

2024

# CS435 - Cloud Computing.

LEARNING MATERIALS

BSCS | Pakistan.

## 116 - 288.

### Important MCQS

1. MCQ: **MTBF** stand for \_\_\_\_\_.

Correct Answers **mean time between failure**

2. MCQ: **CSP** stand for \_\_\_\_\_.

Correct Answers **Cloud Service Provider**

3. MCQ: **SSL** stand for \_\_\_\_\_.

Correct Answers **Secure Socket Layer**

4. MCQ: **CIS** stand for \_\_\_\_\_.

Correct Answers **Cloud Information Service**

5. MCQ: The \_\_\_\_\_ is called Cloudlet.

Correct Answers **workload unit**

6. MCQ : The characteristics of big data can be represented by \_\_\_\_\_.

Correct Answers **4vs:**

7. MCQ: \_\_\_\_\_ consideration is applied to ensure SLA is not violated.

Correct Answers **QoS**

8. MCQ: \_\_\_\_\_ scheduling, the task starvation can be avoided.

Correct Answers: **Priority-Based**

9. MCQ: SLA violation when IT resources are \_\_\_\_\_.

Correct Answers: **overloaded**

10. MCQ: Effective resource scheduling reduces \_\_\_\_\_.

Correct Answers: **Execution time**

11. MCQ : The best option is to move the data center to \_\_\_\_\_.

Correct Answers: **Cloud**

12. MCQ: It is a third party process of finding the appropriate Cloud provider.

Correct Answers: : **Cloud Brokerage**

13. MCQ: The \_\_\_\_\_ clustering creates a high-availability cluster across multiple physical servers.

Correct Answers: **Hypervisor**

14. MCQ: VMs hosted on a physical server are managed by\_\_\_\_\_.

Correct Answers: **hypervisor**

15. MCQ : Advantages of Mobile Cloud Computing:

Correct Answers: **Extending battery lifetime**

16. MCQ: \_\_\_\_\_architecture is used for provisioning of dedicated IT resources.

Correct Answers: **Resource reservation**

17. MCQ: SDN stand for\_\_\_\_\_.

Correct Answers: **Software Defined Networking**

18. MCQ: API stand for\_\_\_\_\_.

Correct Answers: **application program interface**

19. \_\_\_\_\_can be provided to an overloaded application on the recommendation and budget of the PaaS consumer.

Correct Answers **Scalability**

20. The forensic analysis of \_\_\_\_\_is the responsibility of the consumer.

Correct Answers: **IaaS**

21. The forensic analysis for \_\_\_\_\_is the responsibility of the provider.

Correct Answers: **SaaS**

22. \_\_\_\_\_are usually related to quality metrics such as performance, reliability and maintainability.

Correct Answers: **Non-functional requirement**

23. \_\_\_\_\_are provided by the system analyst to the designer.

Correct Answers: **functional requirement**

24. VM is migrated to other server for\_\_\_\_\_.

Correct Answers: **Load Balance**

25. WEP stand for\_\_\_\_\_.

Correct Answers: **Wired Equivalent Privacy**

26. WPA stand for\_\_\_\_\_.

Correct Answers ; **Wi-Fi Protected Access**

27. it may cause SLA violation when IT resources are \_\_\_\_\_.

Correct Answers: **overloaded**

28. initial investment regarding IT resource acquiring and installations are Called ?

Correct Answers: **Upfront Costs**

29. STEM stand for \_\_\_\_\_.

Correct Answers: **Science, Technology, Engineering and Mathematics**

30. CloudSim requires Sun's \_\_\_\_\_.

Correct Answers: **Java 8 or newer version**

31. \_\_\_\_\_ architecture is used for provisioning of dedicated IT resources.

Correct Answers: **Resource reservation**

32. The \_\_\_\_\_ scheduling can achieve low cost and meet deadline if negotiation is successful.

Correct Answers: **bargain-based**

33. \_\_\_\_\_ is the process of perfecting an algorithm to make it more beneficial.

Correct Answer: **Optimization**

34. The Cloud computing and Mobile Cloud computing are dependent upon \_\_\_\_\_ usage of IT resources offered by Cloud.

Correct Answers: **remote**

35. In case of Cloud computing, the providers of IaaS and PaaS manage to provide \_\_\_\_\_ uptime through server redundancy and failover systems.

Correct Answers: **99.9%**

36. Load balancer module specially in case \_\_\_\_\_ scaling.

Correct Answers: **Horizontal**

37. Consumers should consider the use of advanced procedures for \_\_\_\_\_ provided by some providers to avoid account hijacking or identity thefts.

Correct Answers: **authentications**

38. \_\_\_\_\_ resource scheduling prioritizes the processing deadline of the users' requests.

Correct Answers: **Time-Based Resource**

39. Include the running costs of the IT resources e.g., licensing fee, electricity, insurance and labor.

Correct Answer: **On-going Costs**

40. Up to \_\_\_\_\_ of Europeans.  
Correct Answer: **70%**
41. \_\_\_\_\_ excludes the access privileges of terminated employees as quickly as possible to prevent any damages.  
Correct Answer: **Identity as a Service (IDaaS)**
42. \_\_\_\_\_ is a possibility of harm or loss as a result of an activity.  
Correct Answer: **Risk**
43. Cloud not only provides the facility of data access over the Internet.  
Correct Answer: **RIDA**
44. The \_\_\_\_\_ is configured to use all the redundant NIC.  
Correct Answers: **virtual switch**

### **Big data and Characteristics :**

Big Data can be: Big data is a set of techniques and technologies that require new forms of integration to uncover large hidden values from large datasets that are diverse, complex, and of a massive scale.

The following are the three generic characteristics of big data:

- Data volume is huge
- Data may not be categorized into regular relational databases
- The data is generated, captured and processed at high speed.

### **✚ Security protocol name :**

- Wired Equivalent Privacy (WEP)
- Wi-Fi Protected Access (WPA)
- Wi-Fi Protected Access 2 (WPA2)

### **Question: Mobile cloud computing application name?**

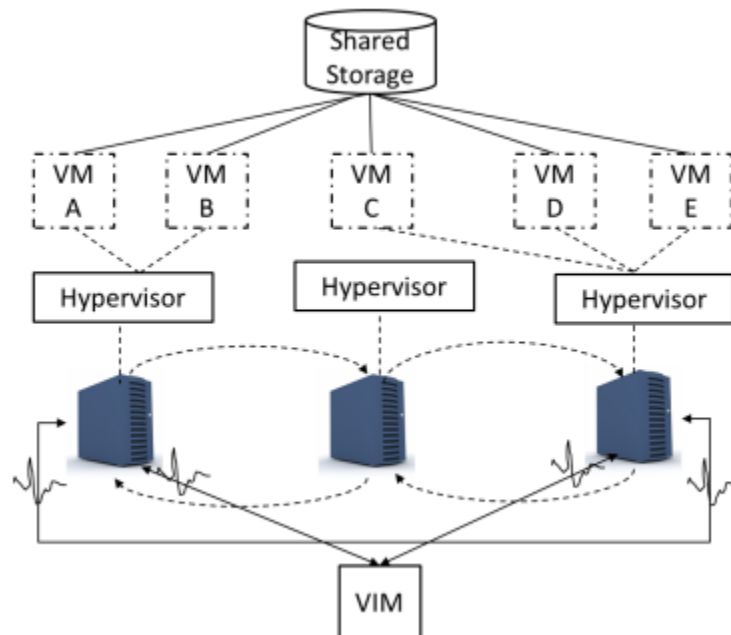
- Mobile gaming
- Mobile banking
- Mobile education
- Mobile healthcare

### **✚ A few runtime configurations can be controlled by SaaS consumers. These include:**

- Usage cost control
- SLA monitoring
- Security related configurations

✚ Occurrence Probability and Business continuity impact:

Risk	Occurrence Probability	Business Continuity Impact
User disk failure	Medium	Low
Server disk failure	Low	High
Network failure	Low	High
Database failure	Medium	High
Server power failure	High	High
Fire	Low	High
Flood	Low	High



Write the name of BOX :

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_

**Question: Accomplishment of using speed communication links for connecting cluster it resources.**

- ✚ High speed communication links are used to connect the clustered IT resources for:
  - Workload distribution
  - Task scheduling
  - Data sharing
  - System synchronization

### What is Cryptography?

It is a science of providing security for information. It is a science of secret communication.

- ✚ The following are the five primary functions:
  - Privacy
  - Authentication
  - Integrity
  - Non-repudiation: A mechanism to prove the originality of the sender.
  - Exchange of crypto keys which are the strings of bits used to change the format of the data.
- ✚ Effective resource scheduling reduces:
  - Execution cost
  - Execution time
  - Energy consumption

### Question: On which factors cost template used by providers depend?

- ✚ The cost templates used by the providers depend upon:
  - Market competition
  - Overhead occurred during design, deployment and operations of the service
  - Cost reduction considerations through increased sharing of IT resources
- ✚ Common types of Resource Cluster Mechanism
  - Server Cluster
  - Database Cluster
  - Large Dataset Clusters
- ✚ Uses of remote administration console
  - Capacity planning
  - Provision and releasing IT resources for on-demand usage
  - Configure and setting cloud services
  - Managing user accounts, security credentials, authorization and access control
  - Monitor cloud service status, usage and performance
- ✚ Lack of interoperability in cloud computing (Chat GPT)
  - Vendor Lock-in

- Incompatible APIs
- Data format in-compatibility
- ✚ VM migration across different sources:
  - Consolidation
  - Upgrade/Downgrade
  - Cloud migration
  - Disaster recovery
  - Load balancing
  - Cost Optimization
- ✚ A Cloud service may become disruptive/unavailable/down due to:
  - Over burden of processing load
  - Scheduled updates
- ✚ Cloud Balancing Architecture improves/increases the following features:
  - Load balancing
  - Performance and scalability of IT-resources
  - Availability and reliability of IT resources
- ✚ In Dynamic Failure Detection and Recovery Architecture, The resilient watchdog module performs the following five core functions:
  - Monitoring
  - Identifying an event
  - Executing the reactive routine/s
  - Reporting
- ✚ Several factors affect the Cloud reliability
  - Network Dependence
  - Safety-Critical Processing
- ✚ Question : Write some threats in disaster recovery of cloud computing
  - Power failure or disruption
  - Computer Viruses
  - Fire, Flood & Disgruntled Employees
  - Lost Equipment & Desktop Failure
  - Server failure & Network Failure
- ✚ Dynamic Failure Detection and Recovery Architecture allows the implementation of an automated recovery policy consisting of predefined steps and may involve actions such as:
  - Running a script
  - Sending a message

- Restarting services

✚ Following are the steps in Bare-Metal Provisioning Architecture:

- Consumer connects to central software through self-service portal.
- The available servers are shown.
- The consumer chooses the server and the OS to be installed.
- The resource management system is used to install the required chosen OS.
- The consumer starts using the provisioned server.

✚ Following are the steps in Rapid Provisioning Architecture:

- A consumer chooses a VM package through self-service portal and submits the provisioning request.
- The centralized provisioning module selects an available VM and initiates it through a suitable template.
- Upon initiation, the baseline/s templates are applied.
- The VM is ready to use now.

✚ [ **Cloud Consumer's Perspective** ] The administrative rights of the IaaS consumer includes, controlling of:

- Life cycle of VM (powering-On/Off and restarting)
- Cloud storage attachment
- Basic software installations (OS and pre-installed software)
- Passwords and credentials
- Costs

✚ [ **Cloud Consumer's Perspective** ] Typically, a PaaS consumer receives the following:

- Cloud emulation environment
- Class libraries
- Software libraries
- Frameworks
- Databases

✚ [ **Cloud Consumer's Perspective** ] The administrative rights of the PaaS consumer includes, controlling of:

- Cloud storage device selection
- Choosing the tools in case of ready-made environment
- Deployment of automated scaling listener, load balancer and replication etc.
- Login management of service/s developed/deployed using PaaS instance
- IT-resource usage cost

- ✚ **[ Cloud Consumer's Perspective ]** A few runtime configurations can be controlled by SaaS consumers. These include:
  - Security related configurations
  - SLA monitoring
  - Usage cost control
  
- ✚ Inter-Cloud providers are of two types:
  - With extra resources
  - With resource shortage
  
- ✚ Business Cost Metrics:
  - Upfront Costs
  - On-going Costs
  
- ✚ Cost management can take place across the lifecycle phases of Cloud services. These phases may include:
  - Design & Development
  - Deployment
  - Service Contracting
  - Provisioning & Decommissioning
  
- ✚ The cost templates used by the providers depend upon:
  - Market competition
  - Overhead occurred during design, deployment and operations of the service
  - Cost reduction considerations through increased sharing of IT resources
  
- ✚ A pricing model for Cloud services can be composed of:
  - Fixed and variable rates definitions
  - Negotiations by consumers
  - Cost customization possibilities
  - Discount offerings
  - Payment options
  
- ✚ Two common metrics related to service measuring resiliency are as follows:
  - Mean-Time System Recovery (MTSR) Metric
  - Mean-Time to Switchover (MTSO) Metric

✚ The key terminologies of privacy are:

- Data subject
- Data processor
- Data controller

✚ Trust has two types:

- Hard trust
- Soft trust
  
- Dynamic trust (short term)
- Persistent trust (long term)

✚ Five primary functions of Cryptography:

- Privacy
- Integrity
- Authentication
- Non-repudiation (A mechanism to prove the originality of the sender)
- Exchange of crypto keys which are the strings of bits used to change the format of the data

✚ Remedies for Denial of Service (DoS) attacks:

- Contact ISP to clarify the reason of downgraded network performance
- ISP can help in throttling malicious traffic
- Using DoS detection tools

✚ Some prominent security protocols for wireless security are:

- Wired Equivalent Privacy (WEP)
- Wi-Fi Protected Access (WPA)
- Wi-Fi Protected Access 2 (WPA2)

✚ Encryption helps in countering:

- Insufficient authorization
- Traffic eavesdropping
- Malicious intermediary
- Overlapping trust boundaries

✚ There are two basic types of encryption:

- Symmetric Encryption
- Asymmetric Encryption

✚ Identity and Access Management (IAM) Consist of four main components:

- Authentication (verifies user identities)
- Authorization (grants access to specific resources based on user roles and permissions)
- User management (creates, updates, and deletes accounts as needed)
- Credential management

✚ Several factors affect the Cloud reliability:

- Network Dependence
- Safety-Critical Processing

✚ The system requirements are of two types:

- Functional (What the cloud service should do)
- Non functional (How well the cloud service should perform)

✚ Cloud Solution Design Metrics:

- Accessibility
- Audit
- Availability
- Maintainability
- Backup

✚ In Cloud Resource Scheduling, There are two main steps:

- Resource provisioning
- Resource scheduling

✚ Effective resource scheduling reduces:

- Energy consumption
- Execution time
- Execution cost

✚ Cloud Resource Scheduling Fulfills following QoS requirements:

- Security
- Availability

- Reliability
- Scalability

✚ Types of computational offloading:

- Static
- Dynamic

✚ Generic characteristics of big data:

- Data volume is huge
- The data is generated, captured and processed at high speed.
- Data may not be categorized into regular relational databases

✚ The characteristics of big data can be represented by 4vs:

- Value
- Volume
- Velocity
- Variety

✚ popular models for big data:

- Distributed Map Reduce model (popularized by Hadoop)
- NoSQL model (used for non-relational, non-tabular storage)
- SQL RDBMS model (for relational tabular storage of structured data)

✚ Software Defined Networking (SDN) has four characteristics:

- Standardized APIs
- Centralization of control plane
- Programmable control plane
- Separation of control and data planes

✚ Online gaming consists of four basic building blocks:

- Networking module
- Input module
- Rendering module
- Game logic module

✚ Advantages of Mobile Cloud Computing:

- Extending battery lifetime
- Improving data storage capacity and processing power

- Improving reliability
- Additionally

MUHAMMAD Khan Travel