

SRM VALLIAMMAI ENGINEERING COLLEGE

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

QUESTION BANK



VI SEMESTER

1922607 – INTRODUCTION TO CLOUD COMPUTING

Regulation – 2019

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Prepared by

Mr.R. Danu, Assistant Professor/AI-DS



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ARTIFICIAL INTELLIGENCE AND DATA SCIENCE

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SUBJECT : 1922607 – INTRODUCTION TO CLOUD COMPUTING
SEM / YEAR: VI / III

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 (2 - MARKS)			
Q. No	QUESTIONS	BTL	Competence
1.	What is meant by the term Cloud Computing?	BTL1	Remembering
2.	What is Grid Computing?	BTL2	Understanding
3.	State the purpose of NCP.	BTL2	Understanding
4.	Mention the four key elements in parallel and distributed computing.	BTL1	Remembering
5.	Explain the challenges in Cloud technologies.	BTL1	Remembering
6.	Define Cloud Computing.	BTL1	Remembering
7.	Compare Parallel Computing and Centralized computing.	BTL1	Remembering
8.	List out the cluster design issues.	BTL1	Remembering
9.	Show the difference between thin and thick client.	BTL1	Remembering
10.	Draw a neat diagram for cloud components.	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.	Illustrate the evolutionary trend towards distributed and cloud computing.	BTL2	Understanding
17.	What are the characteristics of cloud architecture that separates it from traditional one?	BTL2	Understanding
18.	Interpret the cloud resource pooling.	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.	Assess the properties of Cloud Computing.	BTL2	Understanding
24.	Formulate the technologies on which cloud computing relies.	BTL2	Understanding

PART-B (13- MARKS)				
1.	Discuss in detail about view of cloud computing with neat diagram	13	BTL1	Remembering
2.	Explain in detail about Internet Software Evolution.	13	BTL3	Applying
3.	Illustrate about the elements of parallel computing with neat diagram.	13	BTL3	Applying
4.	Describe in detail about practical examples of cloud systems exist across market segments.	13	BTL1	Remembering
5.	Define and examine in detail about the multi core CPUs and multithreading technologies.	13	BTL3	Applying
6.	Illustrate in detail about parallel and distributed programming models.	13	BTL2	Understanding
7.	i) Describe the infrastructure requirements for Cloud computing. ii)What are the issues in cluster design? How can they be resolved?	6 7	BTL1	Remembering
8.	i) Summarize in detail about the degrees of parallelism. ii) Discuss the application of high performance and high throughput system.	6 7	BTL3	Applying
9.	i) Illustrate the cloud architecture in detail. ii)Describe the architecture of a cluster with suitable illustrations.	6 7	BTL2	Understanding
10.	Explain about evolution of cloud computing in detail.	13	BTL3	Applying
11.	Explain in detail underlying principles of Parallel and Distributed Computing.	13	BTL2	Understanding
12.	Explain in detail about the trends towards Cloud Computing.	13	BTL3	Applying
13.	Give the importance of cloud computing and elaborate the different types of services offered by it.	13	BTL4	Analyzing
14.	Explain in detail about characteristics of Cloud.	13	BTL5	Evaluating
15.	Generalize the ideas of software environments for distributed systems and clouds.	13	BTL6	Creating
16.	Explain the hardware architecture of parallel processing with a neat diagram.	13	BTL3	Applying
17.	Explain the software architecture styles for distributed computing.	13	BTL2	Understanding
PART-C (15- MARK)				
1.	Explain in detail about hardware architecture of parallel processing with neat diagram.	15	BTL5	Evaluating
2.	Create and justify Cloud architecture application design with neat sketch.	15	BTL6	Creating
3.	Briefly Explain each of the cloud computing services. Identify two cloud providers by company name in each service category.	15	BTL6	Creating
4.	What are the components of distributed system? Draw and explain its layered view architecture.	15	BTL4	Analyzing
5.	Illustrate the architectural styles for distributed computing.	15	BTL5	Evaluating
UNIT II- VIRTUALIZATION				
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 (2 - MARKS)				

Q. No	QUESTIONS	BTL	Competence
1.	What is mean by Virtualization?	BTL1	Remembering
2.	Define SOA.	BTL1	Remembering
3.	Express the levels of virtualization.	BTL2	Understanding
4.	Define Web services.	BTL1	Remembering
5.	What is the purpose of WSDL and UDDI?	BTL2	Understanding
6.	What are the fundamental components of SOAP specification?	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.	Discuss 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?	BTL2	Understanding
16.	Compare binary translation with full virtualization.	BTL2	Understanding
17.	How does the virtualization Support the Linux platform?	BTL2	Understanding
18.	Discuss on the support of middleware for virtualization.	BTL2	Understanding
19.	Discuss classification or taxonomy of virtualization at different levels.	BTL2	Understanding
20.	List the Merits of virtualization at various levels.	BTL2	Understanding
21.	Illustrate the three structures of virtualization.	BTL2	Understanding
22.	Differentiate full virtualization and para-virtualization.	BTL2	Understanding
23.	Define memory virtualization.	BTL2	Understanding
24.	Define Application virtualization.	BTL1	Remembering
PART-B (13- MARK)			
1.	Describe in detail about SOA and Web services.	13 BTL3	Applying
2.	Describe in detail about characteristics of virtualized environments.	13 BTL3	Applying
3.	Explain the working of public subscribe model.	13 BTL1	Remembering
4.	Illustrate the Web services technologies stack with neat sketch.	13 BTL3	Applying
5.	Explain what you understand the technologies that make up the core of today's web services.	13 BTL3	Applying
6.	Describe in detail about the REST a software architecture style for distributed systems.	13 BTL3	Applying
7.	What is virtualization? Describe about para and full virtualization architectures. Compare and contrast them.	13 BTL1	Remembering
8.	Summarize the virtualization for data center automation.	13 BTL3	Applying
9.	Analyze the pros and cons of virtualization in detail.	13 BTL3	Applying
10.	i) Explain about REST in detail.	7	Applying
	ii) Discuss fast deployment, effective scheduling and high-performance virtual storage in detail.	6	
11.	Discuss in detail about the taxonomy of virtualization techniques.	13 BTL1	Remembering
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 BTL2	Understanding

14.	Analyze in detail about the implementation level of virtualization.	13	BTL4	Analyzing
15.	What is the difference between recovery time objective and recovery point objective? How do they depend on each other? Justify your answer with appropriate examples.	13	BTL2	Understanding
16.	Explain virtualization of CPU, Memory and I/O devices	13	BTL2	Understanding
17.	Discuss in detail about the types of virtualizations.	13	BTL3	Applying
PART-C (15 -MARKS)				
1.	Highlight the key points and identify the distinctions in different approaches of virtualization levels. Discuss their relative advantages, shortcomings and limitations. Also identify example systems implemented at each level	15	BTL4	Analyzing
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.	15	BTL5	Evaluating
4.	Give the importance of Virtualization Support and Disaster Recovery.	15	BTL6	Creating
5.	Explain Virtualization at various implementation levels.	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 (2 - MARKS)				
1.	Define public clouds.		BTL1	Remembering
2.	Write in brief on community cloud.		BTL1	Remembering
3.	Define IaaS.		BTL1	Remembering
4.	State the types of clouds with proper examples?		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.	Discuss any three features of IaaS		BTL2	Understanding
9.	Differentiate cloud consumer and cloud provider.		BTL2	Understanding
10.	Identify the major players involved in cloud computing.		BTL2	Understanding
11.	Demonstrate the need of private cloud.		BTL1	Remembering
12.	Show the interaction between the Actors in the cloud computing.		BTL1	Remembering
13.	List out the characteristics of SaaS.		BTL1	Remembering
14.	Why do we need cloud storage? Specify.		BTL2	Understanding
15.	Analyze the storage as a service.		BTL2	Understanding
16.	Point out major activities of cloud provider.		BTL2	Understanding
17.	Compare service aggregation and service arbitrage.		BTL1	Remembering
18.	Define cloud storage.		BTL1	Remembering
19.	Write down the services in IaaS.		BTL1	Remembering
20.	Identify the use of S3.		BTL1	Remembering
21.	Illustrate 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 (13- MARKS)				
1.	List the cloud deployment models and give a detailed note about them.	13	BTL3	Applying
2.	Discuss in detail about the categories of cloud computing.	13	BTL1	Remembering
3.	Describe service and deployment models of a cloud computing environment with illustrations.	13	BTL3	Applying
4.	Discuss about the Layered Cloud Architecture Design.	13	BTL3	Applying
5.	Summarize about the NIST Cloud Computing Reference Architecture.	13	BTL1	Remembering
6.	Discuss the Infrastructure-as-a-Service, Platform as a service and Software as a service.	13	BTL3	Applying
7.	Discuss the features of software as a Service and explain in detail about SaaS with example.	13	BTL3	Applying
8.	Briefly discuss the architectural design challenges of the cloud.	13	BTL3	Applying
9.	List and discuss the principles for designing public cloud, private cloud and hybrid cloud.	13	BTL3	Applying
10.	i)Give the diagram for 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.	Evaluate in detail about Cloud Storage and Storage-as-a-Service – with advantages of Cloud Storage.	13	BTL5	Evaluating
14.	Explain with neat diagram about the Cloud Storage Providers and Amazon Simple Storage Service S3.	13	BTL6	Creating
15.	Explain in detail the various challenges faced while designing Architecture.	13	BTL3	Applying
16.	Describe in detail the community cloud and give its benefits.	13	BTL2	Understanding
17.	Distinguish three principal layers: Physical infrastructure, Software management infrastructure and User interface.	13	BTL3	Applying
PART-C (15 -MARKS)				
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.	Explain the challenges in cloud architectural design.	15	BTL5	Evaluating
5.	Under what circumstances should you prefer to use PaaS over IaaS? Formulate it with an example.	15	BTL5	Evaluating
UNIT IV- RESOURCE MANAGEMENT				
Virtual Clusters and Resource Management – Physical versus Virtual Clusters – Live VM Migration steps and Performance Effects – Dynamic Deployment of Virtual Clusters - Inter Cloud Resource Management – Resource Provisioning and Resource Provisioning Methods – Global Exchange of Cloud Resources				

PART-A (2 -MARKS)				
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.	Differentiate over provisioning and under provisioning of resources with an example.		BTL2	Understanding
6.	Discuss the demand resource provisioning with example. (VMs)		BTL2	Understanding
7.	Give the diagram for evolution of cloud services.		BTL2	Understanding
8.	What are the security challenges in cloud computing?		BTL2	Understanding
9.	Demonstrate any two storage services of cloud system.		BTL2	Understanding
10.	Illustrate password assurance testing.		BTL2	Understanding
11.	Define Intercloud.		BTL1	Remembering
12.	What are the challenges of intercloud.		BTL2	Understanding
13.	What is Resource Provisioning in cloud?		BTL2	Understanding
14.	What are the types of resource provisioning methods.		BTL2	Understanding
15.	What is Demand Driven resource provisioning.		BTL2	Understanding
16.	What is Event-Driven Resource Provisioning.		BTL2	Understanding
17.	What is Popularity-Driven Resource Provisioning.		BTL2	Understanding
18.	What are the Extended Cloud Computing Services.		BTL2	Understanding
19.	Illustrate the topological structure of the virtual LAN.		BTL2	Understanding
20.	Define physical cluster.		BTL1	Remembering
21.	Sketch the concept of a virtual cluster based on application partitioning.		BTL2	Understanding
22.	Compare physical versus virtual clusters.		BTL2	Understanding
23.	List the four steps to deploy a group of VMs onto a target cluster.		BTL1	Remembering
24.	Define guest-based manager.		BTL1	Remembering
PART-B (13- MARKS)				
1.	Explain in detail about the Inter-cloud resource management.	13	BTL3	Applying
2.	Describe the Resource Provisioning and Platform Deployment.	13	BTL2	Understanding
3.	Explain in detail about virtual machine creation and management.	13	BTL3	Applying
4.	Describe the Interactions among VM managers for cloud creation and management; the manager provides a public API for users to submit and control the VMs.	13	BTL3	Applying
5.	Summarize the global exchange of cloud resources.	13	BTL3	Applying
6.	Examine about Extended Cloud Computing Services with neat block diagram.	13	BTL3	Applying
7.	Illustrate the following: i. Demand-Driven Resource Provisioning ii.Event-Driven Resource Provisioning iii.Popularity-Driven Resource Provisioning	5 5 3	BTL3	Applying
8.	Explain in detail about three cases of resource provisioning	13	BTL2	Understanding
9.	Illustrate Inter cloud architecture with a neat sketch.	13	BTL5	Evaluating
10.	Describe in detail three types of statements are provided by SAML	13	BTL3	Applying

11.	Explain in detail about cloud resource provisioning methods.	13	BTL3	Applying
12.	Relate physical clusters versus virtual clusters.	13	BTL4	Analyzing
13.	Illustrate the Live migration process of a VM from one host to another in detail with a neat sketch.	13	BTL3	Applying
14.	Discuss the Migration of Memory, Files, and Network Resources in detail.	13	BTL5	Evaluating
15.	Illustrate the live Migration of VM Using Xen with example.	13	BTL3	Applying
16.	Explain the Dynamic Deployment of Virtual Clusters with example.	13	BTL2	Understanding
17.	Illustrate the COD partitioning a physical cluster into multiple virtual clusters with example.	13	BTL3	Applying
PART-C (15-MARKS)				
1.	Discuss different ways for cloud service providers to maximize their revenues.	15	BTL5	Evaluating
2.	Write down where SaaS is extremely useful and not useful.	15	BTL5	Evaluating
3.	Discuss the three critical design issues of virtual clusters.	15	BTL5	Evaluating
4.	Illustrate in detail about the Resource Provisioning and Platform Deployment.	15	BTL1	Remembering
5.	Discuss about different projects conducted at Purdue university.	15	BTL5	Evaluating
UNIT V- SECURITY				
Security Overview – Cloud Security Challenges – Software-as-a-Service Security – Security Governance – Virtual Machine Security – IAM – Security Standards – Cloud Security and Trust Management				
PART-A (2 -MARKS)				
1.	What are the security challenges in cloud computing?	BTL1	Remembering	
2.	Define security governance.	BTL1	Remembering	
3.	In which three basic cloud security enforcements are expected? Clarify.	BTL2	Understanding	
4.	Analyze the different security threats in implementing SAAS.	BTL2	Understanding	
5.	Examine whether the virtualization enhances cloud security.	BTL2	Understanding	
6.	Explain data privacy.	BTL2	Understanding	
7.	Identify the phases of Sec SDLC.	BTL2	Understanding	
8.	“Virtual machine is secured”. Is it true? Justify your answer.	BTL2	Understanding	
9.	Generalize about the IAM.	BTL2	Understanding	
10.	Name the different Security Standards.	BTL2	Understanding	
11.	What is mutual authentication?	BTL2	Understanding	
12.	Why cloud environment needs SSL/TLS?	BTL1	Remembering	
13.	List the types of SAML queries.	BTL1	Remembering	
14.	What are the types of statements are provided by SAML?	BTL2	Understanding	
15.	What is Data integrity?	BTL2	Understanding	
16.	List the security issues in cloud.	BTL1	Remembering	
17.	What is the baseline security practices for the SaaS environment.	BTL2	Understanding	
18.	Define Secure Software Development Life Cycle (SecSDLC).	BTL1	Remembering	
19.	List phases of SecSDLC.	BTL1	Remembering	
20.	What is Third-Party Risk Management.	BTL1	Remembering	
21.	List the services across all technology layers.	BTL1	Remembering	
22.	What is Vulnerability Assessment.	BTL1	Remembering	
23.	List the frame works in Data Governance.	BTL1	Remembering	

24.	What is Identity Access Management.		BTL1	Remembering
PART-B (13 MARKS)				
1.	Discuss in detail about Software-as-a-Service Security.	13	BTL3	Applying
2.	Show what is Cloud Security Defense Strategies with neat diagram.	13	BTL3	Applying
3.	What is the purpose of IAM? Describe its functional architecture with an illustration.	13	BTL4	Analyzing
4.	Explain the Secure Software Development Life Cycle with neat diagram.	13	BTL5	Evaluating
5.	Write short note on cloud security challenges.	13	BTL3	Applying
6.	Write short notes on data security.	13	BTL3	Applying
7.	Write short on Virtual machine security.	13	BTL3	Applying
8.	Illustrate Secure Software Development Life Cycle (SecSDLC) in detail.	13	BTL4	Analyzing
9.	(i) Discuss Data governance in detail. (ii) Discuss Security Architecture design in detail.	6 7	BTL3	Applying
10.	Discuss in detail about (i) Virtual Machine security (ii) Application security	6 7	BTL3	Applying
11.	Explain about IAM and physical security in SaaS.	13	BTL5	Evaluating
12.	Demonstrate Security Assertion Markup Language (SAML) in security standards.	13	BTL3	Applying
13.	Elaborate Open Authentication (OAuth) and OpenID in security standards.	13	BTL1	Remembering
14.	Investigate about OpenID in security standards.	13	BTL2	Understanding
15.	Explain about SSL/TLS in security standards.	13	BTL5	Evaluating
16.	Discuss in detail about Cloud security defense strategies.	13	BTL3	Applying
17.	Discuss about distributed intrusion or anomaly detection in detail.	13	BTL3	Applying
PART-C (15 MARKS)				
1.	Explain the security architecture design of a cloud environment and relate how it can be made possible to include such measures in a typical banking scenario.	15	BTL6	Creating
2.	Evaluate the security governance and virtual machine security.	15	BTL5	Evaluating
3.	Compare and Contrast the Key privacy issues in Cloud and explain the steps to overcome the issues with necessary examples.	15	BTL5	Evaluating
4.	Describe the benefits of different cloud Security standards. (SAML OAuth, OpenID, SSL/TLS).	15	BTL6	Creating
5.	Explain the cloud security challenges in detail.	15	BTL5	Evaluating