

Started on	Wednesday, 20 August 2025, 12:36 PM
State	Finished
Completed on	Wednesday, 20 August 2025, 12:47 PM
Time taken	11 mins 6 secs
Marks	28.00/30.00
Grade	93.33 out of 100.00

Question 1

Complete

Mark 1.00 out of 1.00

Edge caching reduces:

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

Question 2

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 3

Complete

Mark 1.00 out of 1.00

Which failure scenario motivates using a circuit breaker?

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

Question 4

Complete

Mark 1.00 out of 1.00

Google Spanner is classified as:

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

Question 5

Complete

Mark 1.00 out of 1.00

Which system is most likely AP under CAP?

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

Question 6

Complete

Mark 1.00 out of 1.00

DynamoDB is classified as:

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

Question 7

Complete

Mark 1.00 out of 1.00

A stale cache is refreshed using which mechanisms?

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

Question 8

Complete

Mark 1.00 out of 1.00

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

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

Question 9

Complete

Mark 1.00 out of 1.00

Circuit breakers primarily prevent:

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

Question 10

Complete

Mark 1.00 out of 1.00

Why does Offset pagination degrade for large datasets?

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

Question 11

Complete

Mark 1.00 out of 1.00

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

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

Question 12

Complete

Mark 1.00 out of 1.00

Which issue is most likely avoided by cursor pagination?

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

Question 13

Complete

Mark 1.00 out of 1.00

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

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

Question 14

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. Unfairness between clients
- ☒ d. Token starvation leading to request throttling

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

Question 16

Complete

Mark 1.00 out of 1.00

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

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

Question 17

Complete

Mark 1.00 out of 1.00

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

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

Question 18

Complete

Mark 1.00 out of 1.00

Why is POST usually non-idempotent?

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

Question 19

Complete

Mark 1.00 out of 1.00

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

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

Question 20

Complete

Mark 1.00 out of 1.00

At which OSI layer does an Application Load Balancer operate?

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

Question 21

Complete

Mark 1.00 out of 1.00

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

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

Question 22

Complete

Mark 0.00 out of 1.00

Which is not a common load balancer feature?

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

Question 23

Complete

Mark 1.00 out of 1.00

Which theorem better represents real-world distributed DBs?

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

Question 24

Complete

Mark 1.00 out of 1.00

How does an Idempotency-Key prevent duplicate booking?

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

Question 25

Complete

Mark 1.00 out of 1.00

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

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

Question 26

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 27

Complete

Mark 1.00 out of 1.00

In a network partition, a system cannot provide both:

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

Question 28

Complete

Mark 1.00 out of 1.00

Cursor pagination is more suitable than offset pagination in:

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

Question 29

Complete

Mark 1.00 out of 1.00

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

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

Question 30

Complete

Mark 1.00 out of 1.00

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

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