

Question 1

The diagram illustrates a TCP connection between a **Client** and a **Server**. The connection is divided into three main phases: *Set-up*, *Data*, and *Teardown*.

Set-up Phase:

- Client** sends a packet with Seq.: 25, Offset: 5, and Flags: SYN.
- Server** responds with Ack.: 26, Offset: 5, Flags: SYN ACK, and Window: 100.
- Client** sends a packet with Offset: 5 and Flags: ACK.

Data Phase:

- Client** sends a packet with Seq.: 26, Offset: 5, and Data: first 20 bytes.
- Server** responds with Ack.: 46, Flags: ACK, and Window: 80.
- Client** sends a packet with Seq.: 46, Offset: 5, and Data: next 20 bytes.
- Server** responds with Ack.: 66, Flags: ACK, and Window: 60.

Teardown Phase:

- Client** sends a packet with Offset: 5 and Flags: FIN.
- Server** responds with Offset: 5 and Flags: FIN ACK.
- Client** sends a packet with Offset: 5 and Flags: ACK.

Source/destination ports of 9090 would be present in every message.

Question 2

The pseudo-header used in the TCP checksum violates the layering principles of the Internet architecture model because it creates a dependency between protocols on separate layers, which should be completely independent of each other.