Branch : CSE & IT Batch : Hinglish

Computer Network

IPv4 Addressing

DPP 05

[MCQ]

1. Consider a class C network with 19 subnets and 6 hosts per subnet. Then which of the following is possible subnet mask?

(a) 255.255.255.241

(b) 255.255.255.244

(c) Both (a) and (b)

(d) None of these

[MSQ]

2. An organization need Class B network with 32 subnet and each subnet need 100 hosts which of the following is/are possible subnet mask?

(a) 255.255.7.3

(b) 255.255.128.135

(c) 255.255.248.0

(d) 255.255.0.248

[NAT]

3. A physics wallah organization is granted a class B network with IP address 186.24.0.0. For revolution 2.0, 10 bits are fixed for subnet. Then, the total number of hosts in each subnet are _____.

[MCQ]

4. Consider a class C network 200.200.250.68. if 3 bits are borrowed from HID part, instead of first 3 subnet bits, last 3 bits are borrowed from HID part. Then which of the following is belong to 3rd subnet ID?

(a) 200.200.250.96

(b) 200.200.250.64

(c) 200.200.250.3

(d) 200.200.250.2

[MCQ]

5. Consider a class C network address of 220.220.220.0. it is divided into 3 subnets A, B and C each subnet need 90, 40 and 33 hosts respectively. Which of the following is a valid subnet mask for subnet B and C respectively?

(a) 255.255.255.128 and 255.255.255.192.

(b) 255.255.255.192 and 255.255.255.128.

(c) Both the subnet mask are same.

(d) None of these.

[MCQ]

6. Suppose, a class C network is divided into 3 subnets P, Q and R. Subnet P need 50 host, subnet Q need 40 hosts and subnet R need 120 hosts. Which of the following is an appropriate subnet mask for R?
(Hints: using VLSM technique)

(a) 255.255.255.128

(b) 255.255.255.224

(c) 255.255.255.0

(d) 255.255.255.192

[MCQ]

7. Suppose, an organization is divided into 6 departments with network 199.198.197.196 For each department 3 bits are borrowed from HID part of given network.

SID	Department Number
010	1
100	2
110	3
101	4
111	5
101	6

Which of the following is direct broadcast address of department number 5 and 4 respectively?

(a) 199.198.197.191 and 199.198.197.255

(b) 199.198.197.169 and 199.198.197.191

(c) 199.198.197.169 and 199.198.197.255

(d) 199.198.197.255 and 199.198.197.191

[MCQ]

8. In a class B network. On the internet has a subnet mask 255.255.240.0 How many minimum number of subnets are possible?

(a) 32 (b) 30
(c) 16 (d) 14

Answer Key

1. (c)
2. (a, b, c, d)
3. (62)
4. (d)
5. (c)
6. (a)
7. (d)
8. (c)

Hints & Solutions

1. (c)

- Class = C
- The number of host ID bits = 8 (class C)
- $19 * 6 \leq 2^8 - 2$

  $114 \leq 254$ (Condition True)

  The number of 1's in SM = NID + SID (19 subnet)

  = 24 + 5

  = 29 bits

(a) 11111111.11111111.11111111.11110001

The number of 1's = 29

SM = 255.255.255.241 (Valid)

This subnet mask practically not possible.

(b) 11111111.11111111.11111111.11110100

255 . 255 . 255 . 244

So, both subnet mask are possible.

Hence option (c) is correct.

2. (a, b, c, d)

Class = B (16 NID)

The number of subnets = 32 (5 bit)

The number of 1's in subnet mask = 21

$32 * 100 \leq 2^{16} - 2$ (Host)

$3200 \leq 2^{16} - 2$ (True)

(a) 11111111.11111111.00000111.00000011

255.255.7.3 (possible)

(b) 11111111.11111111.10000000.10000111

255.255.128.135 (possible)

(c) 11111111.11111111.11111000.00000000

255.255.248.0 (best subnet mask)

(d) 11111111.11111111.00000000.11111000

255.255.0.248 (possible)

Hence, all subnet masks are possible.

3. (62)

Class = B (16 bits NID)

Subnet bits = 10

Total number of hosts in class B = $2^{16} - 2$

Total number of host bit after subnet = 32 – 16 – 10

= 6 bits

The number of hosts / subnets = $2^6 - 2$

= 62

Hence, (62) is correct.

4. (d)

Network = 200.200.250.68

HID bit = 8 bit (class C)

Subnet bits	Subnet number
4 2 1	
0 1 0	3rd subnet

Last 8 bits = 00000010

↓

Subnet bits

= 2

3rd subnet ID = 200.200.250.2

Hence, option (d) is correct.

5. (c)

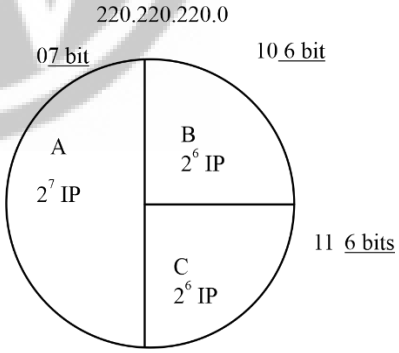
Class = C

Subnet A = 90 (7 bits)

Subnet B = 40 (6 bits)

Subnet C = 33 (6 bits)

- $90 + 40 + 33 \leq 2^8 - 2$
- $166 \leq 254$ (valid)



Subnet mask for A = 255.255.255.128

Subnet mask for B = 255.255.255.192

Subnet mask for C = 255.255.255.192

Both the subnet mask are same for subnet A and B

Hence, option (c) is correct.

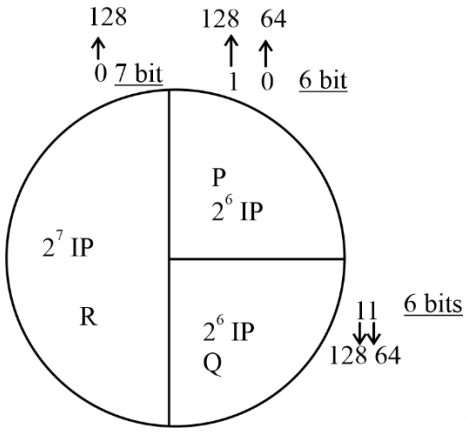
6. (a)

Total hosts = 50 + 40 + 120

= 90 + 120

= 210

$210 \leq 2^8 - 2$ (possible)



Subnet mask for R = 255.255.255.128

Subnet mask for P = 255.255.255.192

Subnet mask for Q = 255.255.255.192

Hence option (a) is correct.

7. (d)

SID of department 4 = 199.198.197.10100000

SID of department 4 = 199.198.197.160

DBA of department 4 = 199.198.197.10111111

= 199.198.197.191

SID of department 5 = 199.198.197.11100000

= 199.198.197.224

DBA of department 5 = 199.198.197.11111111

= 199.178.197.255

Hence option (d) is correct.

8. (c)

SM = 255.255.240.0

= 11111111.11111111 . 11110000

↓ ↓ ↓

NID SID HID

The number of subnets = 2^4

= 16

Hence, Option (c) is correct.