

Assignment-3

1. What is Piggybacking?

ans Piggybacking is a technique in data communication where the acknowledgment of received data is combined with outgoing data to reduce network overhead.

2. List two main functions of the Transport layer.

ans

- Ensures reliable data transfer (using Protocol like TCP).
- Provides error detection and recovery mechanism.

3. Why do we migrate from IPv4 to IPv6?

ans IPv4 has a limited address spaces (4.3 billion addresses). ~~the~~ IPv6 provides a vastly larger address space (128-bit), improves routing, and supports ~~new~~ newer features like auto-configuration and better security.

4. How do routers get information about neighbors?

ans Routers use routing protocols like OSPF, RIP, and EIGRP to discover and maintain information about neighbour routers and build routing tables.

Sec - B

1. Differentiate between IPv4 and IPv6.

ans IPv4: 32 bit address, 4.3 billion unique addresses, written in dotted-decimal
(e.g., 192.168.0.1).

IPv6: 128-bit address, trillions of addresses, written in hexadecimal

(e.g., 2001:0db8::1).

- IPv6 has built-in Security and does not require NAT.

- IPv4 Supports broadcast; IPv6 uses multicast.

2. Find network and last address in

182.44.82.16/26.

- Subnet mask: /26 \rightarrow 255.255.255.192

- Block Size: 64 addresses

- 182.44.82.16 is in the block starting at 182.44.82.0

- Network address: 182.44.82.0

- Last address: 182.44.82.63

Section - c

1. Explain networking devices:

- Router: Connects multiple networks and directs data packets using IP addresses.

- Bridge: Connects two LANs and filters traffic based on MAC addresses.

- Gateway: Connects different network architectures and protocols (e.g., LAN to the internet).

- Repeater: Regenerates and amplifies signal to extend the range of a network.

• Hub: A basic device that broadcasts data to all devices on the network.

• Switch: Connects devices in a LAN and sends data only to the intended recipient using MAC addresses.

7. Classful addressing types and binary to dotted-decimal conversion:

• Class A: 0.0.0.0 - 127.255.255.255 (large networks)

• Class B: ~~128~~ 128.0.0.0 - 191.255.255.255 (medium networks)

• Class C: 192.0.0.0 - 223.255.255.255 (small networks)

• Class D: 224.0.0.0 - 239.255.255.255 (multicast)

• Class E: 240.0.0.0 - 255.255.255.255 (experimental)

• a. 10000001 00001011 00001011
11101111 = 129.11.11.239

• b. 11000001 10000001 00011011
11111111 = 193.129.27.255