

KATHMANDU UNIVERSITY
End Semester Examination
January 2024

Marks Scored:

Level : B.E./B.Sc.
Year : IV

26 JAN 2024

Course : COMP 478
Semester : I

Exam Roll No. :

Time: 30 mins.

F. M. : 10

Registration No.:

Date :

SECTION "A"
[20Q. × 0.5 = 10 marks]

Choose and encircle the most appropriate option from each set of choices

- Data provenance in data security and storage refer to ____.
 - Inadvertent disclosure of data
 - Data storage of audit and compliance purpose
 - Computational accuracy
 - Data confidentiality
- Elasticity of cloud service is applicable for the case of followings.
 - To make long term planning and growth of the service
 - To make static changes in the service infrastructure
 - To handle workflow demand in the industry
 - To achieve scalability of the service
- Multi Tenancy issues in the cloud can be minimized by ____.
 - Contract, policy and regulation
 - VPC
 - Application level monitoring
 - IDM
- Which of the following is **NOT** a type of SEaaS?
 - NSaaS
 - IDaaS
 - ESaaS
 - SSaaS
- Exponential distributed lifetime refers to ____.
 - Age of module does not affect probability of failure
 - probability of failure is exponential to the age of module
 - The condition applicable for Bath-tub curve
 - Module lifetime is exponential
- Service availability of 99.999 refers to ____.
 - Average of less than 6 minutes downtime per year
 - Average of less than 16 minutes downtime per year
 - Average of less than 30 minutes downtime per year
 - Average of less than 3 minutes downtime per year
- Failure in Time is traditionally reported as failure per ____ hours of operation.
 - 10^9
 - 10^6
 - 10^3
 - 10^{12}

8. Which of the following can be considered the advantage of REST over SOAP?
 - a. Stateful - client server communication
 - b. Cacheable data
 - c. Built-in error handling
 - d. Language, platform, and transport independent
9. Which of the following is an AWS big data service?
 - a. AWS Glue
 - b. AWS Hadoop
 - c. AWS Shark
 - d. AWS Hive
10. Which of the following protocols is used for IoT devices?
 - a. HTTP
 - b. MQTT
 - c. XMLT
 - d. UDP
11. Which of the following could be a major issue in integration of IoT and cloud in developing countries?
 - a. Service Discovery
 - b. Data Location
 - c. Privacy and Security
 - d. Connectivity
12. Which of the following is the earliest activity in CI/CD Pipeline with Gitlab?
 - a. Trigger
 - b. Commit
 - c. Deploy
 - d. Deliver
13. As of now, which is the closest AWS Asian Region/AZ of Nepal?
 - a. Delhi
 - b. Mumbai
 - c. Bangalore
 - d. Kathmandu
14. In VPC addressing the CIDR 10.0.0.0/29 can have ___ possible addresses.
 - a. 16
 - b. 32
 - c. 8
 - d. 6
15. Which of the following is not an Azure component for microservice architecture?
 - a. Containers
 - b. Cosmos DB
 - c. Serverless
 - d. Lamda DB
16. Formation of Policies and regulations is a possible solution of _____ security concerns in the cloud.
 - a. Lack of trust
 - b. Lack of Control
 - c. Multitenancy
 - d. compliance
17. SAML Assertion helps in _____ security concerns in the cloud.
 - a. lack of trust
 - b. multitenancy
 - c. lack of control
 - d. Access control
18. In cloud services, use of elasticity to prevent DDOS could be opportunity regarding the obstacle
 - a. Data Confidentiality and Auditability
 - b. Vendor Lock-in
 - b. Performance Unpredictability
 - d. Service Availability
19. Which of the following hypervisors works in the host operating System?
 - a. Type 3
 - b. Type 1
 - c. Type 2
 - d. Type 4
20. Which of the following in open source cloud platforms is _____.
 - a. AWS
 - b. Azure
 - c. Openstack
 - d. Linode

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SECTION "B"

[6 Q. × 4 = 24 marks]

Attempt *ANY SIX* questions.

1. Discuss the challenges of cloud computing in developing countries.
2. Write about containerization and steps involved in implementing containerization on a proprietary cloud.
3. Explain in brief about identity management motivation and issues in cloud computing.
4. How does microservices architecture complement SoA?
5. Explain in brief where the PaaS and SaaS model is applicable.
6. What are the security vulnerabilities that can be mitigated by private cloud deployment?
7. Discuss in brief about hypervisors and types of virtualization.

SECTION "C"

[2Q. × 8 = 16 marks]

Attempt *ANY TWO* questions.

8.
 - a. Write about the taxonomy of fear regarding security and privacy in the cloud. [4]
 - b. Describe the ways cloud can be controlled and managed. Discuss in brief about basic protocols involved. [4]
9.
 - a. Explain in brief about fault tolerance, reliability and availability of a system with perspective of MTTF, MTBF and MTTR. [4]
 - b. Differentiate scalability and Elasticity in terms of availability and financial perspectives. [4]
10. Discuss in brief about implementation of IoT, BigData and Cloud in the field of agriculture or governance in Nepal.

