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Assignment

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Ques 1st → Advantages of Public Cloud →

1. Cost Effective → Lower costs since infrastructure is shared among multiple users.
2. Scalability → Easily handles high traffic volumes due to on-demand resource availability.
3. Accessibility → Available from anywhere, improving global user access.
4. Maintenance → Cloud providers handle maintenance, reducing the company's operational overhead.

→ Disadvantages of Public Cloud →

1. Security Risks → Less control over data security, which is crucial for sensitive user data.
2. Limited Customization → Standardized services may not meet specific needs.
3. Latency Issues → Performance can be affected by shared infrastructure and network congestion.

→ Advantages of Private Cloud →

1. Enhanced Security → Greater control over the security measures, suitable for sensitive data.
2. Customization → Tailored infrastructure and software configurations.

3. Performance → Dedicated resources improve performance and reduce latency.

→ Disadvantages of Private cloud →

1. Higher Costs → Expensive due to dedicated infrastructure and maintenance costs.

2. Limited Scalability → Scaling resources requires additional hardware investment.

3. Maintenance responsibility → The company is responsible for maintenance and management.

Que 2

(a) sol → Root Cause → Intermittent connectivity issues may be due to network congestion, insufficient server capacity, or cloud service disruptions.

Resolution Steps →

- Monitoring cloud performance with help of existing tools.
- Identify server bottlenecks and network latency issues.
- Optimize application code and database queries to reduce load times.

(b) sol → Engineering High Availability and Performance →

1. Load Balancing → Use load balancers to distribute traffic.

across multiple servers, preventing any single server from being overwhelmed.

2. Auto-Scaling → Automatically, adjusts the number of servers based on traffic demand, ensuring consistent performance.

3. Content Delivery Network (CDN) → Use CDNs like Cloudflare or AWS CloudFront to cache content closer to users, reducing latency.

(C) <u>SP</u> Provider	Strengths	Weaknesses	Pricing Model
1. Amazon Web Services (AWS)	Highly Scalable, global reach, comprehensive services.	Complex pricing, steep learning curve.	Pay-as-you-go, free tier available.
2. Microsoft Azure	Integration with Microsoft products, enterprise-grade security.	Can be expensive for small businesses.	Pay-as-you-go, reserved instances.
3. Google Cloud Platform (GCP)	AI/ML capabilities, competitive pricing, sustainability.	Smaller range of services compared to AWS and Azure.	Pay-as-you-go, free credits for startups.

→ For a popular mobile app with high traffic and cost constraints, AWS is the best choice due to its scalability, reliability, extensive global infrastructure.

Ques 3 Ans IaaS can help a retail company to recover from a cyberattack and ensure future resilience in the following ways:-

1. Data backup and Recovery → IaaS providers offer automated backups and disaster recovery solutions, ensuring that data can be restored quickly after an attack.
2. Scalability → IaaS allows the company to scale resources as needed during recovery.
3. Enhanced Security → Leading IaaS providers offer advanced security features.
4. Cost-Effectiveness → Instead of maintaining expensive on-premises infrastructure, IaaS reduces costs through a pay-as-you-go model.

Ques 4 Ans Virtualization can help reduce costs & improve efficiency as

1. Server Consolidation → It allows multiple virtual machines to run on a single physical server.
2. Lower Energy Consumption → Fewer physical servers result in reduced power.
3. Improved resource utilization → Virtualization optimizes the use of CPU, memory & storage.
4. Simplified maintenance → VMs are easier to manage, update, & back up.

5. Increased flexibility → IT teams can quickly deploy new VMs, improving agility and responsiveness.

Ques 5 Q1 The following are the ways in which load balancing can help maintain website performance during high traffic periods →

1. Traffic Distribution → load balancers distribute incoming traffic across multiple servers, preventing any single server from becoming overloaded.

2. Improved Response Time → By spreading the load, response times are faster, enhancing the user exp.

3. Failover Support → If one server fails, the load balancer redirects traffic to healthy servers.

4. Scalability → load balancing works with auto-scaling groups to add or remove servers based on demand.

5. Global Load Balancing → For global users, load balancers can route traffic to the nearest data centers, reducing latency.

Ques 6 Q1 1. Redundant Infrastructure → Use multiple servers in different geographic locations.

2. Active-Active Configurations → Run multiple servers simultaneously so that the traffic is balanced across all of them.

3. Health Monitoring → load balancers continuously

monitor server health and reroute traffic if a server becomes unresponsive.

4. Auto-Scaling → Automatically scale the no. of servers based on real-time demand.

5. Disaster Recovery Integration → Combine balancing with disaster recovery solutions.

Que 7 Q1 Cloud hosting is the best suited for a small bakery's website because :-

1. Cost-Effective → cloud hosting offers affordable pricing suitable for limited budget.

2. Scalability → Even though the website has low traffic initially, cloud hosting allows seamless scaling as traffic grows.

3. Reliability → cloud hosting ensures higher uptime and faster load times.

4. Ease of use → providers offer simple set up processes, making it accessible for non-technical users.

5. Security → Built-in security features like firewalls, to protect the bakery's website from cyber threats.