CS & IT ENGINEERING

COMPUTER NETWORKS

IPv4 Addressing

DPP 01 Discussion Notes

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01 Question

02 Discussion

Q.1

Let 2^p and 2^q be the number of networks present in class B and class C under IPv4 addressing format, the value of p + q is **[NAT]**

35

No. of n/w's in class-B $= 2^p = 2^{14}$

No. of n/w's in class-C $= 2^q = 2^{21}$

$2^p = 2^{14}$

$P = 14$

$2^q = 2^{21}$

$q = 21$

$P + q = 14 + 21 = 35$

Q.2 Which of the following is/are VALID IP addresses belonging to class C under IPV4 addressing format? [MSQ]

A. 191. 82. 129. 75 → class B

B. 208. 21. 97. 120 → class-C

C. 224. 82. 31. 128 → class-D

D. 223. 32. 64. 124 → class-C

(B, D)

class A (1-126)
class-B (128-191)
class-C (192-223)
class-D (224-239)
Class-E (240-255)

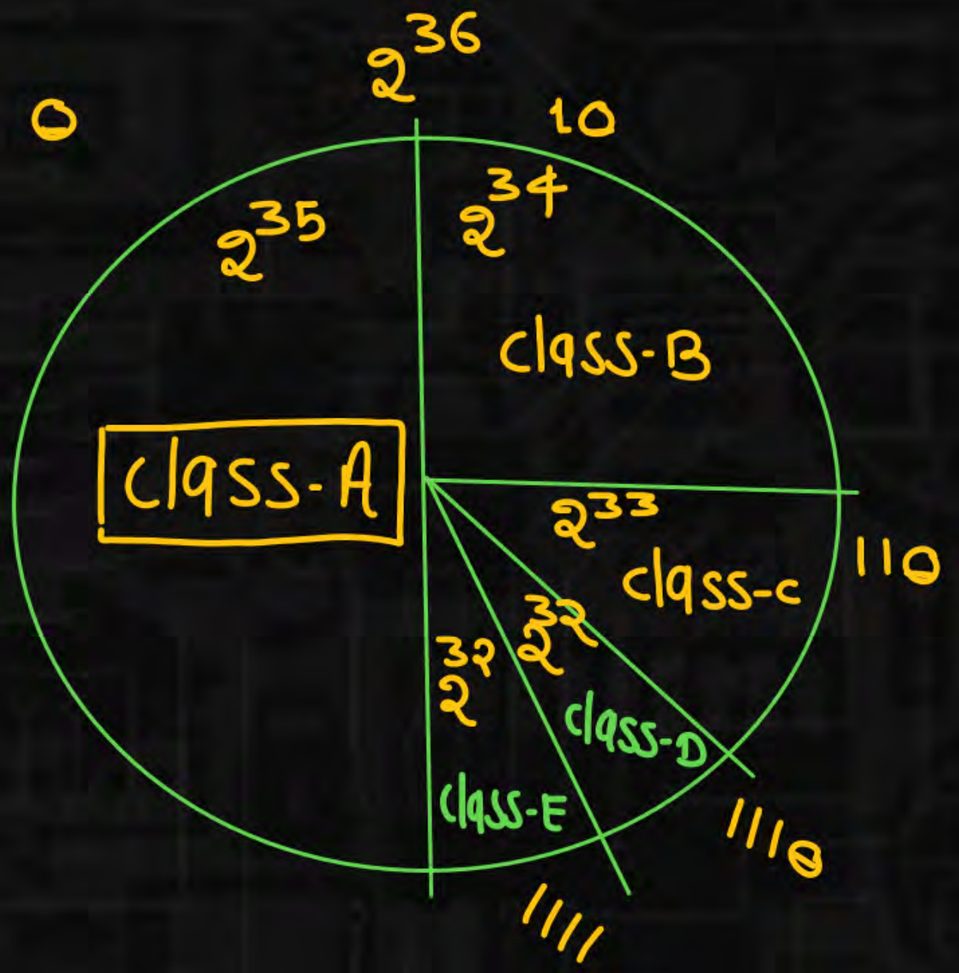
Q.3 Consider a hypothetical IPv4 address of 36 bits where class A contain 2^{35} IP addresses. Then the number of IP address present in class D will be : (Assume classful address is used). **[MCQ]**

A. 2^{28}

B. 2^{32}

C. 2^{34}

D. None of these



$$\frac{2^{33}}{2} = 2^{32}$$

Q.4

Which of the following is/are correct?

[MCQ]

A. Class A IPv4 address start form 0.0.0.0.

B. Class B IPv4 address start from 127.0.0.0. (128-191)

C. Class C IPv4 address start from 191.0.0.0. (192-223)

D. None of the above.

Q.5 [MCQ]

Consider the following statements-

I: The ratio of the number of IP addresses contained in class A to that of class E is 8:1.

II: The number of IP addresses contained in class D is 75% less than the number of IP addresses contained in class B.

Which of the above given statement(s) is/are INCORRECT?

A. I only

B. II only

C. Both I and II

D. Neither I nor II

No. of IP Addresses in class A = 2^{31}
class-B = 2^{30}
class-C = 2^{29}
class-D = 2^{28}
class-E → 2^{28}

$2^{31} : 2^{28}$

$2^3 * 2^{28} : 2^{28}$

8 : 1 (correct)

$$\frac{\text{class B} - \text{class D}}{\text{class-B}}$$

$$\frac{2^{30} - 2^{28}}{2^{30}}$$

$$\frac{2^2 * 2^{28} - 2^{28}}{2^{30}}$$

$$\frac{2^{28}[4-1]}{2^{30}} = \frac{3}{2^2} = \frac{3}{4} = 75\%$$ Correct

Q.6 If the number of networks present in class B are 2^m, then number of hosts present in class C are : (classful addressing scheme is followed) [MCQ]

A. $2^m - 2$ → $2^{14} - 2$

B. $2^{m+2} - 2$ → $2^{14+2} - 2$ → $2^{16} - 2$

C. $\sqrt{2^{m+2}} - 2$ → $\sqrt{2^{14+2}} - 2$ → $\sqrt{2^{16}} - 2$ → $2^8 - 2 = 254$

D. 2^m → 2^{14}

No. of n/w's in class-B = $2^m = 2^{14}$

$m = 14$

No. of Host Present in class-C = $2^8 - 2$

$= 254$

Q.7

If number of network present in class B and class C are 2^p and 2^q respectively. And number of hosts present in B and class C are $(2^m - 2)$ and $(2^n - 2)$ respectively. Then which of the following is/are correct?

[MSQ]

A. Relation between p and q will be $2q = 3p$.

B. The number of networks present in class A $2^{n-1} - 2$ possible.

C. Relation between m and n will be $m = 2n$.

D. Relation between p and n will be $4p = 7n$.

$2^{8-1} - 2$

$2^7 - 2 = 128 - 2 = 126$

(A, B, C, D)

No. of n/w's Present in class-B = $2^P = 2^{14}$

" " " " " class-C = $2^q = 2^{21}$

$2^P = 2^{14}$

$P = 14$

$2^q = 2^{21}$

$q = 21$

$\frac{P}{q} = \frac{14}{21}\,2$

$\frac{P}{q} = \frac{2}{3}$

$3P = 2q$

$P = 14, \eta = 8$

$\frac{P}{\eta} = \frac{14}{8}\,7$

$\frac{P}{\eta} = \frac{7}{4}$

$4P = 7\eta$

No. of Host Present in class B = $2^m - 2$

$= 2^{16} - 2$

$m = 16$

No. of Host Present in class-C = $2^\eta - 2$

$= 2^8 - 2$

$\eta = 8$

$m = 16, \eta = 8$

$\frac{m}{\eta} = \frac{16}{8}\,2$

$\frac{m}{\eta} = \frac{2}{1}$

$m = 2\eta$

Q.8

Which of the following IP address cannot be assigned to any host?

[MCQ]

A. 127.10.15.243

B. 129.46.255.255
NID HID

C. Both (a) and (b)

D. None of the above.

129.46.11111111.11111111
HID

Class B (128-191)

NID/16 HID/16


THANK YOU GW
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