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
<u>any 5 (five)</u> from Group B to E, taking <u>at least one</u> 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)   FAR and FRR are configurable parameters in .... authentication.
              (a) SSO authentication   (b) Biometric authentication
              (c) Both (a) and (b)   (d) None of (a), (b) & (c)

    (ii)   .... is a feature of Cloud computing that enables users to monitor server, allocation of storage without human interaction.
              (a) Resource Pooling   (b) On-Demand Self-Service
              (c) Elasticity   (d) None of (a), (b) & (c)

    (iii)   _____ Grid provides fault tolerant and high performance communication services.
              (a) Data   (b) Network   (c) Collaboration   (d) None of (a), (b) & (c)

    (iv)   _____ is a security access control mechanism that controls access permissions through operating system.
              (a) Mandatory access control   (b) Discretionary access control
              (c) Both (a) and (b)   (d) None of (a), (b) & (c)

    (v)   .... cloud is comparatively insecure than Community cloud.
              (a) Public   (b) Private   (c) Both (a) and (b)   (d) None of (a), (b) & (c)

    (vi)   In .... access control mechanism, data access policies are controlled by data owner.
              (a) Mandatory   (b) Discretionary
              (c) Task based   (d) Role based

    (vii)   Which one of these is not a cloud computing pricing model?
              (a) Free   (b) Pay Per Use   (c) Subscription   (d) Ladder.

    (viii) .... helps user to make, publish and customize the software in the hosted environment
              (a) SAAS   (b) PAAS   (c) IAAS   (d) None of (a), (b) & (c)

(ix)   Which of the following architectural standards is working with cloud computing industry?
(a) Web-application frameworks   (b) Standardized Web services
(c) Service-oriented architecture   (d) All of (a), (b) & (c).

(x)   Which of the following cloud concept is related to pooling and sharing of resources?
(a) Polymorphism   (b) Abstraction
(c) Virtualization   (d) None of (a), (b) & (c).

Group - B

2. (a)   Explain any five characteristics of Cloud Computing.   *[(CO1)(Understand/LOCQ)]*
    (b)   Defend the statement "Cloud Computing is an Automatic system".
                                                                    [(CO1)(Evaluate/HOCQ)]
    (c)   Differentiate between Community cloud and Hybrid cloud with neat diagrams.
                                                                    [(CO1,CO2)(Analyze/IOCQ)]
                                                                    5 + 3 + 4 = 12

3. (a)   Differentiate between Grid Computing and Cloud Computing.
                                                                    [(CO1)(Analyze/LOCQ)]
    (b)   Explain five types of Grid Computing in detail.   *[(CO1)(Understand/LOCQ)]*
    (c)   Define Cloud Computing.   *[(CO1)(Remember/LOCQ)]*
                                                                    5 + 5 + 2 = 12

Group - C

4. (a)   What is virtual Machine? Explain different key properties of virtual machines.
                                                                    [(CO4)(Remember/LOCQ)]
    (b)   Compare between Block-Based and File-Based Storage Virtualization.
                                                                    [(CO4)(Analyze/IOCQ)]
    (c)   What are the advantages of storage virtualization?   *[(CO4)(Remember/LOCQ)]*
                                                                    (2 + 3) + 4 + 3 = 12

5. (a)   Explain different types of PaaS.   *[(CO2)(Understand/LOCQ)]*
    (b)   Critically comment: "SaaS has a lot of appeal to businesses". *[(CO2)(Analyze/IOCQ)]*
    (c)   How does a web service work? Demonstrate with an example.
                                                                    [(CO6)(Apply/IOCQ)]
                                                                    3 + 3 + 6 = 12

Group - D

6. (a)   Differentiate between Discretionary access control mechanism, Attribute based access control mechanism and Role based access control mechanism with neat diagrams.   *[(CO3)(Analyze/IOCQ)]*
    (b)   Explain any three types of attacks in Cloud environment. *[(CO3)(Understand/LOCQ)]*

(c)   Differentiate between FAR and FRR.   *[(CO3)(Analyze/IOCQ)]*

8 + 3 + 1 = 12

7. (a)   Compare between Basic, Medium and Advanced SLA.   *[(CO3)(Analyze/IOCQ)]*
    (b)   Explain different SLA component briefly.   *[(CO3)(Understand/LOCQ)]*
    (c)   Explain five individual aspects of service design phase of IT Infrastructure Library Life Cycle.   *[(CO3)(Understand/LOCQ)]*

3 + 5 + 4 = 12

Group - E

8. (a)   Compare between different key features of Microsoft Azure Service.
    [(CO5)(Analyze/IOCQ)]
    (b)   Explain different features of Amazon VPC.   *[(CO5)(Understand/LOCQ)]*
    (c)   Explain AWS Site-to-Site VPN Connection Pricing.   *[(CO5)(Understand/LOCQ)]*

4 + 6 + 2 = 12

9. (a)   Explain four cost components of Amazon S3.   *[(CO5)(Understand/LOCQ)]*
    (b)   Explain different functionality of Google App Engine to develop robust apps.
    [(CO5)(Understand/LOCQ)]

6 + 6 = 12

Cognition Level	LOCQ	IOCQ	HOCQ
Percentage distribution	62.5	34.38	3.12

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.