

Atal Bihari Vajpayee Indian Institute of Information Technology & Management, Gwalior

IT401: Cloud Computing

Major Examination (Session 2023–24)

Maximum Time: 3 Hours

Max Marks: 70

Note: Attempt all questions. Use neat diagrams wherever required.

1. (a) Explain the layered architecture of cloud computing with a neat diagram. (8 Marks) (b) Discuss the differences between IaaS, PaaS, and SaaS with real-world examples. (7 Marks)
2. (a) Explain **virtualization technologies** (full, para, hardware-assisted). (8 Marks) (b) What are the major challenges in virtual machine migration? (7 Marks)
3. **Numerical (8 Marks):** A company's workload requires 200 vCPUs for 4 hours/day. If the cost per vCPU-hour is \$0.05, calculate the monthly cost on a public cloud. Compare this with a private server setup costing \$1200/month.
4. Attempt any two: (a) Define and explain **Service Level Agreement (SLA)** in cloud. (7 Marks) (b) Compare **cloud security issues** with traditional IT security. (7 Marks) (c) Explain load balancing in cloud with suitable diagram. (7 Marks)
5. **Case Study (10 Marks):** A start-up wants to host a scalable web application.
- Suggest the most appropriate deployment model. - Discuss elasticity and fault tolerance in this context. - What cloud services should they choose (IaaS, PaaS, SaaS)? Justify.
6. Short notes (any three, 5 marks each): (a) Cloud storage architecture (b) Energy efficiency in cloud data centers (c) Big Data and Cloud synergy (d) Future trends in cloud computing