

Sr. No. of Question Paper : 7295

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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

Q1 a) Fill in the blanks: (6)

- I. A group of interconnected computers working together as a single system is called a _____.
- II. A _____ runs directly on hardware and provides better performance compared to a hosted hypervisor.
- III. In cloud SLAs, _____.
- IV. Google App Engine is typically categorized under _____.
- V. A cloud model shared among organizations with similar regulatory requirements is called a _____.

- c) What is a Service Level Agreement (SLA)? Detail the critical components that must be specified in a cloud SLA. (4)
- d) What is a distributed system? Explain the layered architecture of a distributed system. (4)
- e) Explain *any four* advantages of Virtualization. (4)
- f) Define Virtual Machine Manager (VMM). Explain the functions of its internal components. (4)
- g) Explain the key security risks associated with data multi-tenancy in a cloud environment. (4)

Section B

- Q2 a) What is utility-oriented computing? Explain the pay-per-use model and its significance in Cloud Computing. (7)
- b) Describe the security service boundary in IaaS, PaaS, and SaaS. (8)
- Q3 a) Explain the differences between Peer-to-Peer (P2P) and client-server architecture. Provide two examples of each. (7)

intensive applications. How does NoSQL address these limitations?

- Q4 a) Differentiate between full-virtualization and para-virtualization. (7)
- b) What is OS-level virtualization? Explain how it differs from hardware-level virtualization. (8)
- Q5 a) Explain the Cloud Reference Model and discuss the features of *any two* service models. (7)
- b) Differentiate between Public, Private, Hybrid, and Community Cloud deployment models based on ownership, accessibility, scalability, and typical use cases. (8)
- Q6 a) What is data-intensive computing? Explain *Any five* the challenges of data-intensive computing. (7)
- b) In MapReduce, what are the roles of the Map and Reduce functions? Explain how the input is processed and output is produced using this model. (8)
- Q7 a) In the context of cloud computing, explain the concept of Total Cost of Ownership (TCO). How does TCO differ when comparing on-premises infrastructure with cloud-based services? Analyze how cloud computing can reduce or increase the overall TCO for an organization. (7)
- b) Select a cloud deployment model for the following scenarios: (8)

but uses external servers to handle seasonal traffic spikes.

- III. A small developer uses Amazon Web Services to launch a free mobile game for a global audience.
- IV. A government defence agency builds its own data center to ensure maximum security and total hardware control.