OC ASSIGNMENT - 5

Q-1) Please create a network for the following number of Hosts and give the Subnet Mask and Network range for each:

a) 20 Hosts

b) 40 Hosts

c) 100 Hosts

Answer- Let us suppose for all parts, we have an IP of class C as 192.168.10.0.

No of hosts req	2^n-2> no of hosts (Value of n)	Modified subnet mask	No of hosts	Network range
20	5	255.255.255.224	30	192.168.10.0-192.168.10.31
40	6	255.255.255.192	62	192.168.10.0-192.168.10.63
100	7	255.255.255.128	126	192.168.10.0-192.168.10.127

2) Following are some IP addresses. Please give the Network ID for Each and the Broadcast address as well

a) 10.0.77.77/22

b) 200.2.3.5/29

c) 78.87.85.55/17

Answer -

Given IP	Modified subnet mask	Network ID	Broadcast ID
10.0.77.77/22	255.255.252.0	10.0.76.017	10.0.79.255
200.2.3.5/29	255.255.255.248	200.2.3.0	200.2.3.7

78.87.85.55/17	255.255.128.0	78.87.0.0	78.87.127.255

3) You work for a large communications corporation named GlobeComm which has been assigned a Class A network address. Currently, the company has 1,000 subnets in offices around the world. You want to add 100 new subnets over the next three years, and you want to allow for the largest possible number of host addresses per subnet.
Which subnet mask would you choose?
Answer - So, we need 1100 subnets for which extra 11 bits will be used. By default subnet mask of class A IP is 255.0.0.0. By giving 11 bits more, the required subnet mask in decimal form will be 255.255.224.0.

4) Which of the following is a valid IP host address given the network ID of 191.254.0.0 while using 11 bits for subnetting?
a. 191.254.0.32
b. 191.254.0.96
c. 191.254.1.29
d. 191.54.1.64
Answer - By using 11 bits of subnetting, the total bits of network id will be 27. So, new subnet mask will be 255.255.255.224.

Network ID	Broadcast ID	No of hosts per subnet
191.254.0.0	191.254.0.31	30
191.254.0.32	191.254.0.63	
191.254.0.64	191.254.0.95	
191.254.0.96	191.254.0.127	
191.254.0.128	191.254.0.159	
191.254.0.160	191.254.0.191	
191.254.0.192	191.254.0.223	

191.254.0.224	191.254.0.255	
191.254.1.0	191.254.1.31	
191.254.1.32	191.254.1.63	

So, the only correct option is c that is 191.254.1.29.

Q-5) What is the network ID portion of the IP address 191.154.25.66 if the default subnet mask is used?
Answer - By using the default subnet mask of class B that is 255.255.0.0, we convert both the subnet mask and given IP address to binary form and take its AND operation. So the obtained network ID is 191.154.0.0.