

## OVERALL ANALYSIS

## Solution Report

All

Correct Answers

Wrong Answers

Not Attempted Questions

Q.1)

Max Marks: 1

The IP address belong to some network is 196.54.66.79. Find the wild card host on this network.

A

196.54.66.79

B

255.255.255.0

C

0.0.0.79

Correct Option

Solution: (C)

Ans C

Explanation:

The host on the network is calculated by performing bitwise AND between wildcard mask and address.

Wild card mask for class c address= 0.0.0.255

IP = 196.54.66.79

AND

Wild card mask= 0.0.0.255

Host on this network is = 0.0.0.79

D

196.54.66.0

Q.2)

Max Marks: 1

Which of the following will be the subnet mask if the DBA of the subnet is 210.55.93.63

A

255.255.255.224

B

255.255.255.240

C

255.255.255.248

D

All of these

Correct Option

Solution: (D)

Ans d

Explanation:

DBA: 210.55.93.00111111= 6 ones at last

In DBA all the host bits are one.

1. 224= 11100000= 5 host bits= So 5 one's at last for DBA possible

2. 240= 11110000= 4 host bits= So 4 one's at last possible

3. 248= 11111000= 3 host bits= So 3 ones at last possible

Hence all are possible.

Q.3)

Max Marks: 1

A link normally has a bandwidth of 2000 Hz assigned for data communication. The signal to noise ratio is usually 2120. What will be the capacity for this channel in bits per second?

Correct Answer

Solution: (22100)

Ans 22100

Explanation :

$$C = 2000 * \log_2(1 + \text{SNR}) = 2000 * 11.05 = 22100 \text{ bps}$$

Q.4)

Max Marks: 1

If NRZ is preferred over manchester encoding then what is the possible reason?

A

Noise

B

Power

C

Bandwidth

Correct Option

Solution: (C)

Ans c

Explanation: One of the drawbacks of the Manchester encoding is that it needs more bandwidth than other encodings, such as NRZ. The Manchester Encoding consumes twice the bandwidth of the original signal.

D

Speed

Q.5)

Max Marks: 1

Company requires 250 hosts what would be the best possible subnet mask?

A

255.255.0.0

B

255.0.0.0

C

255.255.255.255

D

255.255.255.0

Correct Option

Solution: (D)

Ans d

Explanation:

For 250 hosts =  $2^8 = 256$  hosts approx= 8 bits are needed.

So for minimum wastage the subnet mask should be 255.255.255.0

Q.6)

Max Marks: 1

The capacity of a channel is:

A

The maximum achievable error-free data rate that can be achieved over the channel

Correct Option

Solution: (A)

Ans a

Explanation: The "capacity" of a channel is the theoretical upper-limit to the bit rate over a given channel that will result in negligible errors. Channel capacity is measured in bits/s.

B

The length of the channel multiplied by the data rate

C

The bandwidth of the channel in Hertz

D

The volume of the channel measured in cubic feet

Q.7)

Max Marks: 1

Consider the following two statements with respect to IPv4 in computer networking:

P: The loopback (IP) address is a member of class B network.

Q: The loopback (IP) address is used to send a packet from host to itself.

What can you say about the statements P and Q?

A

P – True; Q – False

B

P – False; Q – True

Correct Option

Solution: (B)

Ans b

Explanation : P is false Q is true

P is false because an IP address which belongs to class B has the first two bits in the first octet set to 10

10000000 - 10111111 (128 - 191)

Q is true because an IP address range 127.0.0.0 – 127.255.255.255 is reserved for loopback address. An address that sends outgoing packet back to the same computer for testing.

C

P – True; Q – True

D

P – False; Q – False

Q.8)

Max Marks: 1

Which of the following option is/are true.

A

The overall total number of host addresses will get decreases when we apply subnetting in the available network

Correct Option

Solution: (A)

Ans: A

Explanation:

Some of the addresses will waste in the representation of subnet id so overall host addresses will get decrease. Subnetting is used to divide the network into small networks.

- B** The overall total number of host address will get increases when we apply the subnetting in the available network
- C** The overall total number of host addresses will remain the same after applying subnetting to the available network
- D** Subnetting helps to join the two available networks to get the sufficient number of IP address

Q.9)

Max Marks: 1

Which of the following is the valid host range for the subnet on which the IP address 192.168.168.188 with subnet mask is 255.255.255.192 ?

**A** 192.168.168.129-190

Correct Option

**Solution:** (A)

**Ans a**

**Sol:** After performing the logical AND with IP address 192.168.168.188 and subnet mask 255.255.255.192, we get 192.168.168.128 as the subnet id.

For subnet mask 255.255.255.192

It's a class C address

Net bits= 24 subnet bits= 2 host bits =6

Total no of hosts =  $2^6 - 2 = 62$

$128 = 10000000$

The first host of the subnet=  $10000001 = 129$

The last host of the subnet=  $10111110 = 190$

So valid range of IP addresses that can be assigned to hosts is 192.168.168.129 to 192.168.168.190

**B** 192.168.168.129-191

**C** 192.168.168.128-190

**D** 192.168.168.128-192

Q.10)

Max Marks: 1

An ISP has assigned an address block to user in which 4096 hosts can be assigned IP addresses. Which of the following can be the network ID ?

**A** 168.72.90.0/20

**B** 168.72.96.0/20

Correct Option

**Solution:** (B)

**Ans B.**

**Explanation:** 168.72.96.0/20

for n/w id, all the host id part should be 0. Since it has to support 4096 hosts,  $\rightarrow 2^{12} \Rightarrow 12$  bits represent host id.

Note- Here in question, it is mentioned to assign IP to 4096 hosts, so we would actually need 13 bits to support this many hosts [ 1 for n/w id and another for broadcast]. But since, no option satisfies, therefore, it is obvious that they are neglecting these 2 addresses. So, consider 12 bits for host id.

Therefore,  $32 - 12 = 20$  bits represent n/w id. Now, we know the prefix-length, the remaining 12 bits should be all 0's which is only in option B. Therefore this is the solution

**C** 168.72.64.64/20

**D** 168.64.64.0/24

Q.11)

Max Marks: 2

What transmission rate is needed to transmit a 4" x 6" photograph (uncompressed, and with a resolution of 1200 dots per inch and 24 bits per pixel/dot) in 1 second?

**A** 691,200kb/s

**B** 28.8kb/s

**C** 8.29Mb/s

D

829Mb/s

Correct Option

**Solution:** (D)**Ans d****Explanation:** We are transferring =  $4 \times 6$  photograph = 24 square inch

So, For one inch = 1200 dots

For 24 sq inch =  $24 \times 1200 \times 1200 = 34560000$  dots

For 1 dot = 24 bits

For 34560000 dots =  $24 \times 34560000 = 829440000$  bits = 829Mb/s approx

Q.12)

Interface: 255.255.255.192

Max Marks: 2

Which one of the following IP addresses belong to given interface ?

A

200.200.200.130 &amp; 200.200.200.64

B

200.200.200.200 &amp; 200.200.200.205

Correct Option

**Solution:** (B)**Ans b****Sol.** According to the given data, the maximum range of addresses possible in each interface are:

If you perform AND operation between interface and IP address of option B you will get the same network id.

In option B:  $200.200.200.200 \text{ AND } 255.255.255.192 = 200.200.200.192$  $200.200.200.205 \text{ AND } 255.255.255.192 = 200.200.200.192$ 

Clearly, the pair of IP addresses which belong to Interface is 200.200.200.200 &amp; 200.200.200.205 which is option (B)

C

200.200.200.30 &amp; 200.200.200.130

D

200.200.200.20 &amp; 200.200.200.200

Q.13)

An organization with 4 departments has the following IP address space: 10.2.22.0/23. As the systems manager, you are required to create subnets to accommodate the IT needs of 4 departments. The subnets have to support to 200, 61, 55, and 41 hosts respectively. What are the 4 subnet network numbers?

Max Marks: 2

A

10.2.22.0/24 , 10.2.23.0/26 , 10.2.23.64/26 , 10.2.23.128/26

Correct Option

**Solution:** (A)**Ans a****Explanation:**

The address is 10.2.22.0/23. We are applying subnetting in the address.

For 200 hosts = we require host bits =  $2^8 = 256$  hosts possible. = 8 bits

First subnet id 10.2.22.0/24. [ This contain more than 200 hosts]

Second subnet id 10.2.23.0/26 [ we can further divide the last octet we want only 61 address]

Third subnet id 10.2.23.64/26 [ 64 address possible &gt; 55]

Fourth subnet id 10.2.23.128/26 [ 64 address possible &gt; 41]

B

10.2.22.0/26, 10.2.23.0/26, 10.2.23.64/26, 10.2.23.128/26

C

10.2.22.0/26, 10.2.22.64, 10.2.22.128/26, 10.2.22.192/26

D

None of the above

Q.14)

Consider a network 192.168.1.0/24 and you have four segments in your network. What distribution of addresses are required to create four subblocks and each subblock is capable of holding a minimum of 50 addresses.

Max Marks: 2

Which of the following is first address of the second subblock

A

192.168.1.163

B

192.168.1.127

c

192.168.1.64

Correct Option

Solution: (C)

Ans c

**Explanation:** network mask = 255.255.255.0  
For 50 hosts=  $2^6$ = 6 bits sufficient

New mask would be 255.255.255.192= /26

First block= (192.168.1.00000000 - 192.168.1.00111111)= (192.168.1.0 - 192.168.1.63) >50 addresses

Second block= (192.168.1.01000000- 192.168.1.01111111)= (192.168.1.64 - 192.168.1.127)>50 addresses

So first address of second block is 192.168.1.64

D

None of these

Q.15)

Max Marks: 2

Suppose a 10Mb/s network interface card sends into a link an infinite stream of 0's using Manchester encoding. The signal emerging from the adapter will have how many transitions per second?

A

10 million transitions per second

B

5 million transitions per second

C

20 million transitions per second

Correct Option

Solution: (C)

Ans C

**Explanation:** In the Manchester encoding we use to have two transition for single bit.

For 0= -ve to +ve, For 1= +ve to -ve

Hence in 1 sec=  $10 \times 10^6$  bits

= 10 million zeros x 2 = 20 million transitions per second.

D

None of the ab

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