

CLOUD COMPUTING
(INFO 4242)

Time Allotted : 3 hrs

Full Marks : 70

Figures out of the right margin indicate full marks.

*Candidates are required to answer Group A and
any 5 (five) from Group B to E, taking at least one from each group.*

Candidates are required to give answer in their own words as far as practicable.

Group – A
(Multiple Choice Type Questions)

1. Choose the correct alternative for the following: **10 × 1 = 10**
- (i) _____ prevent authorized user to access services in network.
(a) DNS attack (b) Cookie poisoning
(c) Denial of Service attack (d) SQL injection
 - (ii) Aggregation of resources are found in _____ computing.
(a) cloud (b) utility
(c) cluster (d) none of these
 - (iii) Which of the following is essential concept related to Cloud ?
(a) Reliability (b) Productivity
(c) Abstraction (d) All of the mentioned.
 - (iv) Which deployment model of cloud computing should be used by a business group, consisting of multiple companies, for its authorized users?
(a) Community Cloud (b) Hybrid Cloud
(c) Public Cloud (d) Private Cloud.
 - (v) Which service model of cloud computing provides the servers, storage devices and networks for a subscriber?
(a) Platform as a Service (b) Infrastructure as a Service
(c) Software as a Service (d) Identity as a Service.
 - (vi) Geographic distribution of data across a cloud provider's network is perceived as a major problem for many enterprises because it:
(a) Adds to latency (b) Makes data recovery harder
(c) Complicates regulatory compliances (d) Heightens security concerns
 - (vii) Which of the following provide system resource access to virtual machines?
(a) VMM (b) VMC
(c) VNM (d) All of the mentioned.

- (viii) In _____ the virtual machine simulates hardware, so it can be independent of the underlying system hardware.
(a) paravirtualization (b) full virtualization
(c) emulation (d) none of the mentioned
- (ix) Which of the following type of virtualization is found in hypervisor such as Microsoft's Hyper-V?
(a) Paravirtualization (b) Full virtualization
(c) Emulation (d) None of the mentioned.
- (x) Which of the following benefit is related to creating resources that are pooled together in a system which supports multi-tenant usage?
(a) On-demand self-service (b) Broad network access
(c) Resource pooling (d) All of the mentioned.

Group- B

2. (a) Explain different types of deployment methods in Cloud Computing. [(CO1)(Understand/LOCQ)]
(b) Differentiate between Cluster computing and Grid computing. [(CO1)(Analyze/IOCQ)]
(c) Defend the statement "Cloud computing follows Pay per use business model" by appropriate justification. [(CO1)(Evaluate/HOCQ)]
(d) Differentiate between Data Grid and Network Grid. [(CO1)(Analyze/IOCQ)]
3 + 4 + 3 + 2 = 12
3. (a) Explain different types of Grid found in Grid Computing. [(CO1)(Understand/LOCQ)]
(b) Explain the components of Cloud Computing architecture. [(CO2)(Understand/LOCQ)]
(c) Defend the statement "Cloud Computing is Economical" by appropriate justification. [(CO1)(Evaluate/HOCQ)]
5 + 5 + 2 = 12

Group – C

4. (a) What is virtual Machine? Explain Full Virtualization and Para Virtualization with a diagram. [(CO4)(Remember/LOCQ)]
(b) Compare between Host-Based, Network-based and Array-Based Storage Virtualization. [(CO4)(Analyze/IOCQ)]
(c) What is Software Defined Networking (SDN)? [(CO4)(Remember/IOCQ)]
(2 + 2 + 2) + 4 + 2 = 12
5. (a) Explain different benefits and risk of SOA. [(CO3)(Understand/LOCQ)]
(b) Compare between Web1.0 and Web2.0. [(CO6)(Analyze/IOCQ)]
(c) Explain four layers of Web Service Protocol Stack. [(CO6)(Understand/LOCQ)]
5 + 3 + 4 = 12

Group - D

6. (a) Differentiate between Discretionary access control mechanism and Role based access control mechanism with neat diagrams. [(C03)(Analyze/IOCQ)]
 (b) Explain different types of attack in Cloud Security. [(C03)(Understand/LOCQ)]
 (c) Discuss the different types of threat in Cloud infrastructure. [(C03)(Understand/LOCQ)]
6 + 3 + 3 = 12
7. (a) Explain different SLA metrics for PaaS and IaaS. [(C02)(C03)(Understand/LOCQ)]
 (b) Explain SLA life cycle briefly. [(C03)(Understand/LOCQ)]
 (c) Explain Service Transition phase of IT Infrastructure Library Life Cycle [(C03)(Understand/LOCQ)]
(3 + 3) + 3 + 3 = 12

Group - E

8. (a) Compare Different storage access tiers in Microsoft Azure Service. [(C05)(Analyze/IOCQ)]
 (b) Explain different features of Cloud SQL for PostgreSQL service in Google App Engine. [(C05)(Understand/LOCQ)]
 (c) Explain Cloud Cost component. [(C03)(Understand/LOCQ)]
4 + 6 + 2 = 12
9. (a) Explain any three components of Chargeback Method. [(C03)(Understand/LOCQ)]
 (b) Explain different key features of Google App Engine. [(C05)(Understand/LOCQ)]
6 + 6 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	70.83	23.96	5.20

Course Outcome (CO):

After the completion of the course students will be able to:

1. Articulate the main concepts, key technologies, strengths, and limitations of cloud computing
2. Identify the architecture and infrastructure of cloud computing, including SaaS, PaaS, IaaS, public cloud, private cloud, hybrid cloud, etc.
3. Explain the core issues of cloud computing such as security, privacy, and interoperability, etc.
4. Discuss system, network and storage virtualization and outline their role in enabling the cloud computing system model.

5. Explain Amazon, Google, Microsoft cloud services.
6. Understand different web services techniques to provide SaaS.

*LOCQ: Lower Order Cognitive Question; IOCQ: Intermediate Order Cognitive Question;
HOCQ: Higher Order Cognitive Question