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1456

BS (SE)

SECTION (A)

Question number :- 1

In the OSI model, each layer uses the services of the layer below it and provides service to the above layer.

The primary function of the data link layer is the provide a well defined service interface to the network layer above it.

TYPES OF SERVICE:-

The data link layer offers three types of services.

Unacknowledge Connectionless Service:-

The data link layer of the sending machine sends independet frames to the data link layer of the receiving machine.
The receiving machine does not acknowlegde receiving the frame no legal comection is set up b/w the host machines.
Error and data loss is not handled

in This Service - This is applicable in Ethernet Service and voice communication-

Acknowledge connection less Service:-

No Signal connection is Set up b/w The host machine- up but each frame sent The Source machine is acknowledged by destination machine on receiving. if The Source does not receive The knowledgement within a Stipulated Times Then it resents The frame - This is used in wifi Services-

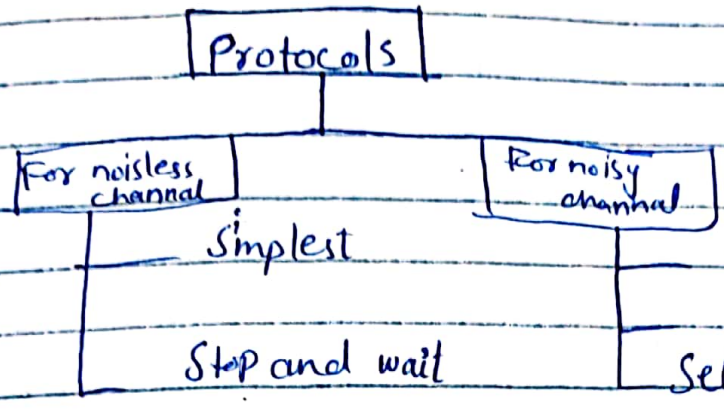
* Acknowledged connection-oriented Service:-

This is The best Service that The data link layer can offer To The network layer- A logical connection is set up b/w Two machines and The data is transmitted along this logical path-

This Service has Three distinct phases-

=> Set up connection
=> Sending frames
=> Realease tom connection-

Question # 3



Noisy channel:-

Although the stop and wait protocol give us an idea of how to add flow control to its predecessor noisless channels are nonexistent - we discuss three protocols in the section that use error control.

Stop and wait automatic repeat request - Go back N - automatic repeat request Selective repeat request

Noiseless channels:-

An idea channel in which no frames are lost duplicated or corrupted is regarded as noisless channels

Simple protocols:-

In Simplest protocol there is no flow control and error control mechanism. ith it is a unidirectional

protocol in which frames travel only one direction.
Also the reciever can immediately handle any recieved frame with a processing time that is small enough to the be negligible.

Question # 4

communication are mostly full-duplex in nature data transmition occurs in both direction. A method to achieve full duplex-communication is to consider both the communication as a pair of simplex communicatin channal for sending data and a reverse channel of sending ac-knowdgment.
However in the above arrang-ment traffic load do bubles for each data unit that is transmitted half of all data transmition of acknowedgement.
So a solution that provide better utillization of band-width is piggybacking.

Question :- 5 :-

In multistage switching - blocking refers to times when one input

cannot be connected To an output because There is no path available b/w them all the possible intermediate switches are occupies one Solution to blocking is The increase The number of intermediate switches based on The close criteria.

Question :- 7

There techniques of digital conversion line coding- block coding and Scrambling-

line coding is along needed, block coding and Scrambling may or may not be needed-

Line Coding :-

Line coding is The process of converting digital data to digital Signal-

line coding converts a Sequence of bits To a digital Signal-

At The Sender digital data are encoted into a digital Signal at The receiver The digital data are recreated by decoding The digital Signal-

Question :- 8 :-

* In data communications, our goal is the send data elements.
* A data elements is the smallest entity that can represent a piece of information that can this is the bit.
* In digital data communication a signal element carries data elements.
* A signal elements is the shortest unit of digital signal.
* Data element are being carried signal elements are the carries.

Data Rates:-

The data rate of defines the number of data elements (bits) sent in is.
The unit is bits per second (bps)

Signal Rates:-

The signal rates is the number of signal elements sent in is.
The unit is the pulse rate/modulation rate or simply band.

Question NO = 11:-

The IPV4 address we are all used to seeing are made up of four numerical octets that combine to form a 32 bit

address - IPV6 address look nothing like IPV4 adresses - IPV6 addresses are 128 bits in length and are made up of hexadecimal characters.

In IPV4 each octat consists of a decimal numbers ranging from 0 to 255 - These numbers are typically Sepated by period -

In IPV6, adresses are expressed as a series of eight-4-character hexadacimal number's which represent 16bits each (for a Total of 128 bits)

Question :- 12 :-

Classless addressing and classful addressing refer to two different ways to think about IP adresses - Both refers reterms refers to a perpective on the structure of a Submeted IP addresses.

Classless addressing using uses a two parts veiw of IP addresses. and classfull addressing has a three - part veiw with classful addressing the address always has an 8-16- or 24 bit network field, bassed on the class A, B and C addressing rules, The end of the address has host part that uniqually identifies each host inside a Submet -

The bits in between the network and host part comprise the third parts, namely the Subnet part of the address - with classless addressing the network and Subnet part from the classful view are combined into a signal part often called the subnet or refer with the address ending in the host part.

Question :- 13

The 32-bits IP address is divided into five Sub-classes -

There are

* Class A
* Class B
* class C
* Class D
* Class E

Each class of these classes has a valid range of IP address.

=> Classes A, B and C are used for unicast communication.
=> Class D for multicast communication.
=> Class E address are reserved for special purpose.

Question 14:-

An IP address has two component, the networks address and the IP address into the network and host address Subneting further divided the hosts part of an IP address into a Subnet and hot address.

If additional Subnetwork is needed - use the Subnet calculator to retrised Subnetwork information from IP addresses and Subnet masks.

It is called a Subnet masks because it is used to identify network addresses of an IP address by performing a bitwise and operation on the netmask.

A Subnet mask is a 32-bit numbers that makes an IP address and divides the IP address into network address and host address. Subnet mask is made by Setting network bits to all "1"s and setting host bits to all "0"s within a given networks two hosts addresses are reserved for Special purpose and cannot ba assigned to hosts. The "0" address is assigned a network address and "255" is assigned to a broadcast address and they cannot be assinged To hosts.

Question :- 15

An address in slash notation (CIDR) contain all information we need about the block the first address (network address) the numbers of address and the last address.

These pieces of information can be found as following.

The number of addressing in the block can be found as $N = 2^{32-n}$ in which n is the prefix length and N is the number of address in the block.

The first address (network address) in the block can be found by anding the address with the network mask.

=> The prefix length is 27. we must keep the first 27 bits as it is and change the remaining bits (5) to 0s

=> The 5 bits affect only the last byte.

=> The last byte is 01010010.

=> Changing the last 5 bits to 0s, we get 01000000 or 64

=> The network address is 167.199.170.64/27

Question 16:-

NAT:-

NAT stand for network address translation. its a way to map multiple local private addresses to a public one before tranferring the information organization thats want multiples devices to empty employ a single IP address use NAT. as do most home routers'

How can NAT help:-

The thoretically, there are 2^32 IPV4 addresses a little more then 4 billion IPV4 addresses. The number of IPV4 available addresses is actually less then the theoritically number. Since some of the addresses in a network are reserved for broadcasting. multicasting or other special purpose they cannot be assigned to hosts.

With the explosion of device online the available IPV4 addresses are just not enough. NAT was designed as a Temporary Solution to circumvent this problem and

Support IPVu address, reusability, NAT result in IPVu addresses, being divided into two broad categories, public and private. The range of the private IPVu addresses can be used by anyone and are unregistered which mean that they cannot be recogined outside the network in they are assigned.

Question :- 19

129 : 14 : 6 : 8

129

2	129	
2	64	re = 1
2	32	re = 0
2	16	re = 0
2	8	re = 0
2	4	re = 0
2	2	re = 0
2	1	re = 0

0 (re = 1)

129 (indecimal) = 10000001 (inbinary)

2	14	
2	7	= 0
2	3	= 1
2	1	= 1

(re = 1)

14 indecimal :- 00001110

6 :-

2	6	Answer
2	3	= 0
2	1	= 1

0 (re = 1)
6 (in decimal) 00000110 (in binary)

8 :-

2	8	Ans -
2	4	= 0
2	2	= 0
2	1	= 0

0 (re = 1)
8 (in decimal) 00001000

So in the binary conversion, the IP address
129.14.6.8 becomes-

10000001 . 00001110 . 00000110 . 00001000

208.34.54.12

2	208 = Re -
2	104 = 0
2	52 = 0
2	26 = 0
2	13 = 0
2	6 = 1
2	3 = 0
	1 = 1

0 (re = 1) 208 (in decimal) = 11010000

2	34 R
2	17 = 0
2	8 = 1
2	4 = 0
2	2 = 0
2	1 = 0

0 (re = 1)
34 (in - 1) 00100010

2	54	Re
2	27	=0
2	13	=1
2	6	=1
2	3	=0
2	1	=1

0 (Re =1)

54 (indecimal) = 00110110 (in binary)

2	12	= Re
2	6	=0
2	3	=0
2	1	=1

0 (re = 1)

12 (indecimal) = 00001100

So in binary conversion-
The IP address ~~208.54.5~~
208.34.54.12 becomes

11010000 . 00100010 . 00110110 . 00001100