

**FUNDAMENTALS OF CLOUD COMPUTING
(INFO 4121)**

Time Allotted: 2½ hrs

Full Marks: 60

Figures out of the right margin indicate full marks.

*Candidates are required to answer Group A and
any4 (four) from Group B to E, taking one from each group.*

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

Group – A

1. Answer any twelve: **12 × 1 = 12**

Choose the correct alternative for the following

- (i) Which grid provides fault tolerant and high performance communication service?
(a) Network Grid (b) Data Grid
(c) Collaboration Grid (d) None of (a), (b) & (c).
- (ii) Which computing technology supports aggregation of resources?
(a) Cloud (b) Cluster (c) Grid (d) None of (a), (b) & (c).
- (iii) In which category of hypervisor, Operating system has been fully replaced?
(a) Type 2 (b) Type 3 (c) Type 1 (d) All of (a), (b) & (c).
- (iv) Which Server virtualization technique does not use hypervisor?
(a) Full server virtualization (b) Para server virtualization
(c) OS-Level server virtualization (d) All of (a), (b) & (c).
- (v) Which Cloud deployment technique involves consumers having similar work domain?
(a) Public (b) Private (c) Hybrid (d) Community
- (vi) What is the name of the Cloud actor involved in handling communications?
(a) Cloud Auditor (b) Cloud Carrier
(c) Cloud Consumer (d) None of (a), (b) & (c).
- (vii) What is the name of the Storage service used by Amazon Web Service?
(a) Amazon Simple Storage Services (b) Amazon Storage Services
(c) Amazon Services (d) None of (a), (b) & (c).
- (viii) What is duration for which data can be stored in Archive storage tier of Microsoft Azure?
(a) 180 days (b) 90 days
(c) 30 days (d) 60 days.

- (ix) Which Access control technique is enforced by the owner of data?
 (a) Discretionary Access control technique
 (b) Mandatory Access control technique
 (c) Roll based. Access control technique
 (d) All of the above.
- (x) Full form of UDDI is
 (a) Universal Description, Discovery and Integration
 (b) Universal Description, Integration and Discovery
 (c) Universal Description, Discovery and Distance
 (d) None of the above.

Fill in the blanks with the correct word

- (xi) In _____ attack, resource cannot be used by authorised users.
- (xii) _____ cloud infrastructure is provisioned for exclusive use by single organization.
- (xiii) _____ delivery model is also known as Software on Demand.
- (xiv) Applications and services that run on a distributed network using virtualized resources is known as _____.
- (xv) _____ refers to development of online services that encourage collaboration, communication and information sharing.

Group - B

2. (a) Compare between Cloud Computing, Cluster Computing and Grid Computing. [[CO1](Analyze/IOCQ)]
 (b) Explain any four characteristics of Cloud computing. [[CO1](Understand/LOCQ)]
 (c) Explain the advantages of Cloud Computing. [[CO1](Understand/LOCQ)]
5 + 4 + 3 = 12
3. (a) Differentiate between Data grid, Computational grid and Collaboration grid. [[CO1](Analyze/IOCQ)]
 (b) Explain any four applications of Cloud Computing. [[CO1](Understand/LOCQ)]
 (c) Define Utility computing. [[CO1](Remember/LOCQ)]
6 + 4 + 2 = 12

Group - C

4. (a) Differentiate between Public cloud, Hybrid cloud and Community cloud with neat diagrams. [[CO2](Analyze/IOCQ)]
 (b) Differentiate between Service Intermediation, Service Aggregation and Service Arbitrage. Define Server Virtualization. [[CO2](Analyze/IOCQ)](CO4)(Remember)/LOCQ]
6 + (4 + 2) = 12
5. (a) Explain different purchasing options of Amazon EC2. [[CO5](Understand/LOCQ)]

- (b) Discuss Software Defined Network (SDN) briefly and compare between SDN and Network Functions Virtualization (NFV). [[CO4](Analyze/IOCQ)]
6 + (3 + 3) = 12

Group - D

6. (a) Discuss any six features of Google App Engine. [[CO5](Understand/LOCQ)]
 (b) Discuss any six features of Microsoft Azure App Service. [[CO5](Understand/LOCQ)]
6 + 6 = 12
7. (a) Explain the working mechanism of Web Service with an example. [[CO6](Understand/LOCQ)]
 (b) Discuss the features of Web 2.0. [[CO6](Understand/LOCQ)]
 (c) Differentiate between IAAS, PAAS and SAAS. [[CO6](Remember/LOCQ)]
6 + 3 + 3 = 12

Group - E

8. (a) Explain all the stages of SLA (Service Level Agreement) Life Cycle in detail. [[CO3](Understand/LOCQ)]
 (b) Discuss any six components of SLA (Service Level Agreement). [[CO3](Understand/LOCQ)]
6 + 6 = 12
9. (a) Explain five types of threats in Cloud infrastructure. Define Life Cycle management. [[CO3](Understand/Remember/LOCQ)]
 (b) Differentiate between Mandatory Access control technique and Discretionary Access control technique with neat diagrams. [[CO3](Analyze/IOCQ)]
(5 + 1) + 6 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	69.79	30.21	0

Course Outcome (CO):

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.
4. Discuss system, network and storage virtualization and outline their role in enabling the cloud computing system model.
5. Explain AWS, Google App Engine, Microsoft Azure
6. Understand different web services techniques to provide SaaS.

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

