1. **An Internet Service Provider (ISP) is granted a block of addresses starting with 145.75.0.0/16. The ISP needs to distribute these addresses to three groups of customers as follows:**

(a) The first group has 128 customers; each needs 256 addresses.
(b) The second group has 128 customers; each needs 64 addresses.
(c) The third group has 64 customers; each needs 128 addresses.

Find the first address of the 128th customer of the 2nd group and how many addresses are still available with ISP after these allocations.

(A) 145.75.127.128/24, 32768   (B) 145.75.159.192/26, 16384
(C) 145.75.159.192/26, 32768   (D) 145.75.191.128/25, 16384

Common Data Questions: Q. 2 and Q. 3

An organization is granted the block 150.36.0.0/16. The administrator wants to create 512 subnets.

2.   What is the subnet mask?

(A) 255.255.255.128/25   (B) 255.255.255.192/26
(C) 255.255.255.224/27   (D) 255.255.255.240/28

3.   Find the number of hosts in each subnet. Find the first and last host in the first subnet.

(A) 128, 150.36.0.1 and 150.36.0.127   (B) 128, 150.36.0.129 and 150.36.0.255
(C) 126, 150.36.0.1 and 150.36.0.126   (D) 126, 150.36.0.129 and 150.36.0.254.

4. What could be the network mask if the direct broadcast address of a network is 168.17.07.255?

(A) 255.255.248.0
(B) 255.255.252.0
(C) 255.255.254.0
(D) All the above

5. The subnet mask for a particular network is 255.255.252.0. Which of the following pairs of IP addresses could belong to this network?

(A) 172.57.88.62 and 172.57.87.233   (B) 10.35.24.2 and 10.35.29.4
(C) 191.203.31.87 and 191.234.31.88   (D) 128.8.129.43 and 128.8.131.42

6. An organisation has a class-B network and wishes to form subnets for 24 departments. The subnet mask would be:

(A) 255.255.224.0   (B) 255.255.240.0
(C) 255.255.248.0   (D) 255.255.252.0

7. The routing table of a router is shown below:

Destination	Subnet Mask	Interface
128.75.43.0	255.255.255.0	Eth0
128.75.43.0	255.255.255.128	Eth1
192.12.17.5	255.255.255.255	Eth2
Default		Eth3

(A) Eth1 and Eth3   (B) Eth0 and Eth3
(C) Eth0 and Eth2   (D) Eth1 and Eth2

On which interface will the router forward packets addressed to destinations 128.75.43.16 and 192.12.17.10 respectively?

8. In IP4 addressing format, the number of networks allowed under Class-C address is:

(A) 2^{24} (B) 2^{21}
(C) 2^8 (D) $2^8 - 2$

9. Suppose a subnet 'X' has a subnet mask 255.255.192.0 and a system A has IP 157.106.46.234. Which of the following IPs belongs to the same network A?

(A) 157.106.65.03   (B) 157.106.142.77
(C) Both (A) and (B)   (D) None of these

10. A company has a Class-C address of 204.204.204.0. It wishes to have three subnets, one with 100 hosts and two with 50 hosts each. Which one of the following options represents a feasible set of subnet mask/ subnet address pairs?

(A) 255.255.255.192/ 204.204.204.128

255.255.255.128/ 204.204.204.0
255.255.255.128/ 204.204.204.64

(B) 255.255.255.192/ 204.204.204.0
255.255.255.128/ 204.204.204.192
255.255.255.128/ 204.204.204.64

(C) 255.255.255.128/ 204.204.204.128
255.255.255.192/ 204.204.204.192
255.255.255.192/ 204.204.204.224

(D) 255.255.255.128/ 204.204.204.128
255.255.255.192/ 204.204.204.64
255.255.255.192/ 204.204.204.0

11. Two computers, A and B are configured as follows. A has IP address of 203.197.17.157 and netmask 255.255.128.0. B has the IP address of 203.192.192.201 and netmask 255.255.192.0. Which one of the following statements is true?

(a) A and B both assume they are on the same network.
(b) B assumes A is on the same network, but A assumes B is on a different network.
(c) A assumes B is on the same network, and B assumes A is on a different network.
(d) A and B both assume they are on different networks.

12. A router uses the following routing table:

Destination	Mask	Interface
144.72.0.0	255.255.0.0	Eth0
144.72.64.0	255.255.224.0	Eth1
144.72.68.0	255.255.255.0	Eth2
144.72.68.64	255.255.255.224	Eth3

A packet bearing a destination address 144.72.68.117 arrives at the router on which interface will it be forwarded?

(a) Eth0   (b) Eth1
(c) Eth2   (d) Eth3

13. 127.0.127.195 is a:

(a) Limited Broadcast Address   (b) Direct Broadcast Address
(c) Multicast Address   (d) Loopback Address

14. Let computers A and B have IP addresses 72.195.126.113 and 72.195.126.91, respectively, and both use subnet mask 'N'. Then what is the value of 'N' that should not be used out of the following if both belong to the same network?

(A) 255.255.255.0   (B) 255.255.255.128
(C) 255.255.255.192   (D) 255.255.255.224

Common Data Questions: Q. 15, Q. 16 and Q.17

Consider three IP networks A, B and C. Host H_A in networks 'A' sends the message each containing 180 B of application data to a host H_C in network HC. The TCP layer prefixes 20 Bytes header to the message. This passes through an intermediate network, 'B'. The maximum packet size, including 20B IP headers in each network, is:
A. 500 Bytes
B. 100 Bytes
C.1000 Bytes

The network A and B are connected through a 512 Kbps link, while B and C are connected by a 256 Kbps link.

15. Assuming that the packets are correctly delivered, how many Bytes including headers, are delivered to the IP layer at the destination for one application message in the best case? Consider only data packets.

(A) 220   (B) 240
(C) 260   (D) 280

16. What is the rate at which application data is transferred to host H? Ignore errors, acknowledgements and other overheads.

(A) 196 Kbps   (B) 177.23 Kbps
(C) 354.5 Kbps   (D) 325.5 Kbps

17. What is the extra overhead caused by fragmentation?

(A) 40 Bytes   (B) 20 Bytes
(C) 0 Bytes   (D) 60 Bytes

18. How many networks of class B are possible

(A) 2^{32} (B) 2^{16} (C) 2^{14} (D) 2^7

19. In which of the following strategies, bits from HID are chosen in an IP address. (HID means Host ID).

(A) subnetting (B) supernetting   (C) NAT   (D) None of these

20. In a subnet mask, the number of 0's indicated

(A) NID   (B) HID   (C) Both   (D) None of these