

# Lecture 6 - IP Addressing Quiz ANS

---

## 1. Why is hierarchical addressing crucial for scaling the Internet?

- A) It allows routers to have one table entry for an entire network rather than every host
- B) It makes IP addresses shorter and easier to type
- C) It encrypts the location of the host for privacy
- D) It forces all traffic to go through a single central server

**ANS:**

## 2. In the early Internet (Classful Addressing), what determined the size of the network?

- A) The first few bits of the IP address (e.g., 0, 10, 110)
- B) A separate subnet mask sent with every packet
- C) The physical location of the router
- D) The number of cables plugged into the switch

**ANS:**

## 3. What was the main problem with Classful Addressing (Classes A, B, C)?

- A) It was too slow for routers to process
- B) It wasted huge numbers of addresses (inflexible block sizes)
- C) It only supported 64-bit addresses
- D) It did not support email traffic

**ANS:**

## 4. What does CIDR stand for?

- A) Central Internet Data Routing
- B) Classless Inter-Domain Routing
- C) Computer Identity Distribution Registry
- D) Common IP Destination Resolution

**ANS:**

## 5. In the address 192.168.1.0/24, what does the '/24' indicate?

- A) There are 24 hosts in the network
- B) The first 24 bits are the Network ID (fixed)
- C) The network can support 24 subnets
- D) It is a Class A network

**ANS:**

**6. Which organization is at the top of the IP address allocation hierarchy?**

- A) ARIN
- B) Google
- C) ICANN
- D) The United Nations

**ANS:**

**7. How does route aggregation (supernetting) help reduce routing table size?**

- A) By deleting routes to unpopular websites
- B) By combining multiple adjacent small prefixes into one larger prefix
- C) By converting all IPv4 addresses to IPv6 automatically
- D) By storing tables in the cloud instead of on routers

**ANS:**

**8. What is 'Multi-homing' and how does it affect aggregation?**

- A) Connecting to multiple ISPs for redundancy; it breaks perfect aggregation
- B) Using multiple computers at home; it improves aggregation
- C) Moving a laptop between work and home; it has no effect
- D) Hosting multiple websites on one server; it reduces table size

**ANS:**

**9. If a packet matches two entries in a forwarding table (e.g., 4.0.0.0/8 and 4.29.0.0/16), which one is used?**

- A) The first one in the list
- B) The one with the shortest prefix length
- C) The one with the Longest Prefix Match (most specific)
- D) The router randomly picks one to load balance

**ANS:**

**10. Approximately how many addresses does IPv4 provide?**

- A) 1 million
- B) 4 billion ( $2^{32}$ )
- C) 340 undecillion ( $2^{128}$ )
- D) 16 million

**ANS:**

**11. How many bits are in an IPv6 address?**

- A) 32 bits
- B) 64 bits
- C) 128 bits

D) 256 bits

**ANS:**

**12. Which of the following is a valid shorthand for the IPv6 address 2001:0DB8:0000:0000:0000:0000:0001?**

- A) 2001:DB8:0:0:0:0:1
- B) 2001:DB8::1
- C) Both A and B are valid
- D) IPv6 addresses cannot be shortened

**ANS:**

**13. Why is migrating from IPv4 to IPv6 difficult?**

- A) IPv6 cables are more expensive
- B) IPv4 and IPv6 are incompatible; you need two separate forwarding tables or complex translation
- C) IPv6 is slower than IPv4
- D) Governments have banned IPv6

**ANS:**

**14. What is the typical size of an IPv6 subnet prefix allocated to a user or small network?**

- A) /32
- B) /64
- C) /96
- D) /120

**ANS:**

**15. What is the 'Default Route' typically represented as in wildcard notation?**

- A) 255.255.255.255
- B) 1.1.1.1
- C) \*.\* (or 0.0.0.0/0)
- D) 127.0.0.1

**ANS:**

**16. What is the purpose of a 'Netmask'?**

- A) To hide the IP address from hackers
- B) To identify which bits of an IP address are the Network ID (1s) and which are the Host ID (0s)
- C) To act as a password for the router
- D) To convert decimal numbers to hexadecimal

**ANS:**

**1. What notation is used to represent an IPv4 address range like '192.168.1.0 to 192.168.1.255' concisely?**

- A) 192.168.1.0/24
- B) 192.168.1.0-255
- C) 192.168.1.x
- D) Class A Network

**ANS:**