Started on	Tuesday, 18 November 2025, 12:45 PM
State	Finished
Completed on	Tuesday, 18 November 2025, 12:54 PM
Time taken	8 mins 8 secs
Marks	8.00/10.00
Grade	**80.00** out of 100.00

Question 1

Complete

Mark 1.00 out of 1.00

A 32-bit system uses paging with a page size of 4 KB. How many page table entries are needed to map the entire virtual address space of a process?

- a. 2^20 entries
- b. 2^32 entries
- c. 2^10 entries
- d. 2^12 entries

Question 2

Complete

Mark 0.00 out of 1.00

A disk has multiple pending requests for cylinder numbers: 10, 50, 80, 20, 5 (in this order). The disk head is currently at cylinder 25 and is moving towards higher-numbered cylinders. Using the SCAN (elevator) algorithm, which order will the requests be serviced?

- a. 50, 80, 20, 10, 5
- b. 20, 10, 5, 50, 80
- c. 10, 5, 20, 50, 80
- d. 50, 80, 20, 10, 5

Question 3

Complete

Mark 1.00 out of 1.00

A host with IP 10.0.0.5/24 wants to send a packet to 10.0.0.20. Which of the following is the correct sequence of actions at the network + link layer?

- a. Use DNS to resolve 10.0.0.20 to a MAC address
- b. Broadcast the IP packet and let all hosts decide
- c. Use ARP to resolve 10.0.0.20 to a MAC address, then send frame directly to that MAC
- d. Send packet to default gateway's MAC, because all traffic goes via router

Question 4

Complete

Mark 1.00 out of 1.00

A video conferencing application needs low latency and can tolerate occasional packet loss, but re-transmitting old frames is not useful. Which transport protocol is most appropriate and why?

- a. UDP, because it guarantees delivery without reordering
- b. UDP, because it avoids connection setup and retransmissions
- c. TCP, because it uses congestion control
- d. TCP, because it guarantees in-order delivery and reliability

Question 5

Complete

Mark 1.00 out of 1.00

Consider a multithreaded process with 4 threads running on a single-core OS that uses preemptive time-sharing at the thread level. Which of the following is true?

- a. Threads are scheduled in user space and the kernel is unaware of them
- b. All 4 threads run truly in parallel on the CPU
- c. Threads from this process and threads from other processes share CPU time according to the scheduler
- d. Only one thread from that process can ever run; others are blocked permanently

Question 6

Complete

Mark 1.00 out of 1.00

During the TCP 3-way handshake, which is the correct order of flags sent between client and server?

- a. Client: SYN → Server: SYN-ACK → Client: ACK
- b. Client: ACK → Server: SYN-ACK → Client: SYN
- c. Client: SYN → Server: SYN → Client: ACK
- d. Client: SYN-ACK → Server: SYN → Client: ACK

Question 7

Complete

Mark 0.00 out of 1.00

When you type https://example.com into a browser, which of the following sequences is most accurate at the application & transport level, assuming nothing is cached?

- a. DNS query → TCP handshake → TLS handshake → HTTP request
- b. TCP handshake → DNS query → HTTP request → TLS handshake
- c. HTTP request → DNS query → TCP handshake → TLS handshake
- d. TLS handshake → TCP handshake → DNS query → HTTP request

Question 8

Complete

Mark 1.00 out of 1.00

Which of the following best describes a context switch in an operating system?

- a. Flushing all CPU caches when a new process starts
- b. Switching from kernel mode to user mode within the same process
- c. Moving a process from disk to memory during swapping
- d. Saving the state of the currently running process/thread and restoring the state of another

Question 9

Complete

Mark 1.00 out of 1.00

Which of the following sets of conditions is known as the Coffman conditions for deadlock?

- a. Mutual exclusion, preemption allowed, circular wait, starvation
- b. Mutual exclusion, hold-and-wait, no preemption, circular wait
- c. No mutual exclusion, hold-and-wait, preemption allowed, circular wait
- d. Mutual exclusion, no preemption, fair scheduling, circular wait

Question 10

Complete

Mark 1.00 out of 1.00

You are given the IPv4 address block 192.168.10.0/24. You need 4 subnets with equal size for different departments. Which subnet mask is appropriate?

- a. /25
- b. /27
- c. /26
- d. /28