

**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  
any 4 (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 of the following is NOT a common benefit of cluster computing?
  - (a) High availability
  - (b) Enhanced performance
  - (c) Increased cost-effectiveness compared to single powerful machines
  - (d) Reduced power consumption
- (ii) Which delivery model of cloud is known by the name “Software on Demand”?
  - (a) PaaS
  - (b) IaaS
  - (c) SaaS
  - (d) None of above
- (iii) Which Server virtualization technique does not use hypervisor?
  - (a) OS-level server virtualization
  - (b) Full server virtualization
  - (c) Para server virtualization
  - (d) All of above
- (iv) Which pricing model in Amazon EC2 saves up to 72% ?
  - (a) On Demand Instances
  - (b) Reserved Instances
  - (c) Spot Instances
  - (d) Savings Plans
- (v) Who among the following provides Joomla as application template?
  - (a) Google app Engine
  - (b) Microsoft Azure
  - (c) AWS
  - (d) None of above
- (vi) Which of the following helps developers to publish new services or find existing services?
  - (a) Service Provider
  - (b) Service Reakon
  - (c) Service Requestor
  - (d) Service Registry
- (vii) What is the role of XML in web services?
  - (a) To format and transfer messages between systems
  - (b) To encrypt data before transmission
  - (c) To manage web service deployment
  - (d) To create the user interface for a web application

- (viii) In which 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 above
- (ix) Which authentication techniques deal with physical and behavioural features of individual?
  - (a) TCG
  - (b) PKI
  - (c) SSO
  - (d) Biometric
- (x) What is the primary purpose of an SLA in a cloud environment?
  - (a) To increase cloud service costs.
  - (b) To define the responsibilities of both the service provider and the customer.
  - (c) To determine the physical location of servers.
  - (d) To provide a discount on services.

*Fill in the blanks with the correct word*

- (xi) \_\_\_\_\_ cloud infrastructure is provisioned for open use by the general public.
- (xii) \_\_\_\_\_ delivery model allows user to deploy the cloud infrastructure by using programming languages, libraries, services and tools supported by the cloud provider.
- (xiii) Archive storage tier of Microsoft Azure stores data for at least \_\_\_\_\_ days.
- (xiv) \_\_\_\_\_ refers to the development of the online services that encourages collaboration and information sharing.
- (xv) Applications and services that run on a distributed network using virtualized resources is known as \_\_\_\_\_.

### Group - B

- 2. (a) Differentiate between Cluster computing and Grid computing. [[CO1](Analyse/IOCQ)]  
 (b) Discuss any four advantages of Cloud computing. [[CO1](Understand/LOCQ)]  
 (c) Justify the statement “Cloud computing is economical”. [[CO1](Analyse/IOCQ)]  
**4 + 4 + 4 = 12**
- 3. (a) Explain the roles of different types of Cloud Actors in detail. [[CO1](Understand/LOCQ)]  
 (b) Justify the statement “Cloud computing follows Multi-tenant model”. [[CO1](Analyse/IOCQ)]  
 (c) Define Utility computing. [[CO1](Remember/LOCQ)]  
**7 + 3 + 2 = 12**

### Group - C

- 4. (a) Explain the following:
  - (i) Virtualization
  - (ii) Virtual machine
  - (iii) Hypervisor.[[CO4](Understand/LOCQ)]

- (b) Explain Type 1 Hypervisor and Type 2 Hypervisor with neat diagrams. *[[CO4](Understand/LOCQ)]*  
**6 + 6 = 12**
5. (a) Explain Amazon Elastic Compute Cloud (Amazon EC2). Discuss any six features of Amazon EC2. *[[CO5](Understand/LOCQ)]*
- (b) Compare between Software as Service (SaaS) and Infrastructure as Service (IaaS). *[[CO2] (Analyse/IOCQ)]*  
**(2 + 6) + 4 = 12**

### Group - D

6. (a) Explain Microsoft Azure App service. Discuss any six features of Microsoft Azure App service. *[[CO5](Understand/LOCQ)]*
- (b) Compare between Hot, Cool and Archive storage tiers of Microsoft Azure storage service. *[[CO5](Analyse/IOCQ)]*  
**(2 + 6) + 4 = 12**
7. (a) Explain the working mechanism of Web Service with an example. *[[CO6](Understand/LOCQ)]*
- (b) Explain four layers of Web Service Protocol Stack in detail. *[[CO6](Understand/LOCQ)]*
- (c) Explain Service Registry. *[[CO6](Understand/LOCQ)]*  
**6 + 4 + 2 = 12**

### Group - E

8. (a) Define Service Level Agreement (SLA). *[[CO3](Remember/LOCQ)]*
- (b) Explain any eight components of Service Level Agreement (SLA) in detail. *[[CO3](Understand/LOCQ)]*
- (c) Discuss two advantages of Service Level Agreement (SLA). *[[CO3](Understand/LOCQ)]*  
**2 + 8 + 2 = 12**
9. (a) Explain any four types of Authentication techniques in Cloud computing. *[[CO3](Understand/LOCQ)]*
- (b) Compare between Direct cost and Indirect cost in context with Cloud computing. *[[CO3](Analyse/IOCQ)]*
- (c) Explain Mandatory access control mechanism in detail with neat diagram. *[[CO3](Understand/LOCQ)]*  
**4 + 4 + 4 = 12**

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	76	24	0

