Question 1 of 15

Network protocol layers provide abstraction that simplifies application development.

1 True

2 False

Correct!

Protocol layers like TCP, HTTP, and WebSockets abstract lower-level networking details, allowing developers to focus on application logic rather than packet routing or error correction.

Question 2 of 15

Which protocol prioritizes speed over reliability?

1 HTTP

2 HTTPS

3 UDP

4 TCP

Correct!

UDP provides connectionless, best-effort delivery with minimal overhead, making it faster than TCP but without reliability guarantees. This trade-off suits real-time applications where speed matters more than perfect delivery.

Question 3 of 15

Which is NOT a benefit of load balancing?

1 Improved availability

2 Horizontal scaling

3 Data consistency

4 Reduced latency

Correct!

Load balancers distribute traffic and provide failover capabilities, enabling horizontal scaling and improved availability. While they can reduce latency by routing to optimal servers, they may also introduce slight latency due to the additional network hop. However, they don't inherently provide data consistency - that requires application-level coordination or database features.

Question 4 of 15

HTTP's stateless design enables servers to handle requests independently.

1 True

2 False

Correct!

HTTP's stateless nature means each request contains all necessary information, allowing any server to handle any request. This simplifies load balancing and horizontal scaling since servers don't need to maintain session state.

Question 5 of 15

Which load balancer type passes through TCP connections directly to backend servers?

1 Layer 4

2 Neither type

3 Layer 7

4 Both types

Correct!

Layer 4 load balancers operate at the transport layer, passing TCP connections directly through to backend servers without terminating them. Layer 7 load balancers terminate incoming connections and create new connections to backend servers, acting as a proxy.

Question 6 of 15

Circuit breakers prevent cascading failures by temporarily blocking requests to failing services.

1 True

2 False

Correct!

Circuit breakers monitor service health and 'trip' when failures exceed a threshold, blocking requests to give failing services time to recover. This prevents cascading failures and reduces system-wide impact.

Question 7 of 15

Real-time gaming applications requiring persistent bidirectional communication should use which protocol?

1 HTTP

2 Server-Sent Events

3 WebSockets

4 REST

Correct!

WebSockets provide persistent, bidirectional connections ideal for real-time gaming where both client and server need to send frequent updates. HTTP and REST are request-response only, while SSE only supports server-to-client communication.

Question 8 of 15

What is the PRIMARY benefit of Content Delivery Networks?

1 Enhanced security

2 Cost reduction

3 Reduced latency ✓

4 Improved reliability

Correct!

CDNs primarily reduce latency by caching content at edge locations closer to users. While they may provide other benefits, their main purpose is minimizing the distance data travels to improve response times.

Question 9 of 15

Idempotent APIs can be safely retried without causing side effects.

1 True

2 False

Correct!

Idempotent operations produce the same result when executed multiple times. This property enables safe retries during network failures without unintended consequences like duplicate payments or data corruption.

Question 10 of 15

Which mechanism enables load balancers to detect server failures?

1 Health checks

2 Retry logic

3 Circuit breakers

4 Session stickiness

Correct!

Health checks are periodic tests that load balancers perform to verify server availability. Failed health checks trigger automatic traffic redirection to healthy servers, providing fault tolerance and high availability.

Question 11 of 15

When users in different continents experience high latency, which approach reduces response times most effectively?

1 Better algorithms

2 Regional data centers ✓

3 Faster servers

4 More bandwidth

Correct!

Geographic distance creates fundamental latency constraints due to speed of light limitations. Regional data centers place services closer to users, minimizing network hops and physical distance to achieve the lowest possible latency.

Question 12 of 15

Which retry strategy prevents overwhelming recovering services?

1 Fixed intervals

2 Immediate retry

3 No retries

4 Exponential backoff

Correct!

Exponential backoff increases delay between retries, reducing load on recovering services. Adding jitter prevents synchronized retries from multiple clients, avoiding thundering herd problems that could prevent service recovery.

Question 13 of 15

Server-Sent Events enable bidirectional real-time communication between clients and servers.

1 True

2 False

Correct!

Server-Sent Events only support server-to-client communication, not bidirectional. While they enable real-time push notifications, clients must use separate HTTP requests to send data to servers. WebSockets provide true bidirectional communication.

Question 14 of 15

What happens when using round-robin load balancing with long-lived persistent connections?

1 Reduced latency

2 Better fault tolerance

3 Uneven connection distribution

4 Improved performance

Correct!

Round-robin distributes new connections evenly, but persistent connections accumulate on servers over time. Long-lived connections can create imbalanced load, making least-connections algorithms more appropriate for persistent connection scenarios.

Question 15 of 15

Distributed systems should always assume network calls will occasionally fail or timeout.

1 True

2 False

Correct!

Networks are inherently unreliable - cables break, routers fail, and congestion causes delays. Robust distributed systems must handle these realities with timeouts, retries, circuit breakers, and graceful degradation rather than assuming perfect connectivity.