# Cloud Computing (315325)

MSBTE Diploma · K-Scheme · Computer Engineering Sem 5 (elective) · Important Questions

**Based on MSBTE papers W-2025 and S-2026 available on msbte.ac.in** (only two K-scheme papers of this course exist so far) and the K-scheme syllabus (unit marks: I-10, II-16, III-16, IV-14, V-14). Practice guidance only — not a prediction of the exam.
**Probability:** High = asked in both papers · Medium = asked two or more times, but in one paper · Low = asked once · Low (not yet asked) = syllabus topic not asked so far, still worth preparing. With only two papers, treat these labels as a rough guide.

## Most repeated topics (all units)

| # | Topic | Unit | Times asked | Marks | Asked in |
|---|---|---|---|---|---|
| 1 | VM migration and VM management (incl. live vs cold migration, migration techniques) | II | 5 | 2, 4 M | S-26, W-25 |
| 2 | Benefits / advantages and disadvantages of virtualization (cost, productivity, many OS on one server) | II | 4 | 4, 6 M | S-26, W-25 |
| 3 | Identity and access management — IAM, access control, SSO, IAM best practices | IV | 4 | 4, 6 M | S-26, W-25 |
| 4 | Cloud service models IaaS / PaaS / SaaS — explain, compare, choose the right model | I | 3 | 4, 6 M | S-26, W-25 |
| 5 | Definition and characteristics of cloud computing (on-demand self-service etc.) | I | 2 | 2 M | S-26, W-25 |
| 6 | Characteristics of virtualized environment | II | 2 | 2 M | S-26, W-25 |
| 7 | SLA phases — SLA management phases / SLA life cycle (operationalization) | III | 2 | 6 M | S-26, W-25 |
| 8 | Types of SLA (infrastructure SLA, application SLA) | III | 2 | 2, 4 M | S-26, W-25 |

## Unit I — Fundamentals of Cloud Computing (10 M)

| Question / topic (actual wording asked) | Marks | Asked in | Probability |
|---|---|---|---|
| **Cloud service models IaaS / PaaS / SaaS — explain, compare, choose the right model**<br>*W-25 Q2a: Explain the IaaS cloud service model. Write its two advantages.*<br>*W-25 Q6c: Compare the various cloud delivery models based on their characteristics (six points).*<br>*S-26 Q3c: A startup needs a scalable platform to deploy applications without managing infrastructure. Which cloud service would you recommend? Justify.* | 4, 6 M | W-25 (4 M), W-25 (6 M), S-26 (4 M) | **High** |
| **Definition and characteristics of cloud computing (on-demand self-service etc.)**<br>*W-25 Q1a: Define term cloud computing.* | 2 M | W-25 (2 M), S-26 (2 M) | **High** |

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| *S-26 Q1f: State the use of on-demand self-service in cloud computing.* | | | |
| **Deployment models — public / private / hybrid / community (define, compare)**<br>*S-26 Q1a: Define a hybrid cloud.*<br>*S-26 Q2d: Compare public and private cloud (four points).* | 2, 4 M | S-26 (2 M), S-26 (4 M) | **Medium** |
| **Cloud cost benefits**<br>*W-25 Q5c: Explain the cloud cost benefits in detail.* | 6 M | W-25 (6 M) | Low |
| **Architectural / infrastructural components — role of middleware**<br>*S-26 Q5a: Explain the role of middleware in cloud computing.* | 6 M | S-26 (6 M) | Low |

## Unit II — Virtualization (16 M)

| Question / topic (actual wording asked) | Marks | Asked in | Probability |
|---|---|---|---|
| **VM migration and VM management (incl. live vs cold migration, migration techniques)**<br>*W-25 Q4a: What is VM migration? Also explain VM management.*<br>*S-26 Q4b: What is VM migration? Also explain VM management.*<br>*S-26 Q1g: State any two techniques for VM migration.*<br>*S-26 Q2a: Differentiate between live migration and cold migration (four points).*<br>*S-26 Q3a: Which VM migration technique is most suitable for moving a VM running critical services without downtime? Justify.* | 2, 4 M | W-25 (4 M), S-26 (4 M), S-26 (2 M), S-26 (4 M), S-26 (4 M) | **High** |
| **Benefits / advantages and disadvantages of virtualization (cost, productivity, many OS on one server)**<br>*W-25 Q2b: Explain how virtualization provides improved productivity and operational efficiency.*<br>*W-25 Q5b: List any four advantages and disadvantages of virtualization.*<br>*S-26 Q4d: A company wants to run Linux and Windows on the same server. How does virtualization help?*<br>*S-26 Q5b: An IT company wants to reduce hardware costs and increase flexibility. How can virtualization help?* | 4, 6 M | W-25 (4 M), W-25 (6 M), S-26 (4 M), S-26 (6 M) | **High** |
| **Characteristics of virtualized environment**<br>*W-25 Q1b: List any two characteristics of virtualization.*<br>*S-26 Q1b: List any three characteristics of a virtualized environment.* | 2 M | W-25 (2 M), S-26 (2 M) | **High** |
| **Virtualization reference model — purpose of virtualization layer**<br>*S-26 Q3d: Explain the purpose of a virtualization layer.* | 4 M | S-26 (4 M) | Low |
| **Virtual machine — definition, life cycle**<br>*W-25 Q1c: Define virtual machine (VM).* | 2 M | W-25 (2 M) | Low |
| **Xen architecture**<br>*W-25 Q3d: Explain the Xen architecture with a neat diagram.* | 4 M | W-25 (4 M) | Low |

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| **VMware full virtualization reference model; hypervisor Type-1 / Type-2; VM consolidation; types of virtualization** | 2 / 4 / 6 M | — | Low (not yet asked) |

## Unit III — Cloud Storage, Monitoring and Management (16 M)

| Question / topic (actual wording asked) | Marks | Asked in | Probability |
|---|---|---|---|
| **SLA phases — SLA management phases / SLA life cycle (operationalization)**<br>*W-25 Q5a: Explain SLA management phases in detail.*<br>*S-26 Q6c: Explain the role of the operationalization phase in the SLA life cycle.* | 6 M | W-25 (6 M), S-26 (6 M) | **High** |
| **Types of SLA (infrastructure SLA, application SLA)**<br>*W-25 Q1d: List types of SLA.*<br>*S-26 Q2b: Which type of SLA is more relevant for a customer using SaaS? Justify with an example.* | 2, 4 M | W-25 (2 M), S-26 (4 M) | **High** |
| **Google File System (GFS) — features, advantages, disadvantages; GFS vs HDFS**<br>*W-25 Q1g: Compare GFS and HDFS (any two points).*<br>*W-25 Q3c: Describe four characteristics and list two advantages and two disadvantages of GFS.* | 2, 4 M | W-25 (2 M), W-25 (4 M) | **Medium** |
| **Virtualized Data Centre (VDC) — components, server virtualization benefits**<br>*S-26 Q1c: Name any two components of a VDC environment.*<br>*S-26 Q3b: Explain the benefits of server virtualization in a VDC (any four).* | 2, 4 M | S-26 (2 M), S-26 (4 M) | **Medium** |
| **Cloud storage system architecture**<br>*W-25 Q2c: Explain cloud storage system architecture.* | 4 M | W-25 (4 M) | Low |
| **Federated cloud — architecture and model**<br>*W-25 Q4b: Explain an architecture of federated cloud computing with its model.* | 4 M | W-25 (4 M) | Low |
| **Cloud service life cycle phases**<br>*S-26 Q1e: List four phases of the cloud service life cycle.* | 2 M | S-26 (2 M) | Low |
| **HDFS — heartbeat, balancing, replication, features, limitations** | 2 / 4 / 6 M | — | Low (not yet asked) |

## Unit IV — Security in Cloud Computing (14 M)

| Question / topic (actual wording asked) | Marks | Asked in | Probability |
|---|---|---|---|
| **Identity and access management — IAM, access control, SSO, IAM best practices**<br>*W-25 Q3b: Suggest any four best practices for cloud IAM.*<br>*W-25 Q4c: Explain identity management and access facility in cloud computing.*<br>*S-26 Q4c: Explain the importance of access control in cloud computing.*<br>*S-26 Q6a: A company uses multiple SaaS applications and wants single-credential login. Which IAM feature would you recommend and why?* | 4, 6 M | W-25 (4 M), W-25 (4 M), S-26 (4 M), S-26 (6 M) | **High** |

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| **Cloud security concepts — multi-tenancy, data outsourcing, metadata security, trust management**<br>*W-25 Q6a: Explain multi-tenancy, data outsourcing and metadata security in clouds.*<br>*S-26 Q5c: Explain the importance of trust management in cloud computing and its role in ensuring security between providers and users.* | 6 M | W-25 (6 M), S-26 (6 M) | **High** |
| **Types of cloud risks (policy & organizational, technical, legal)**<br>*W-25 Q1f: List the types of cloud risks.*<br>*S-26 Q1d: List any two types of cloud risks.* | 2 M | W-25 (2 M), S-26 (2 M) | **High** |
| **Data security technologies — server-side vs client-side encryption**<br>*W-25 Q2d: Compare server side and client side encryption (four points).* | 4 M | W-25 (4 M) | Low |
| **Content-level security (pros & cons); Security-as-a-Service features** | 2 / 4 / 6 M | — | Low (not yet asked) |

## Unit V — Trends in Cloud (14 M)

| Question / topic (actual wording asked) | Marks | Asked in | Probability |
|---|---|---|---|
| **Ubiquitous computing — cloud trends, access from any device**<br>*W-25 Q1e: What is ubiquitous computing? Give two examples of cloud-based ubiquitous computing.*<br>*S-26 Q4a: Identify the cloud trend that lets students access educational resources from multiple devices without downloading; explain how it works.* | 2, 4 M | W-25 (2 M), S-26 (4 M) | **High** |
| **ZigBee technology — IoT connectivity and applications**<br>*W-25 Q4d: Describe any application developed with the help of ZigBee technology.*<br>*S-26 Q2c: Explain the role of ZigBee in enabling IoT connectivity for low-power, short-range communication.* | 4 M | W-25 (4 M), S-26 (4 M) | **High** |
| **Google App Engine — features, benefits for developers**<br>*W-25 Q3a: List the characteristics and features of Google App Engine.*<br>*S-26 Q6b: Explain the benefit of using Google App Engine for developers.* | 4, 6 M | W-25 (4 M), S-26 (6 M) | **High** |
| **Amazon EC2 and S3 — benefits**<br>*W-25 Q6b: Explain benefits of cloud platforms like Amazon EC2 and S3.* | 6 M | W-25 (6 M) | Low |
| **ECG analysis in the cloud (healthcare IoT application)**<br>*W-25 Q4e: Explain ECG analysis in cloud and its access.* | 4 M | W-25 (4 M) | Low |
| **CRM and ERP as cloud applications**<br>*S-26 Q4e: Differentiate between CRM and ERP in the context of cloud computing (four points).* | 4 M | S-26 (4 M) | Low |

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| **RFID, sensor networks, GPS; CloudStack, OpenStack, OpenNebula, InterCloud** | 2 / 4 / 6 M | — | Low (not yet asked) |

**Note:** Prepared by Ananda Technologies from previous MSBTE question papers (W-2025, S-2026) and the K-scheme syllabus, for practice only. It is **not an official MSBTE document** and does **not** claim that these questions will come in the exam. Study the full syllabus. Free for students — anandatechnologies.in