	Discuss MapReduce with suitable diagrams.	13	BTL4	Analyzing
6	Summarize the Comparison of MapReduce++ Subcategories	13	BTL4	Analyzing

	along with the Loosely Synchronous Category Used in MPI.			
7	Discuss in detail about the four levels of federation in cloud.	13	BTL4	Analyzing
8	i) Classify the various ways in input splitting of map reduce. ii) Show how will you prevent input splitting in map reduce.	6 7	BTL3	Applying
9	How cloud federation addresses the limitations in cloud computing? Explain in detail.	13	BTL3	Applying
10	Illustrate how encrypted federation differs from trusted federation.	13	BTL3	Applying
11	Illustrate dataflow in HDFS during file read/write operation with suitable diagrams.	13	BTL4	Analyzing
12	Explain in detail about Hadoop framework.	13	BTL4	Analyzing
13	Illustrate the architecture of OpenStack in detail.	13	BTL3	Applying
14	Draw the design of OpenStack Nova system architecture and describe detail about it.	13	BTL3	Applying
15	Explain in detail Extensible Messaging and Presence Protocol.	13	BTL4	Analyzing
16	Explain in detail about the functional modules of GAE.	13	BTL4	Analyzing
17	Illustrate the Architecture of Virtual box with neat sketch.	13	BTL3	Applying
PART – C				
1	Generalize the big table data model used in Mass Media using a simplified data model compared to traditional database systems	15	BTL6	Creating
2	What are the programming supports of Google App Engine? Illustrate in detail about the Google File System.	15	BTL5	Evaluating
3	Evaluate the HDFS concepts with suitable illustrations. Develop a word count application with Hadoop Map Reduce programming model.	15	BTL5	Evaluating
4	Construct OpenStack open-source cloud computing infrastructure and discuss in detail about it.	15	BTL6	Creating
5	Evaluate the architecture of Hadoop. Explain the file read/write operation in HDFS with suitable diagram.	15	BTL5	Evaluating