U18CO081

NAME :- KRUNAL RANK.

ROLL NO :- U18CO081

CLASS :- B TECH 3RD YEAR,
COMPUTER ENGINEERING.

U18C0081

Computer Networks
End Semester Examination
Section I

Ans 1: TCP/IP addressing is done using IP address that is 32 bit for a version 4 addressing.
The 32 bits are divided into 4 octets ranging from 0 to 255 each.

For example, an IP address looks like 127.36.53.25

There are 5 classes of IP addresses:-
- Class A :- The first octet is in range of 1 to 126.
- Class B:- The first octet is in range of 128 to 191.
- Class C:- The first octet is in range of 192 to 223.
- Class D:- The first octet is in range of 224 to 239.
- Class E:- The first octet is in range of 240 to 255.

The IPv6 version includes 6 bytes which is represented by 12 digits, each byte separated with a colon.
For example:- 01:00:7E:2F:36:49

Ans 2: No. of bits = $10^6 \times 8$

a) Channel bitrate = 10^3

Time taken = $\frac{8 \times 10^6}{10^3} = 8 \times 10^3$ s.

b) Channel bit rate = 100×10^6

Time taken = $\frac{8 \times 10^6}{100 \times 10^6} = 8 \times 10^{-2}$ s = 80ms.

U18C0081

Ans 3: Given, $f = 50\ Hz$

$$T = \frac{1}{f} = \frac{1}{50} = \frac{2}{100} = 20\ ms$$

$f = 100\ KHz$,

$$T = \frac{1}{100 \times 10^3} = 10^{-5}\ s = 10\ \mu s.$$

$f = 150\ MHz$.

$$T = \frac{1}{150 \times 10^6} = \frac{1}{150} \times 10^{-6} = 0.006 \times 10^{-6}\ s.$$

$$= 0.0066\ \mu s$$

$$= 6.667\ ns.$$

$f = 200\ GHz$

$$T = \frac{1}{200 \times 10^9} = 0.005 \times 10^{-9} = 0.005\ ns.$$

Ans 4: In 5B/6B encoding,

We have,

$2^5 = 32$ data sequences

and $2^6 = 64$ code sequences.

Hence, unused code sequences $= 64 - 32 = 32$.

Valid code sequences $= 32$.

U18CC081

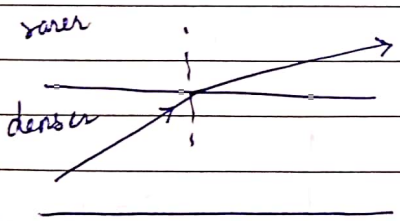
Camlin | Page
Date / /

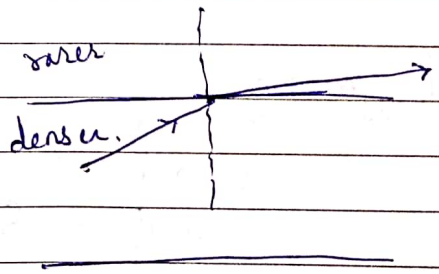
Ans 5: Frequency Hopped Spread Spectrum is a technique where users are made to change frequencies of usage and hence, use the frequency reuse policy.

Direct Sequence Spread Spectrum (DSSS), uses a technique where every bit is multiplied by a secret code, called chipping.

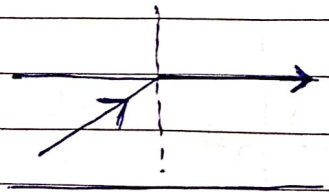
FHSS uses multiple frequencies.
DHSS uses single frequency.

Ans 6: Given, Critical angle = 60°.





i) $\theta = 30°$



ii) $\theta = 45°$

iii) $\theta = 60°$

V18C0081

Ans 7:- No, a routing table in a datagram cannot have two entries with same destination address.
This is due to the fact that if two destination addresses are same, then router algorithm will face ambuigity about where to send the data.
Hence, destination address entries must be unique in the table.

Ans 8:-

The cnsum will be

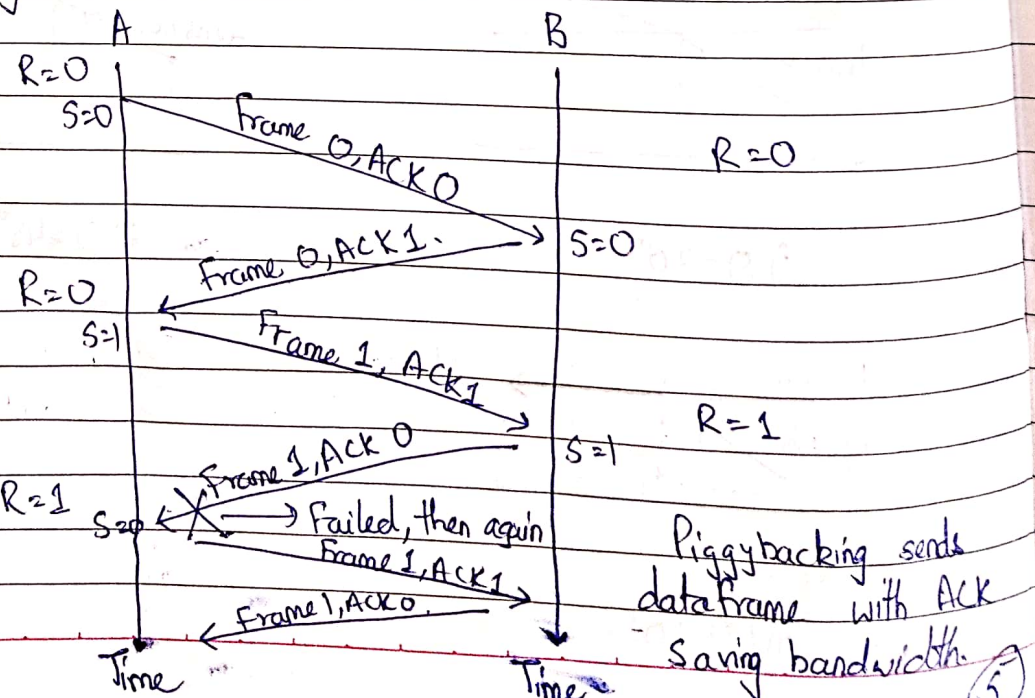
1 0 1 0 0 1 0 0 1 1 1 1.

Verification:-

~~No. of 1 bits at position, 2, 4, 6, 8, 10, 12 = 2~~

No. of 1 bits at position 4, 8, 12

Ans 9:- Piggybacking:-



Piggybacking sends dataframe with ACK saving bandwidth.

5

Ans 10: A bridge operates at data link layer, acts like a repeater, will add on the functionality of filtering content by reading the MAC addresses of source and destination.

A switch on the other hand

Ans 10:

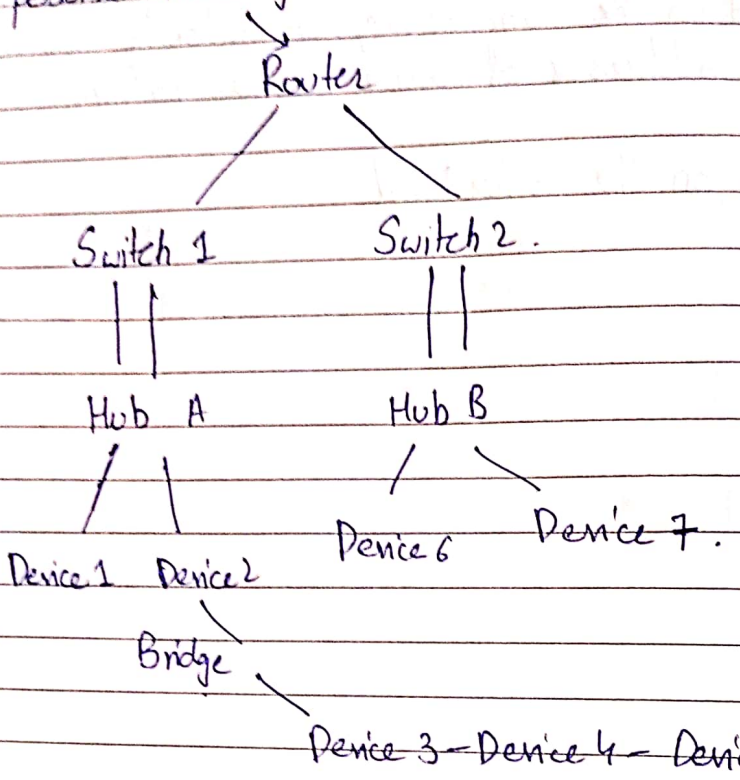
Ans 11: A bridge operates at data link layer, ack like a repeater, will add on the functionality of filtering content by reading the MAC addresses of source and destination.

A switch on the other hand, is a multiport bridge that has a buffer and a design that boosts its efficiency.

(6)

U18CO081

Yes, it is possible. The diagram is as follows:-



Ans 12:

	IEEE 802.3	IEEE 802.4	IEEE 802.5
1.	Topology is Bus topology.	Bus or tree topology.	Ring topology.
2.	Size of frame 1572 bytes	8202 bytes	Variable size.
3.	No priority given in standard.	Priority is supported.	Priority is supported.
4.	Size of data field	0 to 1500 bytes	0 to 8182 bytes	No limits.

Ans 13:

Ans 14

U18CO081

Camlin Page
Date / /

Ans 13:-

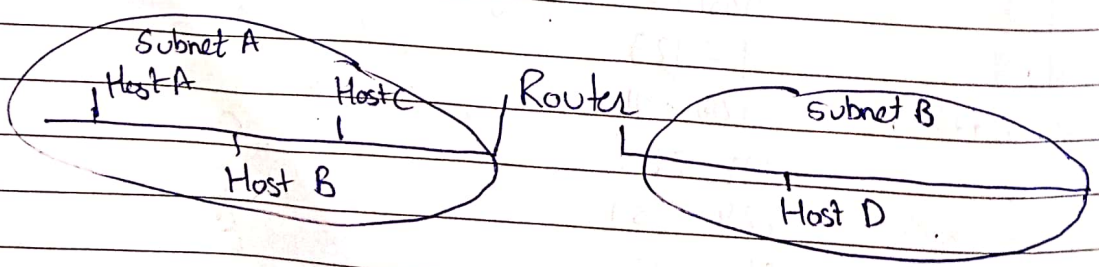
Ans 14:- We can find that an organisation is assigned a classful address using the IP address.
To determine the class the first Octet is required from an IP address:-

First Octet Range	Class
1 - 127	A
128 - 191	B
191 - 223	C
224 - 239	D
240 - 255	E

U18CO081

Ans 15:

Ans 16: Proxy ARP is an Address Resolution Protocol that can help machines on a subnet to reach remote subnets without the direct connection, with the help of a proxy device.



Ans 17:

Ans 18

U18CO081

Ans 17: Longest Mask Matching is a rule to find the entry in the table which has the longest prefix matching with incoming packet's destination IP and forward packet to corresponding next hope.

For example,
all overlapping range (192.24.12.0 to 192.24.15.255) are forwarded to next hop B as B ~~as~~ has longer ~~pref~~ prefix (22 bits)

Here, B = 192.24.12.022.

Ans 18: Routing Information Protocol (RIP), is an example of distance vector routing for local networks.

- It works to deliver the whole routing table to all active users in 30 seconds, every time.
- Hop count is only metric that decides best path to remote network.

Open Shortest Path First is a link state routing protocol, massively adopted by enterprise networks.

- It collects link state information from routers in network and determines the routing table information to forward packets.
- This occurs by creating a topology map for network.

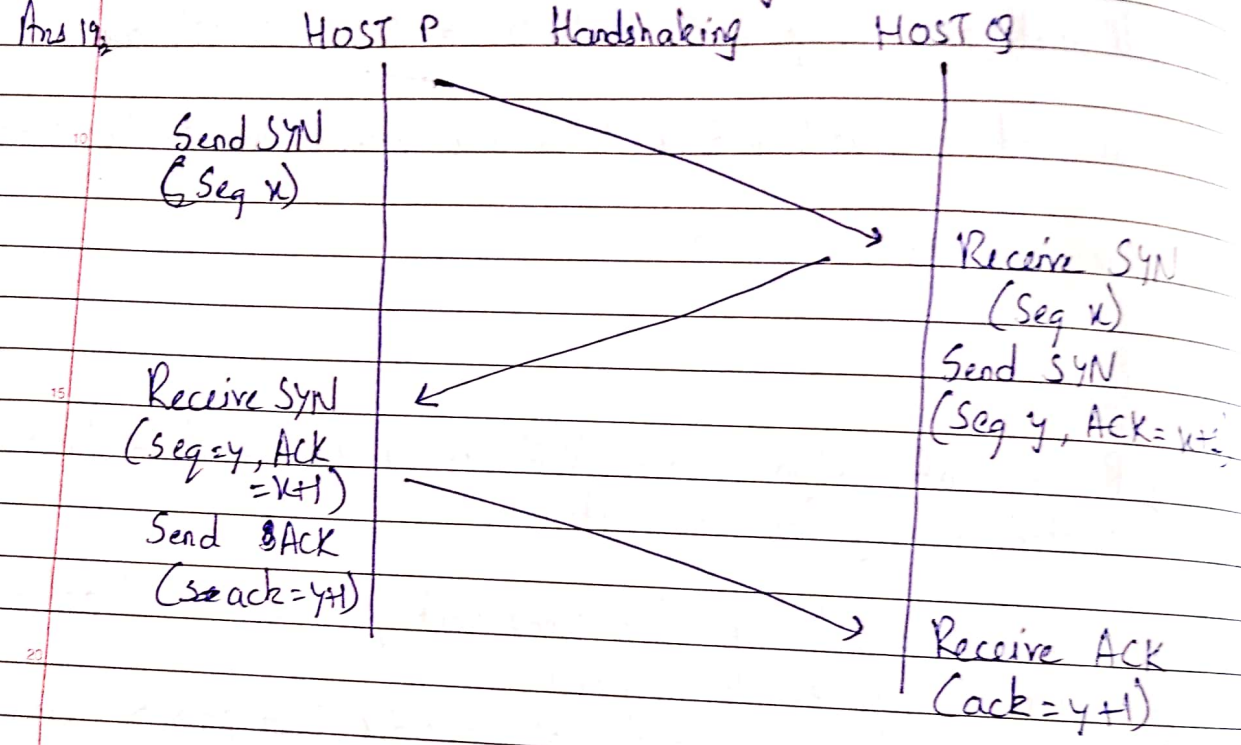
10

V18C0051

Yes, OSPF works faster than RIP because RIP messages are distributed slowly because a network using RIP relies on periodic updates that occur every 30 seconds.

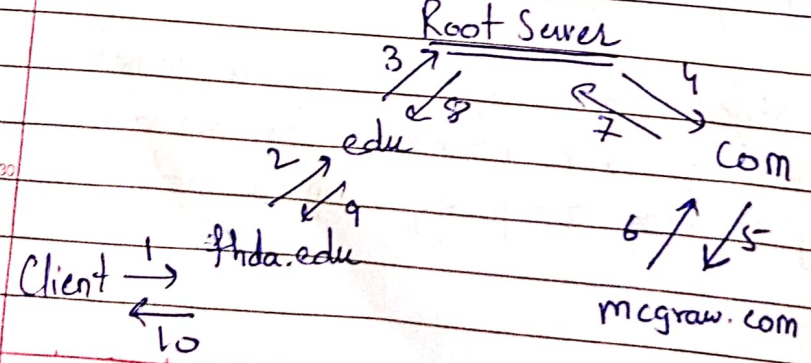
Ans 19:

TCP Three Way Handshaking



Ans 20: An IP address is given to each device on the internet.

- The task of DNS is to find the IP address of a host domain name, from a Name Server.



Example of finding device of mcgraw.com from fhda.edu