Question Bank
23MCA265 - Cloud Computing

Course Type	Course Nature	CA Conduct	System	L	T	P	Credits	CA Total	CA Pass	SEE Total	SEE Pass	Total Pass
Elective	1	End Semester	Mark	3	1	0	4	40	0	60	24	50

Question Bank Summary

Sect. Part A	Sect. Part B	Easy	Med.	Chall.	Th.	Appli.					
63	63	18	69	39	100	26	9	50	7	21	26	13

Part A

#	Unit	Question	COS	Categorized
1	1.1	Define cloud computing and explain its key characteristics.	CO1	Easy - Remembering - T
2	1.1	Differentiate between public cloud, private cloud, and hybrid cloud architectures. Provide examples of each.	CO1	Easy - Understanding - T
3	1.1	Describe Infrastructure as a Service (IaaS) and give an example of how a business might use it.	CO1	Medium - Understanding - T
4	1.1	Compare Platform as a Service (PaaS) and Storage as a Service (SaaS). Discuss their differences in terms of usage scenarios.	CO1	Medium - Evaluating - T
5	1.1	Explain the architectural considerations when designing an OpenStack cloud. What are the key factors to keep in mind?	CO1	Challenging - Understanding - T
6	1.1	Outline the logical architecture of OpenStack and explain the role of Nova Compute Service in this architecture.	CO1	Medium - Analysing - T
7	1.1	Discuss the importance of Neutron Networking services in OpenStack and how they contribute to cloud networking.	CO1	Medium - Understanding - T
8	1.1	Consider a scenario where you need to set up a sample architecture using OpenStack. List the components required and describe their interconnections	CO1	Challenging - Understanding - A
9	1.1	Evaluate the benefits and challenges of adopting a hybrid cloud architecture for an enterprise. Support your answer with examples.	CO1	Challenging - Evaluating - T
10	1.1	Design a simple OpenStack-based data center architecture. Highlight the key services and how they interact to support cloud operations.	CO1	Challenging - Creating - A
11	1.1	Explain the new data center paradigm enabled by cloud computing. How does this differ from traditional data centers?	CO1	Medium - Understanding - T
12	1.1	Analyze how OpenStack can be integrated into an existing IT infrastructure. What are the potential challenges, and how can they be mitigated?	CO1	Challenging - Analysing - A
13	2.1	Describe the role of the Cloud Controller in an OpenStack Cluster.	CO2	Easy - Understanding - T
14	2.1	Explain the difference between Asymmetric and Symmetric clustering.	CO2	Medium - Understanding - T
15	2.1	Summarize the key functions of the Keystone service in OpenStack.	CO2	Easy - Evaluating - T
16	2.1	Differentiate between the Cloud Controller and Common Services in an OpenStack Cluster.	CO2	Medium - Understanding - T
17	2.1	Illustrate how the Cloud Controller manages authentication and messaging in an OpenStack deployment.	CO2	Challenging - Analysing - T
18	2.1	Discuss the importance of high availability in the design of a Cloud Controller.	CO2	Medium - Understanding - T
19	2.2	Explain the purpose of telemetry services in cloud computing.	CO2	Medium - Understanding - T
20	2.2	Illustrate the role of the nova-api service in OpenStack?	CO3	Medium - Applying - A

21	2.2	Demonstrateis the purpose of the nova-conductor service?	CO3	Challenging - Applying - T
22	2.2	Describe the role of the nova-conductor service in OpenStack.	CO2	Easy - Understanding - T
23	2.2	Explain how the nova-scheduler service determines the placement of instances	CO2	Medium - Understanding - T
24	2.2	Summarize the functions of the API services in OpenStack.	CO2	Easy - Evaluating - T
25	2.2	Differentiate between image management and network service in OpenStack.	CO2	Medium - Understanding - T
26	2.2	Describe the main features of the Horizon dashboard.	CO2	Easy - Understanding - T
27	3.1	Summarize the difference between Type 1 and Type 2 hypervisors.	CO3	Medium - Evaluating - T
28	3.1	Outline the OpenStack Magnum and its primary function?	CO3	Challenging - Analysing - T
29	3.1	Describe the compute resources in the context of cloud computing.	CO3	Easy - Understanding - T
30	3.1	Explain any three components of the OpenStack compute service.	CO3	Medium - Understanding - T
31	3.1	Describe a "Bay" in the context of OpenStack Magnum.	CO3	Medium - Understanding - T
32	3.1	Outline the functions of Docker containers in OpenStack?	CO3	Medium - Analysing - T
33	3.1	Analyze how do host aggregates benefit an OpenStack cloud?	CO3	Challenging - Analysing - T
34	3.1	Conclude the significance of availability zones in cloud infrastructure?	CO3	Medium - Evaluating - T
35	3.2	Outline the primary use cases for OpenStack's block storage service, Cinder?	CO3	Medium - Analysing - T
36	3.2	Illustrate, how does OpenStack Swift ensure data durability?	CO3	Easy - Applying - T
37	3.2	Differentiate between persistent and ephemeral storage in OpenStack.	CO3	Medium - Understanding - T
38	3.2	Describe the role of Swift's proxy servers in its architecture?	CO3	Medium - Understanding - T
39	3.2	Demonstrate the significance of Swift's ring-based architecture?	CO3	Medium - Applying - T
40	4.1	Describe the core components of OpenStack Neutron and their roles.	CO4	Easy - Understanding - T
41	4.1	Compare and contrast the Neutron ML2 plugin with the other core plugins available.	CO4	Challenging - Evaluating - T
42	4.1	Analyze the role of security groups and firewall rules in securing OpenStack networks.	CO4	Medium - Analysing - T
43	4.1	List and describe the steps to create a virtual network in OpenStack using Neutron.	CO4	Easy - Understanding - A
44	4.1	Discuss the advantages and disadvantages of using Neutron in a cloud environment.	CO4	Medium - Understanding - T
45	4.2	Explain the role of Neutron in OpenStack Networking.	CO4	Medium - Understanding - T
46	4.2	Describe the core components of the Neutron architecture and their functions.	CO4	Medium - Understanding - T
47	4.2	Discuss the role of the ML2 plugin in Neutron and its advantages.	CO4	Medium - Understanding - T
48	4.2	Define the concept of Tunnelling in the context of OpenStack.	CO4	Easy - Remembering - T
49	4.2	Outline the steps to create a VLAN-based virtual network in OpenStack.	CO4	Medium - Analysing - A
50	4.2	Compare VLAN and tunnel-based (VXLAN/GRE) networking in Neutron.	CO4	Medium - Evaluating - T
51	4.2	Outline the steps to connect a virtual network to the external world and associate a floating IP.	CO4	Medium - Analysing - A
52	5.1	What is OpenStack Heat, and what are its primary components?	CO5	Easy - Remembering - T
53	5.1	Explain how Heat templates are used in OpenStack Orchestration	CO5	Medium - Understanding - T

54	5.1	Differentiate between stacking in OpenStack Heat and orchestration with Terraform in OpenStack.	CO5	Medium - Understanding - T
55	5.1	Describe the steps to create a stack in OpenStack using a Heat template	CO5	Medium - Understanding - A
56	5.1	How can you ensure High Availability (HA) in OpenStack?	CO5	Easy - Remembering - T
57	5.1	Explain the role of RabbitMQ in OpenStack and how HA can be implemented in RabbitMQ.	CO5	Medium - Understanding - T
58	5.1	Describe the process of configuring High Availability (HA) in the OpenStack database.	CO5	Medium - Understanding - A
59	5.1	Compare HA strategies for the message queue service (e.g., RabbitMQ) and the database in OpenStack.	CO5	Challenging - Evaluating - A
60	5.1	What are the challenges of implementing failover in OpenStack, and how can they be addressed?	CO5	Challenging - Remembering - T
61	5.1	Design a solution using Heat templates to automate the deployment of a highly available web service in OpenStack	CO5	Challenging - Creating - A
62	5.1	What is the role of Terraform in orchestrating OpenStack resources, and how does it differ from Heat orchestration?	CO5	Medium - Remembering - T
63	5.1	Analyze the limitations of High Availability in OpenStack's database and suggest improvement strategies	CO5	Challenging - Analysing - T

Part B

#	Unit	Question	COS	Categorized
1	1.1	Explain the new data center paradigm enabled by cloud computing. How does this differ from traditional data centers?	CO1	Easy - Remembering - T
2	1.1	Describe the core components of the OpenStack architecture and their functions.	CO1	Easy - Understanding - T
3	1.1	Explain the role of the Nova Compute Service in OpenStack and how it contributes to the overall cloud infrastructure.	CO1	Medium - Understanding - T
4	1.1	Evaluate the architectural considerations when designing a cloud infrastructure using OpenStack. What are the potential challenges and how can they be mitigated?	CO1	Challenging - Evaluating - T
5	1.1	Design a hybrid cloud architecture using OpenStack, considering both scalability and security requirements. Explain your design decisions.	CO1	Challenging - Creating - A
6	1.1	Evaluate the impact of adopting Storage as a Service in a cloud environment, particularly in terms of cost, performance, and data security.	CO1	Medium - Evaluating - A
7	1.1	What is the purpose of the Neutron Networking Service in OpenStack?	CO1	Easy - Remembering - T
8	1.1	Critically evaluate the new data center paradigm brought by cloud computing. How does it differ from traditional data centers in terms of efficiency, cost, and scalability?	CO1	Challenging - Evaluating - T
9	1.1	Create a detailed step-by-step plan for setting up a sample OpenStack architecture, including key services like Nova, Neutron, and others. Justify the inclusion of each component.	CO1	Challenging - Creating - A
10	1.1	Illustrate how Infrastructure as a Service (IaaS) is implemented in a cloud environment, providing a real-world example.	CO1	Medium - Applying - T
11	1.1	Compare and contrast Platform as a Service (PaaS) with Infrastructure as a Service (IaaS) in terms of flexibility, control, and scalability.	CO1	Medium - Evaluating - T
12	1.1	Analyze how Neutron Networking services in OpenStack manage network resources and discuss the benefits they provide in a cloud environment.	CO1	Medium - Analysing - A
13	2.1	Analyze the impact of using Asymmetric clustering versus Symmetric clustering in a cloud environment.	CO2	Medium - Analysing - T
14	2.1	Evaluate the effectiveness of the Keystone service in managing identity and access in OpenStack.	CO2	Challenging - Evaluating - T
15	2.1	Compare the architectural differences and similarities between the Cloud Controller and Common Services in OpenStack.	CO2	Medium - Evaluating - T
16	2.1	Design a high-availability architecture for a Cloud Controller in an OpenStack deployment, considering potential failure points	CO2	Challenging - Creating - T
17	2.1	Assess the challenges and benefits of integrating the Cloud Controller with other OpenStack services.	CO2	Challenging - Evaluating - T
18	2.1	Create a detailed plan for implementing a new OpenStack Cluster, focusing on the roles of the Cloud Controller and Keystone service.	CO2	Challenging - Creating - T

19	2.2	Create a detailed plan for implementing telemetry services in a cloud environment, focusing on monitoring and reporting.	CO2	Challenging - Creating - T
20	2.2	Assess the challenges and benefits of integrating network services with other OpenStack components.	CO2	Challenging - Evaluating - T
21	2.2	Design a robust image management strategy for an OpenStack deployment, considering scalability and redundancy.	CO2	Challenging - Creating - T
22	2.2	Compare the architectural differences and similarities between the API services and the Horizon dashboard in OpenStack.	CO2	Medium - Evaluating - T
23	2.2	Evaluate the effectiveness of the nova-scheduler service in optimizing resource utilization in a cloud environment.	CO2	Challenging - Evaluating - T
24	2.2	Analyze the impact of the nova-conductor service on the security and performance of an OpenStack deployment.	CO2	Medium - Analysing - T
25	3.1	Discuss the advantages and disadvantages of using KVM as a hypervisor in OpenStack.	CO3	Medium - Understanding - T
26	3.1	Summarize the role of container orchestration in OpenStack and evaluate how Magnum facilitates it.	CO3	Challenging - Evaluating - T
27	3.1	Compare and contrast containers and virtual machines in terms of their use in cloud computing.	CO3	Challenging - Evaluating - T
28	3.1	Describe the concept of regions and availability zones in OpenStack and their impact on service continuity.	CO3	Medium - Understanding - T
29	3.1	Analyze the importance of overcommitment considerations in OpenStack compute cloud design.	CO3	Medium - Analysing - T
30	3.1	Explain the process and importance of service recovery planning in OpenStack.	CO3	Medium - Understanding - T
31	3.1	Evaluate the role of nova-scheduler in the OpenStack compute service and its impact on resource allocation.	CO3	Medium - Evaluating - T
32	3.1	Analyze the impact of high availability (HA) clusters on the performance and reliability of OpenStack cloud services.	CO3	Medium - Analysing - T
33	3.1	Demonstrate how do host aggregates and availability zones contribute to efficient resource management in OpenStack?	CO3	Medium - Applying - A
34	3.1	Illustrate how does OpenStack Magnum integrate with other OpenStack services to provide a seamless container orchestration experience?	CO3	Medium - Analysing - A
35	3.2	Outline the process of attaching a Cinder volume to a Nova instance in OpenStack and its importance for data management.	CO3	Challenging - Analysing - T
36	3.2	Discuss the benefits and challenges of using Swift for object storage in OpenStack.	CO3	Medium - Understanding - T
37	3.2	Describe how OpenStack Swift supports high availability and the role of storage policies in managing costs.	CO3	Medium - Understanding - T
38	3.2	Compare and contrast the use of block storage, object storage, and shared file systems in OpenStack.	CO3	Challenging - Evaluating - T
39	3.2	Analyze the physical and logical design considerations for deploying Swift in a multi-region OpenStack cloud environment.	CO3	Medium - Analysing - T
40	4.1	Describe how Neutron integrates with the OpenStack Identity Service (Keystone) for authentication and authorization.	CO4	Medium - Understanding - T
41	4.1	Implement a Neutron-based virtual network with VXLAN tunneling and explain each configuration step in detail.	CO4	Challenging - Creating - A
42	4.1	Explain the role of Open vSwitch (OVS) in Neutron's implementation of virtual networks and how it facilitates network connectivity.	CO4	Medium - Understanding - T
43	4.1	Explain how Neutron implements distributed firewalls and their impact on network security.	CO4	Medium - Understanding - T
44	4.1	Design a security strategy for an OpenStack environment, focusing on the use of Neutron security groups and firewall rules to protect virtual machines. Include a rationale for your choices.	CO4	Challenging - Creating - A
45	4.1	Describe how to configure Neutron to enable external network connectivity for virtual machines. Include the steps for setting up an external network and router.	CO4	Medium - Understanding - A
46	4.2	Design a virtual network topology in OpenStack using both VLAN and VXLAN technologies. Include a diagram and explain the configuration steps.	CO4	Challenging - Creating - A
47	4.2	Describe a scenario where connecting multiple virtual networks with a Neutron router improves network efficiency. Illustrate with an example configuration.	CO4	Medium - Applying - A
48	4.2	Develop a comprehensive security plan for an OpenStack deployment, focusing on network security measures such as security groups, firewall rules, and network policies.	CO4	Challenging - Creating - A

49	4.2	Discuss the benefits and challenges of using OpenStack Neutron for network virtualization in cloud environments.	CO4	Medium - Understanding - T
50	4.2	Explain in detail how the Neutron API interacts with other OpenStack components to provide network services.	CO4	Challenging - Understanding - T
51	4.2	Critically evaluate the use of the ML2 plugin for supporting various network types in Neutron. Include examples of network scenarios where ML2 is beneficial.	CO4	Medium - Evaluating - T
52	5.1	What are the main components of OpenStack Heat, and how do they work together to enable orchestration?	CO5	Easy - Remembering - T
53	5.1	Explain the structure of a Heat Orchestration Template (HOT) and its key sections. Provide an example.	CO5	Medium - Understanding - T
54	5.1	Describe the process of stacking in OpenStack and how it enables resource management in an OpenStack cloud environment.	CO5	Medium - Understanding - T
55	5.1	Compare and contrast orchestration in OpenStack Heat with orchestration using Terraform in an OpenStack environment	CO5	Challenging - Evaluating - T
56	5.1	Outline the steps to configure High Availability (HA) for OpenStack services. Discuss the significance of HA in cloud environments	CO5	Medium - Analysing - A
57	5.1	Discuss the scope and importance of High Availability (HA) in OpenStack. What are the key components that need HA configuration?	CO5	Medium - Understanding - T
58	5.1	Explain the concept of failover in OpenStack and how it can be implemented for critical services. What are the challenges associated with failover?	CO5	Medium - Understanding - T
59	5.1	Analyze the methods of achieving High Availability in OpenStack's database. What role do clustering and replication play?	CO5	Challenging - Analysing - T
60	5.1	Describe the architecture of RabbitMQ in OpenStack and how High Availability can be implemented for the message queue system.	CO5	Medium - Understanding - T
61	5.1	Design a Heat template that orchestrates the deployment of a scalable web application on OpenStack. Include steps to ensure High Availability for the deployed resources.	CO5	Challenging - Creating - A
62	5.1	How does OpenStack handle message queue HA with RabbitMQ? Describe the architecture and necessary configurations.	CO5	Medium - Understanding - A
63	5.1	Critically evaluate the limitations of High Availability in OpenStack. Suggest solutions to improve the overall resilience of OpenStack services.	CO5	Challenging - Evaluating - T