

[This question paper contains 2 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 2489

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Unique Paper Code : 2343010019

Name of the Paper : Cloud Computing

Name of the Course : **B.A. (Program) / B.Sc. (Program)**

Semester : VI

Duration : 3 Hours

Maximum Marks : 90

Instructions for Candidates

1. Write your Roll No. on the top immediately on receipt of this question paper.
2. **Section A** is compulsory.
3. Attempt any **four** questions from **Section B**.
4. Parts of a question should be attempted together.

Section A

1. (i) What is Cloud Computing? Briefly explain two benefits and one limitation of Cloud Computing? (5)
(ii) Write five differences between parallel and distributed computing. (5)
(iii) What is MapReduce? Explain the three phases of MapReduce. (5)
(iv) Explain Cloud Computing services classification: IaaS and PaaS along with a suitable example. (5)
(v) During deployment of an applications on AWS, the company unknowingly violates certain terms related to data usage and software licensing, which leads to service restrictions and penalties. Analyze how violating End User License Agreement (EULA) terms can impact an organization using cloud service. (5)
(vi) Write short notes on: (5)
 - a) Windows Azure identity standards
 - b) Full Virtualization

Section B

- 2 (i) A company plans to deploy its IT infrastructure for a period of 5 years and is evaluating whether to choose an on-premise solution or a cloud-based solution. The on-premise setup requires an initial investment of ₹10,00,000 for hardware and installation. Additionally, the company incurs annual maintenance costs of ₹1,50,000, electricity costs of ₹80,000 per year, and staff salary of ₹1,20,000 per year. On the other hand, the cloud service provider charges ₹3,50,000 per year, which includes computing, storage, and maintenance, along with a one-time migration cost of ₹2,00,000. Find the cost of on-premise solution and cloud-based solution. Can the company offer a more cost-effective solution by choosing Cloud Computing? Justify your answer. (7)
(ii) Differentiate between service-oriented computing and utility-oriented computing, highlighting their key characteristics and differences. (8)

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- 3 (i) Briefly explain any seven key components of data center technology that help to provide virtual IT resources? (7)
- (ii) Explain in detail Cloud Computing architecture with the help of a diagram. (8)
- 4 (i) Write any seven laws of Wienman's cloudonomics. (7)
- (ii) Explain the following types of clouds based on ownership, accessibility, cost and use cases. (8)
- a) Public Clouds
 - b) Private Clouds
 - c) Hybrid Clouds
 - d) Community Clouds
- 5 (i) What are the four key characteristics of Cloud Security Alliance? Explain any three ways to evaluate risk in cloud deployment. (7)
- (ii) A company, *DataServe Pvt. Ltd.*, relies on a cloud service provider to host its business-critical applications. The provider guarantees a Service Level Agreement (SLA) of 99.95% uptime per month. However, during a particular month, the system experienced multiple outages, resulting in an actual uptime of 99.40%. Due to this downtime, the company faced loss of revenue, customer dissatisfaction, and disruption in operations. Explain the concept of a Service Level Agreement (SLA) and identify its four key components relevant to this scenario. (8)
- 6 (i) Explain briefly any four open challenges in data intensive computing and three technologies used in this domain. (7)
- (ii) Briefly explain the following terms: (8)
- a) Hypervisor
 - b) Containerization
- 7(i) A financial services company, *SecureBank Ltd.*, has recently migrated its customer data and transaction processing system to a cloud platform. After migration, the company faces multiple concerns such as unauthorized access attempts, data breaches, insecure APIs, and insider threats. Explain any four major cloud security issues that may arise in such a cloud environment. (8)
- (ii) A healthcare organization is planning to migrate its patient records, including medical histories and billing information, to a cloud platform. Since this data is highly sensitive, the organization needs to ensure strong protection against unauthorized access and breaches. What is security mapping? Identify and explain four key data protection techniques in cloud computing that the organization should adopt. (7)