**Questionaires of Connectivity Verification**

I. Identification

1. What protocol is used for sending error messages in the TCP/IP suite?

* Answer: ICMP (Internet Control Message Protocol)

2. What is the purpose of ICMP messages in the TCP/IP suite?

* Answer: To provide feedback about issues related to the processing of IP packets under certain conditions.

3. Why might ICMP messages be disallowed within a network?

* Answer: For security reasons.

4. Which version of IP does ICMPv4 support?

* Answer: IPv4

5. What is the equivalent messaging protocol for IPv6?

* Answer: ICMPv6

6. Besides IPv4, for which other version of IP does ICMPv6 provide services?

* Answer: IPv6

7. Name one common ICMP message that is common to both ICMPv4 and ICMPv6.

* Answer: Host confirmation

8. When does an ICMP message of "time exceeded" occur?

* Answer: When the time to live (TTL) of a packet expires.

9. What type of ICMP message is used to notify the source that the destination or service is unreachable?

* Answer: ICMP Destination Unreachable message

10. In the context of ICMP, what does TTL stand for?

* Answer: Time to Live

11. What field does IPv6 use instead of the TTL field to determine if a packet has expired?

* Answer: Hop limit field

12. Which version of IP encapsulates ICMPv6 messages?

* Answer: IPv6

13-14. Name two types of messages exchanged between an IPv6 router and an IPv6 device.

* Answer: Router Solicitation (RS) message and Router Advertisement (RA) message

15-16. What are the two types of messages exchanged between IPv6 devices?

* Answer: Neighbor Solicitation (NS) message and Neighbor Advertisement (NA) message

17. What process is performed to ensure the uniqueness of an IPv6 address assigned to a device?

* Answer: Duplicate Address Detection (DAD)

18. What utility is commonly used for testing connectivity between hosts in both IPv4 and IPv6 networks?

* Answer: Ping

19. This is a that generates a list of hops that were successfully reached along the path.

Answer: Traceroute

20. It is a Traceroute provides a round-trip time for each hop along the path and indicates if a hop failes to respond.

Answer: RTT or Round Trip Time

II. True and False

1. Is ICMPv4 specific to a certain version of IPv4?

* Answer: True

2. ICMP Destination Unreachable messages are used to notify the source about reachable destinations.

* Answer: False

3. An ICMPv4 Time Exceeded message is sent by a router when the TTL field of a packet reaches zero.

* Answer: True

4. When a router decrements the TTL field of an IPv4 packet to zero, it forwards the packet instead of discarding it.

* Answer: False

5. ICMPv6 does not send a Time Exceeded message if a packet has expired.

* Answer: False

6. IPv6 uses the TTL field to determine if a packet has expired.

* Answer: False

7. The hop limit field in IPv6 serves the same purpose as the TTL field in IPv4.

* Answer: True

8. ICMP stands for Integrated Control Message Protocol?

Answer: False

**III. Enumeration Question:**

1. List four Destination Unreachable codes used in ICMPv4 messages, along with their corresponding meanings.

- Answer:

1. 0 - Net unreachable

2. 1 - Host unreachable

3. 2 - Protocol unreachable

4. 3 - Port unreachable

1. What are the types of connectivity tests performed with the ping utility?

- Answer:

1. Pinging the local loopback

2. Pinging the default gateway

3. Pinging the remote host