PDF 12: Cost Optimization & Scaling

Subjective Case Study Questions and Answers

Q1. Scaling Synapse for Peak Loads
Scenario: Sales reporting spikes at month-end.
Answer: Use **elastic scaling of DWUs** in Synapse dedicated SQL pool, scale out during peak times, and scale back after reports complete. Consider **workload management** to prioritize queries.

Q2. Choosing Storage Tiers
Scenario: 500 TB of historical data rarely accessed.
Answer: Use **Azure Data Lake Storage Gen2 Cool or Archive tiers**. Implement **lifecycle management policies** to move old data automatically, balancing cost and accessibility.

Q3. Reducing Pipeline Costs
Scenario: Multiple pipelines running 24/7 are expensive.
Answer: Schedule pipelines during business hours, use **ADF integration runtime auto-scaling**, reduce frequency of non-critical jobs, and leverage **serverless options** when possible.

Q4. Monitoring and Reporting Costs
Scenario: Management wants visibility into cloud expenses.
Answer: Use **Azure Cost Management and Billing**, track resource usage, set **budgets and alerts**, and optimize by shutting down idle resources and resizing compute for efficiency.

MCQs

1. Elastic scaling in Synapse adjusts?
   Answer: B. DWUs — compute capacity based on load.
2. Cost-effective storage for rarely accessed data?
   Answer: C. Cool/Archive tiers — lower storage costs.
3. Reducing ADF pipeline expenses?
   Answer: A. Schedule, auto-scale, serverless — efficient execution.
4. Tracking cloud expenses?
   Answer: B. Azure Cost Management — budgets and usage reports.
5. Workload prioritization?
   Answer: C. Workload management — ensure critical jobs run first.
6. Lifecycle management moves data automatically?
   Answer: A. True — moves based on policies.
7. Resizing compute improves?
   Answer: B. Cost efficiency — match workload to resources.
8. Monitoring idle resources helps?
   Answer: C. Reduce unnecessary charges — optimize spending.