

- (b) What are Type I and Type II hypervisors? Compare them with examples and uses. (8)
5. (a) Define a public and private cloud. Compare them and list three reasons why an organisation might choose a private cloud. (7)
- (b) Explain the cloud reference model. Differentiate among IaaS, PaaS, and SaaS. (8)
6. (a) Provide a detailed explanation of data-intensive computing. List any three challenges in it. (7)
- (b) State and explain any four laws of Weinmann's cloudonomics. (8)
7. (a) Explain the MapReduce model. Define Map and Reduce operations and describe the problem that MapReduce solves. (7)
- (b) Compare how security responsibilities vary across Platform as a Service (PaaS) and Software as a Service (SaaS) models, with particular emphasis on :
- I. The definition and scope of service boundaries
 - II. Risks associated with data storage locations and multi-tenancy environments. (8)

(500)

[This question paper contains 4 printed pages.]

Your Roll No.....

Sr. No. of Question Paper : 7973

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Unique Paper Code : 2343010019/32

Name of the Paper : Cloud Computing

Name of the Course : B.Sc. (H) DSE

Semester : VI/VIII (E)

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. (a) Fill in the blanks : (6)

I. A cloud model shared among organizations with similar regulatory requirements is called a _____.

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- II. Uploading application code while the provider manages OS, middleware, and runtime is characteristic of _____.
- III. Google Docs is an example of _____ as it provides software over the internet without user management of infrastructure.
- IV. A cloud deployment model where services are accessible over the public internet is known as a _____.
- V. In virtualization, the software layer that enables multiple operating systems to run on a single physical machine is called a _____.
- VI. A _____ is most suitable for data intensive and compute intensive tasks involving large-scale data processing.

- (b) What is a Service Level Agreement (SLA)? Detail the critical components that must be specified in a cloud SLA. (4)
- (c) Explain the importance of Identity and Access Management (IAM) and the principle of least privilege. (4)
- (d) Differentiate Peer-to-Peer (P2P) and client-server architecture with example. Also list two applications of P2P Model. (4)

- (e) Define para-virtualization and explain its three distinctions from full virtualization. (4)
- (f) What is containerization? Describe how containers differ from virtual machines. (4)
- (g) What is Amazon EC2 and Amazon S3? Compare their service types and explain their uses. (4)

Section B

2. (a) Describe the evolution of Cloud Computing. Explain the concept of Utility-Oriented Computing and its significance in the pay-as-you-go model. (7)
- (b) What is Service-Oriented Computing (SOC) and why is it important for cloud computing? (8)
3. (a) What are thin and fat clients? Describe two-tier and three-tier (N-tier) architectures with examples. (7)
- (b) Explain Parallel and Distributed Computing with the help of relevant examples of each. List two key differences between them. (8)
4. (a) What are the characteristics of a Virtualized environment? Graphically represent the classification taxonomy of virtualization. (7)

P.T.O.