

Started on	Wednesday, 20 August 2025, 12:35 PM
State	Finished
Completed on	Wednesday, 20 August 2025, 12:46 PM
Time taken	11 mins 13 secs
Marks	28.00/30.00
Grade	93.33 out of 100.00

Question 1

Complete

Mark 1.00 out of 1.00

Which status code is returned if cached content is still valid?

- ☐ a. 503 Service Unavailable
- ☒ b. 304 Not Modified
- ☐ c. 200 OK
- ☐ d. 202 Accepted

Question 2

Complete

Mark 1.00 out of 1.00

Which of the following is a direct drawback of Token Bucket under high sustained load?

- ☐ a. Memory overhead due to token storage
- ☐ b. Over-acceptance of requests
- ☒ c. Token starvation leading to request throttling
- ☐ d. Unfairness between clients

Question 3

Complete

Mark 1.00 out of 1.00

Which theorem better represents real-world distributed DBs?

- ☐ a. BASE
- ☐ b. FLP
- ☐ c. CAP
- ☒ d. PACELC

Question 4

Complete

Mark 1.00 out of 1.00

A service hits a downstream dependency with 95% timeouts. Which resilience pattern helps first?

- ☒ a. Circuit breaker
- ☐ b. PACELC
- ☐ c. Edge caching
- ☐ d. Load balancing

Question 5

Complete

Mark 1.00 out of 1.00

Cursor pagination is more suitable than offset pagination in:

- ☒ a. Real-time feeds (e.g., Twitter, FB)
- ☐ b. Batch processing
- ☐ c. Analytics queries
- ☐ d. Small static datasets

Question 6

Complete

Mark 0.00 out of 1.00

In payment systems, idempotent POSTs prevent:

- ☐ a. Double charges
- ☐ b. Network delay
- ☒ c. Overwrites
- ☐ d. Session expiry

Question 7

Complete

Mark 1.00 out of 1.00

When the circuit breaker is in half-open state, it:

- ☐ a. Closes permanently
- ☐ b. Allows all requests
- ☐ c. Rejects all requests
- ☒ d. Allows limited test requests

Question 8

Complete

Mark 1.00 out of 1.00

Circuit breakers primarily prevent:

- ☒ a. Cascading failures
- ☐ b. Deadlocks
- ☐ c. Resource starvation
- ☐ d. Network congestion

Question 9

Complete

Mark 1.00 out of 1.00

In a network partition, a system cannot provide both:

- ☐ a. Consistency and Latency
- ☐ b. Durability and Partition tolerance
- ☐ c. Partition tolerance and Latency
- ☒ d. Consistency and Availability

Question 10

Complete

Mark 1.00 out of 1.00

DynamoDB is classified as:

- ☒ a. AP
- ☐ b. CP
- ☐ c. CA
- ☐ d. PC

Question 11

Complete

Mark 1.00 out of 1.00

An API gateway enforces 10 requests/sec per user. Which mechanism fits?

- ☐ a. Idempotent POST
- ☐ b. CAP theorem
- ☐ c. Circuit breaker
- ☒ d. Token Bucket

Question 12

Complete

Mark 1.00 out of 1.00

Why is POST usually non-idempotent?

- ☐ a. Caching conflicts
- ☒ b. Multiple calls create duplicates
- ☐ c. Stateless nature of HTTP
- ☐ d. Authentication required

Question 13

Complete

Mark 1.00 out of 1.00

If consistency is preferred over latency in normal conditions, the system follows:

- ☐ a. CP
- ☒ b. PC/EC
- ☐ c. AP/EC
- ☐ d. PA/EL

Question 14

Complete

Mark 0.00 out of 1.00

At which OSI layer does an Application Load Balancer operate?

- ☒ a. Layer 4
- ☐ b. Layer 3
- ☐ c. Layer 7
- ☐ d. Layer 2

Question 15

Complete

Mark 1.00 out of 1.00

In a Token Bucket system with a fill rate of 5 tokens/sec and a bucket size of 20, what happens if 50 requests arrive instantly at $t=0$?

- ☐ a. 25 requests pass, 25 delayed
- ☐ b. All requests pass
- ☐ c. All rejected
- ☒ d. 20 requests pass, 30 delayed/rejected

Question 16

Complete

Mark 1.00 out of 1.00

A financial system requiring strict account balances across replicas would likely prefer:

- ☐ a. AP system
- ☒ b. CP system
- ☐ c. BASE model
- ☐ d. Eventually consistent

Question 17

Complete

Mark 1.00 out of 1.00

You design a news feed API requiring real-time, no duplicates. Which pagination?

- ☐ a. Keyset
- ☒ b. Cursor
- ☐ c. Offset
- ☐ d. Random sampling

Question 18

Complete

Mark 1.00 out of 1.00

Which failure scenario motivates using a circuit breaker?

- ☐ a. High CPU usage
- ☐ b. Cache misses
- ☐ c. Duplicate requests
- ☒ d. Downstream timeout propagation

Question 19

Complete

Mark 1.00 out of 1.00

A stale cache is refreshed using which mechanisms?

- ☐ a. DNS lookup
- ☐ b. SSL handshake
- ☐ c. CDN hashing
- ☒ d. ETag, Last-Modified

Question 20

Complete

Mark 1.00 out of 1.00

PACELC extends CAP by adding which tradeoff when no partition exists?

- ☒ a. Latency vs Consistency
- ☐ b. Durability vs Performance
- ☐ c. Fault tolerance vs Throughput
- ☐ d. Partition vs Availability

Question 21

Complete

Mark 1.00 out of 1.00

Which algorithm ensures that clients with the same IP always hit the same server?

- ☐ a. Random
- ☒ b. IP Hash
- ☐ c. Least Connections
- ☐ d. Round Robin

Question 22

Complete

Mark 1.00 out of 1.00

Which issue is most likely avoided by cursor pagination?

- ☒ a. Duplicate/missing rows due to inserts/deletes
- ☐ b. Phantom reads
- ☐ c. Slow writes
- ☐ d. Deadlocks

Question 23

Complete

Mark 1.00 out of 1.00

CDN responds instantly to a video request from India. Likely cause?

- ☐ a. Token Bucket
- ☐ b. PACELC
- ☒ c. Cache hit at edge
- ☐ d. Cache miss

Question 24

Complete

Mark 1.00 out of 1.00

Google Spanner is classified as:

- ☐ a. PA/EL
- ☐ b. CP/AP
- ☐ c. CA
- ☒ d. PC/EC

Question 25

Complete

Mark 1.00 out of 1.00

How does an Idempotency-Key prevent duplicate booking?

- ☐ a. Server ignores POST body
- ☒ b. Server checks key before creating resource
- ☐ c. Cache invalidation
- ☐ d. Client retries endlessly

Question 26

Complete

Mark 1.00 out of 1.00

Which system is most likely AP under CAP?

- ☐ a. Mongo (in strong consistency mode)
- ☐ b. HBase
- ☐ c. Spanner
- ☒ d. DynamoDB

Question 27

Complete

Mark 1.00 out of 1.00

Why is the Token Bucket preferred over the Leaky Bucket for API rate limiting?

- ☐ a. Handles only uniform traffic
- ☒ b. Supports traffic bursts up to bucket capacity
- ☐ c. Ensures zero packet loss
- ☐ d. Consumes fewer resources

Question 28

Complete

Mark 1.00 out of 1.00

Why does Offset pagination degrade for large datasets?

- ☐ a. Index corruption
- ☒ b. Full table scan with skipped rows
- ☐ c. CPU limits
- ☐ d. Cursor invalidation

Question 29

Complete

Mark 1.00 out of 1.00

Edge caching reduces:

- ☒ a. Bandwidth and latency
- ☐ b. CAP tradeoffs
- ☐ c. Database consistency issues
- ☐ d. Authentication overhead

Question 30

Complete

Mark 1.00 out of 1.00

Which is not a common load balancer feature?

- ☐ a. SSL termination
- ☒ b. Circuit breaking
- ☐ c. Health checks
- ☐ d. Caching