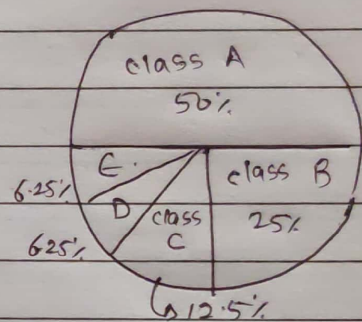


Name : Kalani Karan Griyan.  
 semester : 5 subject : CN.  
 Seat No : CS5A021  
 Pg No : 1/7 of Q2. sign : K.G. Kalani

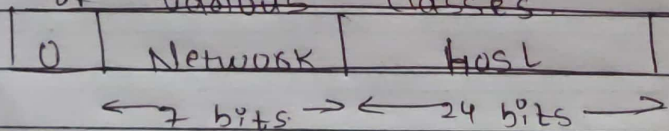
A) In the classful addressing architecture, the IP address space has been divided into 5 classes. A, B, C, D, E. The number of class A addresses is highest i.e. 50% and those of classes D and E is lowest i.e. 6.25%.

class	No. of addresses.	
A	$2^{31}$	50%
B	$2^{30}$	25%
C	$2^{29}$	12.5%
D	$2^{28}$	6.25%
E	$2^{28}$	6.25%



classful addressing occupation of address space.

Format of various classes.



class A IPv4 formats.

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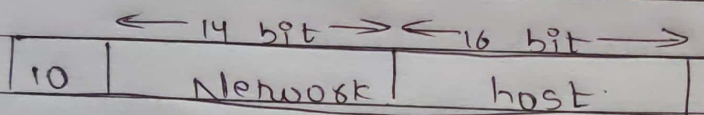
sign : K. G. (Palani)

### n) class A Format.

The formats used for IPv4 address are as shown. The IPv4 address for class A networks is shown. The network field is 7 bit long and host field is 24 bit length. So the network field can have numbers between 1 to 126 but the host no. will range from 0.0.0.0 to 127.255.255.255. The '0' in the first field identifies it is class A network address.

### class B Format.

In class B address format, the first two fields identify the network and the numbers in first field must be in range 128-191



### class B format.

class B networks are large. Host numbers 0.0 and 255.255 are reserved. So there can be up to 65534 (216-2) host in class B network. The first block covers address from 191.255.0.0 to 191.255.255.255

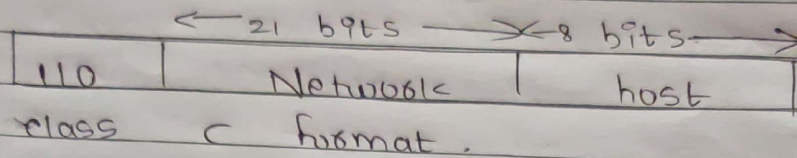
Example : 128.89.0.26 for host 0.26 or net 128.89



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sign : K.G. Kalau

A) class C format :-



The first block in class C covers addresses from 192.0.0.0 to 192.0.0.255 and last block covers addresses from 223.255.255.0 to 223.255.255.255

class D format.

1110	Multicast address
------	-------------------

class D format

class D allows upto 2 million networks with upto 254 hosts each and class D format allows the multicast in which datagram is directed to multiple hosts

class E format :-

11110	Reserved for future use
-------	-------------------------

The 32 bit (4 byte address) are usually written in dotted decimal notation. In notation each of 4 bytes is written in decimal from 0 to 255. So lowest IP address is 0.0.0.0 i.e all 32 bits are zero and highest IP address is 255.255.255.255.



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F. i) In broadcast network, the single communication channel is to be allocated to one transmission time. The other users connected to this medium should wait.

ii) This is called channel allocation. The use two different schemes used for channel allocation

• Static channel allocation in LAN's and MAN's.

i) The traditional way of allocating a single channel among many users is by means of frequency division multiplexing (FDM)

ii) The FDM and TDM are examples of static channel allocation.

iii) In this methods either fixed frequency or fixed time slot is allotted to each other. Entire bandwidth or entire time is shared.

iv) The problem in these methods if all the  $N$  number of users are not using the channel the channel bandwidth is wasted and if there are more than  $N$  users who want to use the channel & they cannot do so for lack of bandwidth.

Dynamic channel allocation

In this method, the user can use the signal channel as per his requirement. For

PT-0



page : 5 / 7 of Q2 Sign : Kinkalaw

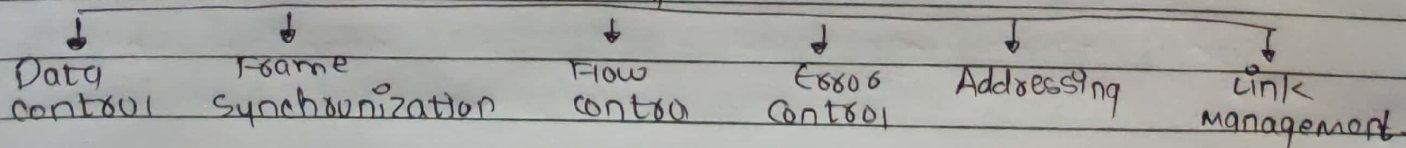
Following assumptions are made for implementation of this method

- i) Station model - This model consists of  $N$  independent stations such as PC, computer etc. which can generate frames for transmission
- ii) Single channel - A single channel is available for all communication.
- iii) Collision - If frames are transmitted at same time by two or more stations there is an overlap in time and resulting signal is garbled. This is called collision.
- iv) Carrier or No carrier sense - Station sense the channel before transmission or they directly transmit without sensing the channel.

-x -x -x -x -

- c). The data link layer is supposed to carry out many specific functions. For effective data communication between two directly connected transmitting and receiver stations the data link layer has to carry out a no. of specific functions.

Functions of data link layer.





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- c) i. Service provided to network layer.  
the data link layer provides a well defined service interface to network layer.
- ii. Frame Synchronization  
the source machine sends data in the form of blocks called frames to destination machine.
- iii) Flow control,  
source machine should not send data frames at a rate faster than capacity of destination machine to accept them.
- iv) Error control:  
the errors introduced during transmission must be detected and corrected at destination machine.
- v) Addressing:-  
when many machines are connected together (LAN) the identity of individual machines must be specified while transmitting the data frame. this is known as addressing
- vi) Link management:  
the communication link between source and destination is required to be initiated, maintained and finally terminated for effective use of data.



Name : Karan

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Sign : K. K. Lalani

B) Some advantages of fibre optics communication over the conventional means of communication.

i. Small size and light weight.

The size (diameter) of optical fibre is very small. Therefore a large no. of optical fibres can fit into cable of small diameter.

ii. Easy availability and low cost.

The material used for manufacturing of optical fibres is 'silica glass'. This material is easily available.

iii) No electrical or electromagnetic interference :-  
Since transmission takes place in the form of light rays the signal is not affected due to any electrical or electromagnetic interference.

iv) Large bandwidth :-

As light rays have a high frequency in GHz range the bandwidth of optical fibre is extremely large. This allows transmission of more no. of channels. Therefore the information carrying capacity of an optical fibre is much higher than that of coaxial cable.

-x -x -x -x -

Teacher's Sign.: \_\_\_\_\_