

SRM VALLIAMMAI ENGINEERING COLLEGE
(An Autonomous Institution)

SRM Nagar, Kattankulathur – 603 203

DEPARTMENT OF
COMPUTER SCIENCE AND ENGINEERING

QUESTION BANK



M.E II SEMESTER

1912209 – CLOUD COMPUTING TECHNOLOGIES

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SUBJECT : 1912209 –CLOUD COMPUTING TECHNOLOGIES

SEM/YEAR : M.E II/I

UNIT I INTRODUCTION TO CLOUD COMPUTING			
Introduction to Cloud Computing – Roots of Cloud Computing – Desired Features of Cloud Computing – Challenges and Risks – Benefits and Disadvantages of Cloud Computing			
PART-A			
Q.No	Questions	BT Level	Competence
1	What is cloud computing?	BTL -1	Remember
2	List the main characteristics of cloud computing	BTL -1	Remember
3	Compare cloud computing and Distributed computing.	BTL -5	Evaluate
4	What are the service models available in cloud computing?	BTL -1	Remember
5	State Deployment models of cloud computing.	BTL -1	Remember
6	Point out the basic operations of VM.	BTL -4	Analyze
7	Differentiate cloud computing and grid computing.	BTL -4	Analyze
8	What is Hardware Virtualization?	BTL -1	Remember
9	Give the advantages of cloud computing	BTL -2	Understand
10	Analyze Autonomous computing and Utility Computing.	BTL -4	Analyze
11	Show the difference between Thin and Thick client.	BTL -3	Apply
12	Draw a neat diagram for cloud components.	BTL -6	Create
13	Illustrate the virtual Appliances in cloud computing.	BTL -3	Apply
14	Examine the challenges and Risks available in cloud computing.	BTL -3	Apply
15	Formulate CCIF.	BTL -6	Create
16	Give some of the cloud components	BTL -2	Understand
17	Express data center.	BTL -2	Understand
18	Explain the challenges in Cloud technologies.	BTL -5	Evaluate
19	What is meant Scale-Up scale-Down?	BTL -1	Remember
20	Discuss distributed computing.	BTL -2	Understand
PART-B			
1	Describe the following in detail i. Internet Technologies ii. Distributed computing	7 6	BTL -1 Remember
2	Discuss in detail about Roots of cloud computing with neat diagram	13	BTL -2 Understand
3	Illustrate in detail about different Benefits and Disadvantages of cloud computing.	13	BTL -3 Apply

4.	List out and discuss the essential characteristics of cloud computing.	13	BTL -2	Understand
5	Describe in detail about Deployment Models and services in cloud computing.	13	BTL -1	Understand
6	i. Define hardware virtualization. ii. Describe in detail about hardware virtualization with diagram and examples.	7 6	BTL -1	Remember
7	i. Illustrate in detail about grid computing. ii. Elaborate in detail about utility computing.	7 6	BTL -3	Apply
8	i. Give the importance of cloud computing. ii. List the pros and cons of cloud computing.	7 6	BTL -2	Understand
9	Write short notes on: i. Features in cloud computing. ii. Challenges and Risks.	7 6	BTL -6	Create
10	Compare the grid and cloud computing in detail.	13	BTL -4	Analyze
11	Explain the following challenges in cloud i. Security. ii. Datalock-in and Standardization. iii. Fault tolerance and Disaster recovery.	5 5 3	BTL -5	Evaluate
12	Analyze the different types of service offered by the cloud with examples.	13	BTL -4	Analyze
13	Outline the similarities and differences between distributed computing, grid computing and cloud computing.	13	BTL -1	Remember
14	i. How does cloud architecture overcome the difficulties faced by traditional architecture? ii. What are the three differences that separate out cloud architecture from the tradition one?	6 7	BTL -4	Analyze
PART C				
1	Briefly explain each of the cloud computing services. Identify two cloud providers by company name in each service category.	15	BTL -6	Create
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	BTL -5	Evaluate
3	What are the advantages of Cloud Computing over the Internet? Explain? Give the architecture of P2P systems. What are the major categories of P2P Network families?	15	BTL -5	Evaluate
4	Formulate different computing paradigms. Discuss in detail different system models for distributed and cloud computing.	15	BTL -6	Create
UNIT II VIRTUALIZATION				
Implementation levels of virtualization – virtualization structure – virtualization of CPU, Memory and I/O devices – virtual clusters and Resource Management – Virtualization for data center automation				
PART A				
1	What are the features of virtualization?		BTL -1	Remember
2	What is mean by Virtualization?		BTL -1	Remember

3	Express the levels of virtualization.		BTL -2	Understand
4	Illustrate Host OS and Guest OS		BTL -3	Apply
5	Define virtual machine monitor.		BTL -1	Remember
6	“Although Virtualization is widely Accepted today, it does have its limits”. Comment on the statement		BTL -4	Analyze
7	Give the library support level of virtualization with example.		BTL -2	Understand
8	State the responsibilities of VMM.		BTL -1	Remember
9	Analyze the relative merits of virtualization at various levels.		BTL -4	Analyze
10	Differentiate full virtualization and para-virtualization.		BTL -4	Analyze
11	Define memory virtualization.		BTL -1	Remember
12	How will you implement storage virtualization at the server level?		BTL -6	Create
13	Illustrate the CPU virtualization.		BTL -3	Apply
14	Show the requirements of VMM.		BTL -3	Apply
15	Write a note on categorizing the resource managers?		BTL -6	Create
16	Discuss operating system level of virtualization.		BTL -2	Understand
17	Compare Hypervisor and Xen Server.		BTL -5	Evaluate
18	Explain hardware abstraction level of virtualization?		BTL -5	Evaluate
19	What is mean by I/O virtualization?		BTL -1	Remember
20	Express the view of physical cluster and virtual cluster.		BTL -2	Understand
PART-B				
1	Describe in detail about the following			
	i. Virtualization.	7	BTL -1	Remember
	ii Load Balancing	6		
2	Explain the following Technology with examples			
	i. Para virtualization	7	BTL -4	Analyze
	ii. Full virtualization	6		
3	i. Mention the advantages of Virtualization.	7	BTL -3	Apply
	ii. Illustrate the Types of virtualization in detail with example.	6		
4	Express in detail about the overview of virtualization technology.	13	BTL -2	Understand
5	Analyze the pros and cons of virtualization in detail.	13	BTL -4	Analyze
6	i. Define Hypervisor?	3	BTL -2	Understand
	ii. Discuss in detail about Hypervisor with suitable example	10		
7	Explain what do you understand by Hypervisor management software and their requirements?	13	BTL -5	Evaluate
8	Describe in details the tools and mechanisms for virtualization.	13	BTL -1	Remember
9	i. Describe the different types of virtualization.	7	BTL -1	Remember
	ii. What is server virtualization? Explain parallel processing.	6		
10	Illustrate the following Virtualization in detail		BTL -3	Apply
	i. CPU virtualization	5		
	ii. Memory Virtualization	4		
	iii. and I/O Devices	4		
11	i. Explain the OS level virtualization?	8	BTL -4	Analyze

	ii. List the pros and cons of OS level virtualization.	5		
12	i. Define Server virtualization. ii. Describe in detail about server virtualization in detail with example	3 10	BTL -1	Remember
13	i. Express Data Center virtualization. ii Discuss in detail about Data Center automation with appropriate example	3 10	BTL -2	Understand
14	Compose dynamic deployment of virtual clusters relevant in today's computing environment.	13	BTL -6	Create
PART C				
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	BTL -6	Create
2	Explain the differences between hypervisor and para-virtualization and give one example VMM (virtual machine monitor), that was built in each of the two categories.	15	BTL -5	Evaluate
3	Summarize the enabling technologies for building the cloud platforms from virtualized and automated data centers to provide services. Identify hardware, software, and networking mechanisms or business models that enable multitenant services	15	BTL -5	Evaluate
4	Explain the about Virtualization for Linux and Windows and NT Platform. Design the process of Live Migration of VM from one host to another.	15	BTL -6	Create
UNIT III CLOUD ARCHITECTURE, SERVICES AND STORAGE				
NIST Cloud Computing Reference Architecture – Public, Private and Hybrid Clouds - IaaS – PaaS – SaaS – Architectural Design Challenges – Cloud Storage.				
PART-A				
1	State the types of clouds with proper examples?		BTL -1	Remember
2	Define short notes on Community cloud		BTL -1	Remember
3	Differentiate Public cloud and Private cloud.		BTL -4	Analyze
4	List out the characteristics of SaaS.		BTL -1	Remember
5	Tabulate examples provided by platform as a service.		BTL -1	Remember
6	Why does one choose public cloud over private cloud? Analyze.		BTL -4	Analyze
7	Point out the role of cloud auditor in cloud.		BTL -4	Analyze
8	Define the advantages of using the cloud carrier		BTL -1	Remember
9	Differentiate cloud consumer and provider		BTL -2	Understand
10	Compare service aggregation and service arbitrage		BTL -5	Evaluate
11	Show the interaction between the Actors in the cloud computing		BTL -3	Apply
12	Draw the diagram for conceptual reference model for cloud		BTL -6	Create
13	Demonstrate the cloud service Orchestration		BTL -3	Apply
14	Illustrate the major activities of cloud provider		BTL -3	Apply
15	Identify the need Hybrid cloud.		BTL -6	Create
16	Express the characteristics of private cloud		BTL -2	Understand

17	Discuss any three features of IaaS		BTL -2	Understand
18	Summarize the benefits and drawbacks of using “Platform as a Service”		BTL -5	Evaluate
19	Define cloud broker		BTL -1	Remember
20	Discuss the benefits and drawbacks of using “Infrastructure as a Service”		BTL -2	Understand
PART-B				
1	i. Describe the NIST cloud computing reference architecture. ii. List the Pros and Cons of cloud computing.	9 4	BTL -1	Remember
2	Explain the various design challenges for effective cloud computing environment.	13	BTL -5	Evaluate
3	i. Give the diagram Cloud Computing Reference Architecture. ii. Illustrate in detail about The Conceptual Reference Model of cloud	3 10	BTL -3	Apply
4	List and discuss the principles for designing Public cloud, private cloud and Hybrid cloud.	13	BTL -2	Understand
5	Describe Cloud deployment models with neat diagrams.	13	BTL -1	Remember
6	Briefly discuss the architectural design challenges of the cloud	13	BTL -2	Understand
7	i. Discuss the features of Infrastructure as a service. ii. Describe in detail about IaaS with example	5 8	BTL -2	Understand
8	i. Point out the features of Platform as a Service ii. Discuss in detail about Paas with example.	5 8	BTL -4	Analyze
9	Describe in detail about the cloud Storage in detail with example.	13	BTL -1	Remember
10	i. Explain the features of software as a Service. ii. Discuss in detail about Saas with example	7 6	BTL -4	Analyze
11	Compare: Public. Private and Hybrid clouds.	13	BTL -4	Analyze
12	i. List out the Cloud Storage Providers. ii. Explain in detail about Amazon Simple Storage Service (S3).	4 9	BTL -1	Remember
13	Demonstrate thee architectural design of compute and storage clouds.	13	BTL -3	Apply
14	Generalize the following in detail i. Google Bigtable Datastore ii. Mobile Me.	7 6	BTL -6	Create
PART C				
1	We are starting a new company to analyze videos and need a lot of storage as videos consume quite a bit of disk. Additionally, need ample computational power, possibly running applications concurrently. We have discovered some very good tools to facilitate development in Windows but the deployment will be more efficiently handled in the Linux environment. All the pointers say that we need to move to cloud. We have found that SaaS is the most attractive service, followed by PaaS and IaaS, in that order. Given the above information, which service do you recommend ? Why?	15	BTL -6	Create
2	Under what circumstances should you prefer to use PaaS over IaaS? Formulate it with an example.	15	BTL -6	Create

3	There are various companies which are offering different applications and services. How the services/applications help a user for business? Summarize the economical and operational benefits.	15	BTL -5	Evaluate
4	Describe the following techniques or terminologies used in cloud computing and cloud services .Use a concrete example cloud or case study to explain the addressed technology. i. Green information Technology ii. Multitenant technique	15	BTL -5	Evaluate
UNIT IV RESOURCE MANAGEMENT AND SECURITY IN CLOUD				
Inter Cloud Resource Management – Resource Provisioning Methods – Security Overview – Cloud Security Challenges –Software-as-a-Service Security Data Security –Application Security – Virtual Machine Security.				
PART-A				
1	What are the security challenges in cloud computing?		BTL -1	Remember
2	List the security issues in cloud.		BTL -1	Remember
3	Give the different security threats in implementing SAAS.		BTL -2	Understand
4	Define security governance.		BTL -1	Remember
5	State the third party risk management.		BTL -1	Remember
6	Point out the layers in security architecture design.		BTL -4	Analyze
7	Discuss change management.		BTL -2	Understand
8	Define VM security.		BTL -1	Remember
9	Analyze the security awareness in cloud.		BTL -4	Analyze
10	Explain data privacy.		BTL -4	Analyze
11	Show the uses of application security.		BTL -3	Apply
12	Identify the phases of Sec SDLC.		BTL -6	Create
13	Illustrate the security images.		BTL -3	Apply
14	Illustrate anything as a service.		BTL -3	Apply
15	Design security architecture for cloud.		BTL -6	Create
16	Express security monitoring.		BTL -2	Understand
17	Summarize password assurance testing.		BTL -5	Evaluate
18	Explain the issues in providing virtual machine security.		BTL -5	Evaluate
19	What is meant by vulnerability assessment?		BTL -1	Remember
20	Give the diagram for evolution of cloud services.		BTL -2	Understand
PART-B				
1	Describe in detail with neat diagram in detail about inter cloud resource management.	13	BTL -1	Remember
2	i. What is resource provisioning? ii. Discuss different types of resource provisioning.	2 11	BTL -2	Understand
3	Illustrate the following in detail i. Demand-Driven Resource Provisioning ii. Event-Driven Resource Provisioning iii. Popularity-Driven Resource Provisioning	5 5 3	BTL -3	Apply
4	i. What are the cloud security challenges? Explain. ii. Explain in detail about security monitoring and incident response.	5 8	BTL -4	Analyze

5	Summarize the following i. Security governance ii. Security monitoring iii. Risk management	5 5 3	BTL -5	Evaluate
6	Describe the Secure Software Development Life Cycle with neat diagram.	13	BTL -1	Remember
7	Discuss in detail about the security architecture of cloud.	13	BTL -2	Understand
8	i. Define Application security and its use. ii. Illustrate the application security in detail.	3 10	BTL -3	Apply
9	Analyze the methods for providing data security and virtual machine security in cloud.	13	BTL -4	Analyze
10	i. List the different types of services offered by cloud. ii. Describe in detail about Extended Cloud Computing Services	4 9	BTL -1	Remember
11	Recommend a model to provide resource management among multiple cloud providers	13	BTL -6	Create
12	Discuss Virtual Machine Creation and Management in detail with suitable diagram	13	BTL -2	Understand
13	Explain in detail about Global Exchange of Cloud Resources	13	BTL -4	Analyze
14	Describe the following in detail i. Data security ii. Application security iii. Virtual machine security	4 5 4	BTL -1	Remember
PART C				
1	Explain the security architecture design of a cloud environment and recommend how it can be made possible to include such measures in a typical banking scenario.	15	BTL -6	Create
2	For an 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 compliance with a privacy standard? Formulate your views about it.	15	BTL -6	Create
3	In today's world infrastructure security and data security is highly challenging at network, host and application levels". Justify and explain the several ways of protecting the data at transit and at rest	15	BTL -5	Evaluate
4	Evaluate the baseline Identity and access Management(IAM) factors to be practiced by the stakeholders of cloud services and common key privacy issues likely to happen in the environment	15	BTL -5	Evaluate
UNIT V CASE STUDIES				
Google App Engine(GAE) – GAE Architecture – Functional Modules of GAE – Amazon Web Services (AWS) – GAE Applications – Cloud Software Environments – Eucalyptus – Open Nebula – Open Stack.				
PART-A				
1	Outline the main services that are offered by AWS.		BTL -1	Remember
2	What is the use of cloud Watch in Amazon EC2?		BTL -1	Remember

3	Give some of the Applications of GAE.		BTL -2	Understand
4	List the functional models of GAE.		BTL -1	Remember
5	Enumerate the features of Eucalyptus cloud		BTL -1	Remember
6	Analyze Amazon Simple Storage Service (S3).		BTL -4	Analyze
7	Point out the use Amazon elastic block store.		BTL -2	Understand
8	Define SQS and SNS services of AWS cloud		BTL -1	Remember
9	Differentiate Amazon SimpleDB and AmazonRDS.		BTL -4	Analyze
10	Analyze the open stack components		BTL -4	Analyze
11	State and discover the core components of AppEngine.		BTL -3	Apply
12	Identify the development technologies currently supported by AppEngine.		BTL -6	Create
13	Demonstrate the AWS Architecture.		BTL -3	Apply
14	Illustrate Amazon EC2 and its basic features.		BTL -3	Apply
15	Create a DataStore. What type of data can be stored in it?		BTL -6	Create
16	Express What is a bucket? What type of storage does it provide?		BTL -2	Understand
17	Explain the compute services offered by AppEngine.		BTL -5	Evaluate
18	Summarize DevPay and use.		BTL -5	Evaluate
19	List different Perspectives of cloud Providers, Vendors, and Users		BTL -1	Remember
20	Give the diagram for Google cloud platform and its major building blocks.		BTL -2	Understand
PART-B				
1	Discuss in detail about the working process of Google App Engine.	13	BTL -2	Understand
2	Describe the following in detail i. Google Cloud Infrastructure ii. GAE Architecture	7 6	BTL -1	Remember
3	i. Write the functional Modules of GAE ii. Discuss in detail about GAE Applications	7 6	BTL -2	Understand
4	Illustrate any five web services of Amazon in detail	13	BTL -3	Apply
5	i. List the AWS offering ii. Explain in detail about Amazon web services	4 9	BTL -4	Analyze
6	Explain the OpenNebula architecture and its main components with neat diagram.	13	BTL -5	Evaluate
7	Compare and contrast Google App Engine and Amazon AWS	13	BTL -4	Analyze
8	i. Give the Eucalyptus architecture for VM image management. ii. Describe in detail about it	4 9	BTL -1	Remember
9	Explain the open source software environment – OpenNebula in detail with appropriate diagram	13	BTL -4	Analyze
10	Describe in detail about the cloud software Environment-Eucalyptus	13	BTL -1	Remember
11	Discuss the following in detail i. Openstack compute ii. Openstack storage	7 6	BTL -2	Understand
12	Identify the services provided by Aneka? Describe its architecture and components	13	BTL -6	Create
13	i. Define the OpenStack ii. Describe in detail about the Openstack Nova system architecture	2 11	BTL -1	Remember

14	What are the programming supports of Google App Engine? Illustrate in detail about the Google File system	13	BTL -3	Apply
PART C				
1	Find out which one of the following cloud solution best suits for research purpose i. Eucalyptus ii. Open Nebula iii. Aneka Justify your Answer.	15	BTL -6	Create
2	Find the different file systems used in cloud environment-Explain in detail about the file systems used GFS and Amazon S3.	15	BTL -6	Create
3	Explain in detail about how to set up a private cloud for an academic university using any one of the cloud environments	15	BTL-5	Evaluate
4	Summarize the various emerging cloud software environment and explain briefly about anyone of the environment	15	BTL-5	Evaluate