CCA-102: DATA COMMUNICIONS ASSIGNMENT

1. WHAT ARE THE DIFFERENT TYPES OF WORKS ?

a. local area network (land)..
personal area network (pan) ..
c. wireless local area network (wan) ..

d. campus area network (can)..

e. metropolitan area network (man)..
f . metropolitan area network (wan)..
g . storage area network (san) ..
h . passive optical area network (plan)..

2. Explain the shielded twisted pair (step) and untested pair (up)

Step:

Shielded twisted pair cabling acts as a conducting shield by covering the four pairs of signal carrying wires as a mean to reduce electromagnetic interference there are a variety of different types of step cables such as a foil twisted pair (ftp) and a shielded foil twisted pair (s/ftp) .

Up:

Up cable is type of copper cable widely used for networking purposes up can bless consist of pairs of insulated wires that are twisted to reduce inter ferrous and crosstalk they are commonly used in Ethernet network for transmitting data signal.

3. What is difference between baseband and broad and transmission ?

Basis of comparison	*Baseband transmission .*	*Broadband transmission*
Type of signal	*In base band transmission is bidirectional in nature*	*In broad band transmission the type of signalling used is analogy*
Direction type	*Baseband transmission is bidirectional in nature*	*Broad band trans mission is unidirectional in nature*
Signal transmission	*The signal can be sent in both directions ,*	*Sending of signal in one direction only*
Distance covered by the	*Signals can only travel over short*	*Signals can travelled over*

	Distances for long distances attenuation is required	*Long distances without being attenuated*
	It can only transfer one data stream at a time in bi directional mode	*It can send multiple signal waves at once but in one direction only*
Installation maintenance	*Baseband transmission is easy to install and maintain*	*Broadbaad transmission is difficult to install and maintain*

cost	*This transmission is cheaper to design*	*This transmission is expensive to design*

4. What is the difference between a hub mode router and a switch?

Routers - connect a modem to different computer networks ensuring that internet traffic goes to the right networks switches - connect devices within a single net work s switches - connect device within a network transfer incommoding and outgoing internet traffic between the connected devices gateway - regulate between two or more dissimilar net works .

The key difference between hubs switches hubs switches and bridges is that hubs operate at layer 1 of the oust model while brides and switches and switches work mac addresses a 2, hubs broadcast incoming traffic on all ports whereas and switches only route traffic to wards their addressed destinations .

5. when you move the nice cards from one pc to another pc does the mac address gets trans ferried as well ?

Yes that s because mac addresses are hard - wired into the nic circuitry not the pc this also means that a pc can have a different mac address when the nice card was replace by another one .

6. when troubleshooting computer network problems what common hard ware - related problems can occur ?

Some network problems can arise from faulty hardware su ch as routers firewalls and even form unexpected usage like network band width spikes changes in app configuration or security breaches .

7. in a net work that contains two servers and twenty workstations where is the best place to install an anti - virus program ? .

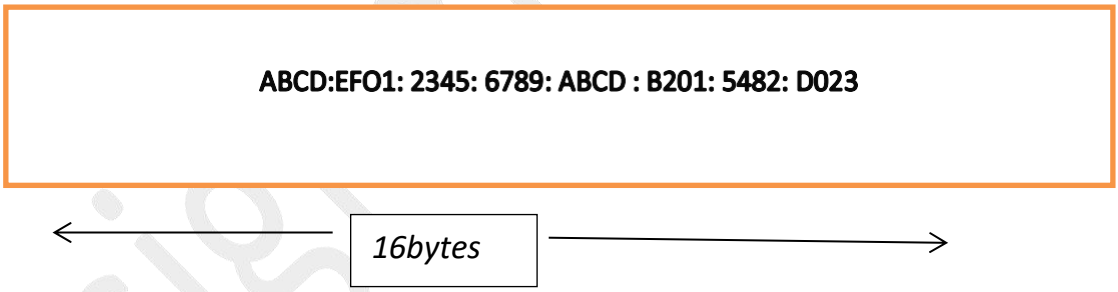
In a network that contains two servers and twenty works tons the best place to install an anti - virus is on he server this is because the server is the main port for all the network traffic and so it is more important to ensure that the server is free of and virus other security risks

Lpv6:

Lpv6is based on lpv4 and stand s for internet protocol version 6 . it was first introduced in December 1995 by internet engineering task force lp version 6 is the new version of internet protocol which is way better than lp version 4 in terms of complexity and efficiency lp v6 is written as a group of 8 hexadecimal numbers separated by colon (:). It can be written as 128 bits of so and 1s.

Lpv6address format:

Lpv6address format is a 128 – lp address which is written in a group of 8 hexadecimal numbers separated by colon (:)



DIFFERNCE BETWEEN IPV4 AND LPV6 :

LPV4	*LPV6*
lpv4 has a 32 bit address length	*lpv6 has a 128 bit address length*
it supports manuals and duck address configuration	*It supports ante and renumbering address configuration*

In lap v4 end to end connection integrity is unachievable	*In lap v6 end to end connection integrity is achievable*
*It can generate 4.29*109 address space*	*He address space of IPv6 is quite large it can produce 3.4*1038 address space*
The security feature s dependent on the application	*IPSEC is an inbuilt security feature in the IPv6 protocol*
Address representation of IPv4 is in decimal	*Address representation of IPv6 is in hexadecimal*
Fragmentation performed by sender and forwarding routers	*In IPv6 fragmentation is performed only by the sender*
In IPv4 packet flow identification is not available	*N IPv6 packet flow identification are available and uses the flow label filed in the header*
In IPv4 checksum filed is available	*In IPv6 checksum field is not available*
It has a broadcast message transmission scheme	*In IPv6 multicast and any cast message transmission scheme is available*
In IPv4 Encryption and Authentication facility no provided	*In lap 6 encryption and authentication are provided*
Lap v4 has a header of 20 - 60 bytes	*Lpv6 has a header of 40 bytes fixed*
Lap v4 can be converted to lpv6	*Not all lpv6 can be converted to lpv4*
Lpv4 consists of 4 field which are separated by addresses dot (.)	*Lap v6 consists of 8 fields which are separated by a colon (.)*
Lap v4 s lap addresses are divided into five different classes class a class b class c class d class e	*Lap v6 does not support elms .*
Lpv4 supports elms (variable length subnet mask)	*Lap v6 does not support elms .*
Example of lap v4: 66. 94. 29 . 13	*2001.0000:3238: dfe1:0063 : 0000:fefb*

8. DEFINE STATIC IP AND DYNAMIC IP? DISCUSS THE DIFFERENCE BETWEEN IPV4 AND IPV6.

STATIC IP ADDRESSES:

A computer on the internet can have a static IP address, which means it stays the same over time , or a dynamic IP address, which means the address can changes over time.

DYNAMIC IP

. *A dynamic IP address is a temporary address for devices connected to a network that continually changes over time .An internet protocol(IP) address is a number used by computer to identify host and network interface , as well as different locations on a network.*

DIFFERENCE BETWEEN IPV4 AND IPV6.

IPv4 :

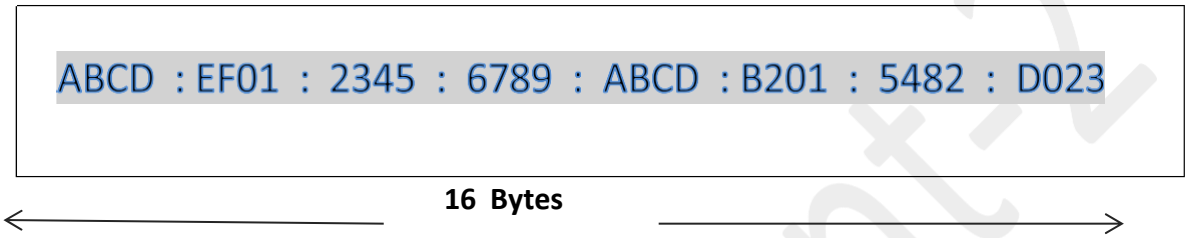
IPv4 address consist of two things that are the network address and the host address. It stands for internet protocol version four. It was introduced in 1981 by DARPA and was the first deployed version in 1982 for production on ***SATNET*** *and on the* ***ARPANET*** *in* ***January 1983****. IPv4 addresses are 32- bit integers that have to be expressed in Decimal Notation. It is represented by 4 number separated by dots in the range of 0-255 which have to be converted to 0 and 1, to be understood by computers****. For Example*** *, An IPV4 Address can be written as* ***189.123.123.90****. IPv4 Address format IPv4 Address format is a 32-bit Address that comprises binary digits separated by a dot(****.****).*

.

IPv6 :

IPv6 address Format :

IPv6 address format is a 128-bit IP Address , which is written in a group of 8 hexadecimal number separated by colon(:).



DIFFERENCE BETWEEN IPV4 AND IPV6 :

IPv4	IPv6
IPV4 HAS A 32-BITS ADDRESS LENGTH	IPV6 HAS A 128-BITS ADDRESS LENGTH
IT IPV4 END TO END , CONNECTION INTEGRITY IS UNACHIEVABLE	IN IPV6 END TO END , CONNECTION INTEGRITY IS ACHIEVABLE
IT CAN GENERATE 4.29 X 109 ADDRESS SPACE	THE ADDRESS SPACE OF IPV6 IS QUITE LARGE IT CAN PRODUCE 3.4 X 1038 ADDRESS SPACE
THE SECURITY FEATURE IS DEPENDENT ON THE APPLICATION	IPSEC IS AN INBUILT SECURITY FEATURE IN THE IPV6 PROTOCOL
ADDRESS REPRESENTATION OF IPV4 IS IN DECIMAL	ADDRESS REPRESENTATION OF IPV6 IS IN HEXADECIMAL
FRAGMENTATION PERFORMED BY SENDER AND FORWARDING ROUTERS	INIPV6 FRAGMENTATION IS PERFORMED ONLY BY THE SENDER
IN IPV4 PACKET FLOW IDENTIFICATION IS NOT	IN IPV6 PACKET FLOW IDENTIFICATION ARE AVAILABLE AND USES THE FLOW

AVAILABLE	LABEL FIELD IN THE HEADER
IN IPV4 CHECKSUM FIELD IS AVAILABLE	IN IPV6 CHECKSUM FIELD IS NOT AVAILABLE
IT HAS A BROADCAST MESSAGE TRANSMISSION SCHEME	IN IPV6 MULTICAST AND ANY CAST MESSAGE TRANSMISSION SCHEME IS AVAILABLE
IN IPV4 ENCRYPTION AND AUTHENTICATION FACILITY NOT PROVIDED	IN IPV6 ENCRYPTION AND AUTHENTICATION ARE PROVIDED
IPV4 HAS A HEADER OF 20-60 BYTES.	IPV6 HAS A HEADER OF 40 BYTES FIXED
IPV4 CAN BE CONVERTED TO IPV6	NOT ALL IPV6 CAN BE CONVERTED TO IPV4
IPV4 CONSISTS OF 4 FIELDS WHICH ARE SEPARATED BY ADDRESSES DOT (.)	IPV6 CONSIST OF 8 FIELD , WHICH ARE SEPARATED BY A COLON (:)
IPV4'S IP ADDRESS ARE DIVIDED INTO FIVE DIFFERENT CLASSES. CLASS A, CLASS B , CLASS C , CLASS D, CLASS E.	IPV6 DOSE NOT HAVE ANY CLASS OF THE IP ADDRESS.
IPV4 SUPPORTS VLSM (VARIABLE LENGTH SUBNET MASK).	IPV6 DOSE NOT SUPPORT VLSM.
EXAMPLE OF IPV4 : 66.94.29.13	EXAMPLE OF IPV6 :2001:0000:3238:DFE1:0063:0000:0000:FEFB

9. DISCUSS TCP/IP MODEL IN DETAIL.

- ***Transmission Control Protocol (TCP)*** *is a communications standard that enables application programs and computing devices to exchange message over a network. It is designed to send packets across the internet and ensure the successful delivery of data and messages over network. TCP is one of the basic standards that define the rules of the internet and*

*is included within the standards define by the **Internet Engineering Task Force (IETF).**It is one of the most commonly used protocol within digital network communication and ensures end-to-end data delivery.*

- *TCP organizes data so that it can transmitted between a*

10. **WHAT IS A WEB BROWSER (Browser)? GIVE SOME EXAMPLE OF BROWSERS**

browsers, but some of the most common ones include ***Google Chrome, Safari, and Mozilla Firefox.***

11. **WHAT IS A SEARCH ENGINE ? GIVE EXAMPLE.**

A search engine is a web-based tool that enables users to locate information on the World Wide Web. Popular example of search engines are Google, Yahoo!, and MSN Search. …

12. **WHAT IS THE INTERNET & WWW? WHAT ARE USES OF INTERNET IN OUR DAILY LIFE?**

Internet :

The internet is a global network of interconnected computers, servers, phones, and smart appliances that communicate with each other using the ***Transmission Control Protocol (TCP)*** *standard to enable a fast exchange of information and files, along with other type of services.*

WWW :

World-Wide Web (*also called WWW or W3****)*** *is a hypertext-based information system. Any word in a hypertext document can be specified as a pointer to a different hypertext document where more information pertaining to that word can be found.*

WHAT ARE THE USES OF INTERNET IN OUR DAILY LIE?

- ☆ Uses of the Internet in Education. …
- ☆ Internet Use to Speed Up Daily Tasks. …
- ☆ Use of the Internet for Shopping. …
- ☆ Internet for Research & Development. …
- ☆ Business Promotion and Innovation. …
- ☆ Communication. …
- ☆ Digital Transactions. …
- ☆ Money Management.

13. **WHAT IS AN INTERNET SERVICE PROVIDER ? GIVE SOME EXAMPLE OF ISP IN INDIA.**

The example of some internet service providers are Hath way , BSNL , Tata teleservices, Verizon, Reliance Jio, ACT Fibernet and many more working in India as well as worldwide . Internet service providers or ISPs are responsible for providing services for using the Internet.

14. **DISCUSS THE DIFFERENCE BETWEEN MAC ADDRESS, IP ADDRESS AND PORT ADDRESS.**

MAC addresses are used to identify a node's unique address, whereas IP addresses are primarily used to identify a node's connectivity to a network . The MAC address is a hardware-based, burnt-in, or physical address, whereas the IP address is a software-based or logical address.

15. **HOW DO WE VIEW MY INTERNET BROWSER'S HISTORY?**

- *On your computer, open chrome.*
- *In the address bar , enter @ history.*
- *Press tab or space. You can also click search History. In the suggestions.*
- *Enter keywords for the page you previously visited.*
- *Select the page from the list.*