COURSE WORKSHEET: CLOUD COMPUTING (23CS706)

Course Type: Professional Elective - IV | Target Students: B.Tech IV Year I Sem

UNIT - I: Computing Paradigms & Cloud Architecture

Syllabus: Computing Paradigms, Cloud Computing Fundamentals, Cloud Computing Architecture, and Management.

Multiple Choice Questions (MCQs)

1. Which computing paradigm relies heavily on a decentralized network of autonomous computers interacting as a single unified resource to solve massive computational problems?

   a) Mainframe Computing

   b) Grid Computing

   c) Centralized Computing

   d) Monolithic Computing

   - **Answer:** b) Grid Computing

2. What is a core fundamental attribute of Cloud Computing that allows consumers to automatically provision computing capabilities without requiring human interaction with the service provider?

   a) Broad Network Access

   b) Resource Pooling

   c) On-Demand Self-Service

   d) Rapid Elasticity

   - **Answer:** c) On-Demand Self-Service

3. In Cloud Architecture, what does "Elasticity" primarily refer to?

   a) The ability to encrypt data across multiple channels

   b) The capability to dynamically scale resources up or down based on demand

   c) The fixed pricing model of infrastructure components

   d) The speed of internet routing protocols

   - **Answer:** b) The capability to dynamically scale resources up or down based on demand

4. Which layer of Cloud Architecture manages the abstraction of physical hardware to create virtual pools of compute, storage, and networking?

   a) Application Layer

   b) Platform Layer

   c) Infrastructure/Virtualization Layer

   d) User Interface Layer

   - **Answer:** c) Infrastructure/Virtualization Layer

5. Cloud Resource Management is essential because it guarantees that:

   a) Network bandwidth is completely eliminated

   b) Service Level Agreements (SLAs) are met through optimal resource allocation

   c) Multi-tenancy features are disabled for security

   d) Web 2.0 architectures are replaced by Web 3.0

   - **Answer:** b) Service Level Agreements (SLAs) are met through optimal resource allocation

6. Which paradigm involves processing data on a cluster of networked computers to handle high-throughput, data-intensive tasks?

   a) Pervasive Computing

   b) Distributed Computing

   c) Localized Computing

   d) Embedded Computing

   - **Answer:** b) Distributed Computing

7. What type of cloud management tool handles billing, metering, and tracking resource usage for multi-tenant clients?

   a) Hypervisor Management

   b) Utility Computing / Metering Tool

   c) Network Flow Controller

   d) Compile-time Analyzer

   - **Answer:** b) Utility Computing / Metering Tool

8. What architectural feature ensures a cloud system remains highly available even during localized hardware failures?

a) Loose Coupling and Redundancy

b) Single Point of Failure Design

c) Monolithic Code Base

d) Manual Resource Provisioning

- **Answer:** a) Loose Coupling and Redundancy

9. The concept of "Broad Network Access" implies that cloud services must be accessible via:

   a) Only localized high-speed corporate intranets

   b) Heterogeneous client platforms (e.g., mobile phones, laptops, workstations)

   c) Proprietary, vendor-locked hardware interfaces

   d) Offline storage synchronization exclusively

   - **Answer:** b) Heterogeneous client platforms (e.g., mobile phones, laptops, workstations)

10. Which cloud paradigm model focuses on delivering bare minimum hardware resources over a utility billing mechanism?

    a) Software Paradigms

    b) Infrastructure as a Service (IaaS)

    c) Operating System Paradigms

    d) Application Environment Paradigms

    - **Answer:** b) Infrastructure as a Service (IaaS)

Fill in the Blanks

1. The historical shift from traditional client-server models to on-demand utility resources marks a evolution in _____.
   - **Answer:** Computing Paradigms
2. In cloud fundamentals, when physical computing assets are pooled together to serve multiple consumers using a multi-tenant model, it is known as _____.
   - **Answer:** Resource Pooling
3. The structural framework that defines how hardware components, software apps, and virtual networks interact in the cloud is called the _____.
   - **Answer:** Cloud Computing Architecture

4. Managing the orchestration, runtime monitoring, and optimization of virtual instances falls under _____.
    - **Answer:** Cloud Management
5. _____ Computing allows computing elements to be delivered as a metered service, much like traditional electricity or water utilities.
    - **Answer:** Utility
6. The capability of a cloud system to seamlessly withstand a surge in user traffic without manual server configuration is termed _____.
    - **Answer:** Scalability (or Rapid Elasticity)
7. Before Cloud Computing gained dominance, _____ computing coordinated shared, heterogeneous resources across distinct geographic locations.
    - **Answer:** Grid
8. A user interacting with cloud applications without needing to manage the underlying infrastructure is using the cloud's _____ paradigm.
    - **Answer:** Abstracted
9. Cloud management architectures utilize _____ policies to automatically scale up infrastructure when CPU usage hits a threshold.
    - **Answer:** Auto-scaling
10. The foundational driver behind cloud cost efficiency is shifting corporate IT spend from CapEx (Capital Expenditure) to _____ (Operational Expenditure).
    - **Answer:** OpEx