

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

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) _____ Grid provides secure access to huge pool of shared processing power required for intensive computing.
(a) Data (b) Collaboration (c) Network (d) Computational
- (ii) _____ computing is based on consolidation of resources.
(a) Cluster (b) Grid (c) Cloud (d) All of the above
- (iii) _____ cloud infrastructure is provisioned for open use by the general public.
(a) Private (b) Hybrid (c) Public (d) None of the above
- (iv) Access control mechanism that controls access permission through data owner is called
(a) Mandatory access control (b) Discretionary access control
(c) Attribute access control (d) Role based access control.
- (v) In _____ attack, the attacker captures the authentication request through hacking and deliberately mimics it without modification to gain access to cloud resources.
(a) Denial of Service (b) Replay
(c) Insider (d) None of the above
- (vi) _____ delivery model allows user to deploy the cloud infrastructure by using programming languages, libraries, services and tools supported by the cloud provider.
(a) PaaS (b) SaaS (c) IaaS (d) All of the mentioned
- (vii) _____ Hypervisor replaces the traditional operating system.
(a) Type1 (b) Type2
(c) Both (a) and (b) (d) None of the mentioned
- (viii) In _____ Server virtualization, all the virtual servers must run the same operating system.
(a) Full (b) Para (c) OS-Level (d) None of above
- (ix) Archive storage tier of Microsoft Azure stores data for atleast _____ days.
(a) 90 (b) 180 (c) 60 (d) 30

- (x) _____ is used to describe the availability of service in Web Service.
(a) XML (b) WSDL (c) SOAP (d) WMDL

Group - B

2. (a) Differentiate between Grid computing and Cloud Computing. [(CO1)(Analyze/IOCQ)]
(b) Justify the statement "Maintenance is easy in Cloud computing". [(CO1)(Evaluate/HOCQ)]
(c) Explain Cluster computing with appropriate diagram. [(CO1)(Understand/LOCQ)]
4 + 4 + 4 = 12
3. (a) Discuss any four limitations of Cloud computing. [(CO1)(Understand/LOCQ)]
(b) Discuss any four applications of Cloud computing. [(CO1)(Understand/LOCQ)]
(c) Explain any four types of Grid computing. [(CO1)(Understand/LOCQ)]
4 + 4 + 4 = 12

Group - C

4. (a) Differentiate between Hybrid Cloud and Community Cloud with neat diagrams. [(CO2)(Analyze/IOCQ)]
(b) Explain Host-Based Storage Virtualization. [(CO4)(Understand/LOCQ)]
(c) Compare between the roles of different types of Cloud actors in Cloud Infrastructure. [(CO2)(Analyze/IOCQ)]
4 + 3 + 5 = 12
5. (a) Justify the statement "Performance of Para Server Virtualization is better than Full Server Virtualization". [(CO4)(Evaluate/HOCQ)]
(b) Explain the architecture of NFV (Network Function Virtualization) in detail with neat diagram. [(CO4)(Understand/LOCQ)]
(c) Explain Type1 Hypervisor with neat diagram. [(CO4)(Understand/LOCQ)]
4 + 6 + 2 = 12

Group - D

6. (a) Explain the different types of layers in Web Service Protocol stack. [(CO6)(Understand/LOCQ)]
(b) Differentiate between XML-RPC and UDDI. [(CO6)(Analyze/IOCQ)]
(c) Discuss any four features of Web 2.0. [(CO6)(Understand/LOCQ)]
4 + 4 + 4 = 12
7. (a) Explain any six features of Microsoft Azure App service. [(CO5)(Understand/LOCQ)]
(b) Differentiate between the different storage access tiers available in Microsoft Azure Storage Service. [(CO5)(Analyze/IOCQ)]
(c) State any three services of Google App Engine. [(CO5)(Remember/LOCQ)]
3 + 6 + 3 = 12

Group - E

8. (a) Differentiate between role based access control technique and attribute based access control technique with neat diagrams. [(CO3)(Analyze/IOCQ)]
 (b) Differentiate between physical biometric authentication and behavioural biometric authentication. Differentiate between False Accept Ratio (FAR) and False Reject Ratio (FRR) [(CO3)(Analyze/IOCQ)]
8 + (2 + 2) = 12
9. (a) Explain any eight types of components of SLA (Service Level Agreement). [(CO3)(Understand/LOCQ)]
 (b) Differentiate between direct cost and indirect cost. [(CO3)(Analyze/IOCQ)]
8 + 4 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	51.04	40.63	8.33

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.
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

