Computer Hardware

1) What is a computer?

Computer is a programmable machine. It the integral part of everyday life.

2) What are the different functions of a computer?

A computer does the following functions;

a) Accepting data
b) Processing Data
c) Storing Data
d) Displaying Data

3) Draw the hierarchical classification of the computer.

4) How a minicomputer different from a mainframe?

Minicomputer is a midsized multiprocessing and multi user computer. It is also called mid-range server. But mainframes are huge computers, most commonly occupying entire rooms or floor. It is highly costly.

5) What is Super computer?

The fastest type of computer. Supercomputers are very expensive and are employed for specialized application that require immense amounts of mathematical calculations. For example, weather forecasting requires a supercomputer. Other uses of supercomputers include animated graphics fluid dynamic calculations, nuclear energy research, and petroleum exploration.

6) Differentiate Input and Output device.

Input devices are used for giving input to the computer. But output devices are used to get the result back from the computer. The examples of input devices are keyboard, mouse, scanner, digital camera atc...whereas output devices include monitor, printer, projector etc....

7) What is a storage device? What is the common classification?

Storage devices are used to store data in the computer. The different types of storage devices are;

a) Magnetic Devices.
b) Optical Devices.
c) Solid-State Storage Devices.

The main function of a computer is to process data. The various types of processing device in a computer are;

a) Microprocessor
b) Chipset
c) BIOS

9) Differentiates Serial and Parallel port.

Serial port and parallel port are used for transferring data in/out of the computer. In serial port transmission only 1 bit is transmitted at a time. Most serial ports on personal computers conform to the RS-232C or RS-422 standards. A parallel interface for connecting an external device such as a printer. On PCs, the parallel port uses a 25-pin connector (type DB-25) and is used to connect printers, computers and other devices that need relatively high bandwidth. It uses parallel transmission of data.

10) What is an interface?

These are the communication channel that enables your computer to exchange information with various devices.

11) What is a microprocessor?

The most important electronic component on the computer. It is a programmable logical device for processing data. In the world of personal computer, the termsMICROPROCESSOR and CPU are used interchangeably.

12) What are the factors affecting the speed of the microprocessor?

The following are the factors affecting the speed of the microprocessor.

a) Number of instructions build in the processor.
b) Bandwidth
c) Clock Speed
d) Number of transistors inside the processor

13) What are the differences between Multitasking and Multiprocessing?

Multitasking- Enables the processor to do multiple programs simultaneously by fast switching through the programs. Here doesn't have the involvement of multiple processors.
Multiprocessing- Enables the processor to do multiple programs simultaneously by the use of multiple processors.

Front Side Bus. Another name for the system bus.The front side bus connects the CPU to main memory. A microprocessor bus that connects the CPU to a level 2 cache is called Back Side Bus. Typically, a backside bus runs at a faster clock speed than the front side bus.

15) What is packaging a microprocessor? What are the different packaging available?

Packaging is the process of connecting a microprocessor with a computers motherboard. The types of microprocessor packaging are;

a) PGA
b) SPGA
c) SECC
d) LGA

16) What is LGA ?

An LGA socket is the connection point for a central processing unit (CPU) to fit into a motherboard. The LGA stands for Land Grid Array.

17) What is CISC and RISC?

Reduced Instruction Set Computer (RISC) and Complex Instruction Set Computer (CISC) are two philosophies by which computer chips are designed. RISC became a popular technology buzzword in the 1990s, and many processors used in the enterprise business segment were RISC-based.

18) What is Intel Pentium?

The Intel Pentium is a series of microprocessors first developed by the Intel Corporation. These types of processors have been found in many personal computers since 1993.

19) Any difference between Pentium III and IV.

There have been a number of Pentium processor lines starting with the base Pentium in 1993.The of the recent Pentium entries are Pentium III and Pentium 4.

a) In a Pentium III processor, the bus speed is generally 133 MHz (although there were a few with 100 MHz). The lowest bus speed on a Pentium IV is 400 MHz, and there are versions with much higher speeds (topping at 1066 MHz for the "extreme edition").

b) The Pentium 4s are smaller than the Pentium IIIs

c) Pentium III processors had (for the most part) about 512 KB of cache. Pentium 4 processors, on the other hand, start at 512 KB.

20) What are the differences between Intel Celeron and Pentium family of Processors?

Celeron

- According to Build Gaming Computers, Celeron processors are the low-end processor intended for standard home computer use. SciNet reports the best Celeron processor has an L2 Cache of 128kb, a clock speed limit of about 2.0 GHz and runs at a core voltage of 1.75V. These are useful numbers for comparison.

Pentium

- The top Pentium processor is the Pentium 4 Prescott. CPU Scorecard reports it has an L2 cache of 1MB (1024kb), a potential 3.0 GHz clock speed and runs at about 1.4V. The lowest performing Pentium 4 processor, the Willamette, has an L2 cache of 256kb, a potential 2.0 GHz clock speed and runs at about 1.7V.

21) What is Hyper Threading? What is the use of it?

A thread of execution, or simply a "thread," is one series of instructions sent to the CPU. Hyper-threading is a technology developed to help make better use of spare processing cycles. Hyper-threaded processors have a duplicate set of registers, small spaces of high-speed memory storage used to hold the data that is currently needed to execute a thread. When a CPU core is delayed, waiting for data to be retrieved from another place in memory, it can use these duplicate registers to spend the spare computation cycles executing a different thread. The second set of registers will be pre-loaded with the data needed to execute the second thread, so the CPU core can begin work immediately

22) What is Intel Atom processor?

The Intel Atom family of processors are extremely small central processing units (CPU) found mostly in ultraportable devices, such as netbooks, cell phones and tablet PCs, according to Intel. While small and light on energy use, Atom processors can handle the most common tasks, such as email and instant messaging.

23) What is Nehalem Architecture?

Nehalem is Intel's new microprocessor architecture The Core i7 chips were the first processors ever produced using an architecture called Nehalem.

24) Which is a heavy-duty Microprocessor of Intel? Intel Xeon.

25) Which is the processor suitable from Intel family of processors for Server and Workstation? Intel Xeon.

26) What is full name of AMD? Advanced Micro Devices.

27) What are the latest Processor of Intel and AMD?
For intel it is Intel Core i7 and AMD Opteron 6200 Series processor.

28) Write socket LGA 775 is apt for which type of Intel Processors?
The top of the line for the LGA775 series CPU socket was the Core 2 processor series, with the Core 2 Duo E8600, Core 2 Extreme QX9770 and Core 2 Quad Q9650 being the three top performers

29) Socket 939 is developed by AMD. It supports a maximum of how many bits of computing? What are the the different processors of AMD is suitable for this socket?
AMD Athlon 64, AMD Athlon 64FX and AMD Athlon 64 X2.

30) Which type of socket is needed to connect a dual core processor of Intel? Socket LGA 775.

31) What is Heat Sink? What is its use? If it is not in the system what will happen?

A heat sink is a component used to lower the temperature of a device. It is most commonly there on the microprocessor. If it is not properly fixed the system, the system will shut down automatically to prevent further damage to the processor.

32) A CPU fan should be placed in system.
Why? To make the system cool and more functioning.

33) What is Upgrading a microprocessor? Why we have to do it?

34) Upgrading a microprocessor is just physically replacing a processor with a new one. Before doing so we have to make sure that the processor we want to use for your upgrade is physically compatible with the socket on your computer's motherboard. We also have to make sure that the motherboard has the internal logic to support the processor.

35) What are the causes of overheating of microprocessor?

a) Processor fan may not be properly connected.
b) Heat sink may be not contacted with the processor.
c) Jumpers may be configured to over clock the CPU.
d) Voltage supply incompatible

36) No Display. What is the problem?
a) CPU fan problem
b) Heat sink related issue
c) Power related issues
d) Improper Jumper settings

37) What is the use of Conventional memory in the system?
The size of conventional memory is 640KB. It is also called DOS memory or Base memory. This memory is used by some small programs like Word star, Lotus etc…DOS cannot use more than 640KB.

38) What is main memory in a computer?

The main memory in a computer is called Random Access Memory. It is also known as RAM. This is the part of the computer that stores operating system software, software applications and other information for the central processing unit (CPU) to have fast and direct access when needed to perform tasks.

39) What is Cache memory? What is the advantage if a processor with more cache memory you are using?
Cache memory is the memory area between RAM and Processor. If cache memory increases the speed of the system will also improve.

40) What are the different types of RAM?
SRAM, DRAM, VRAM, SGRAM, DDR-SDRAM etc….

41) Differentiate SRAM and DRAM. SRAM
Static RAM stores each bit of data on six metal oxide semiconductor field effect transistors, or MOSFETs. SRAM is used in devices that require the fastest possible data access without requiring a high capacity. Some examples are CPU caches and buses, hard drive and router buffers and printers.
DRAM:Dynamic RAM stores data using a paired transistor and capacitor for each bit of data. Capacitors constantly leak electricity, which requires the memory controller to refresh the DRAM several times a second to maintain the data.

42) What are the different DRAM types?

FPMDRAM, EDO DRAM, SDRAM, RDRAM, DDR-SDRAM

43) What is the difference between DDR-I and DDR-II?

DDR2 is the successor to DDR RAM. DDR 2 incorporates several technological upgrades to computer system memory, as well as an enhanced data rate .DDR 2 is capable of achieving twice the data transfer rate of DDR-I memory because of its higher clock speed. It operates at a lower voltage than DDR-I as well: 1.8 volts instead of 2.5.

44) Which is the latest DDR version? Which processor of Intel will support it?

The latest DDR version is DDR-III. Intel's all latest processors such as Core i3,i5 and i7 will support it.

45) What are VRAM and SGRAM?

VRAM is Video Random Access Memory. Video adapter or video system uses VRAM. VRAM is dual ported. It is costly. But SGRAM is not dual ported and not costly. It is a less expensive approach to graphics functions. Most commonly all low cost graphics cards are using it.

46) What is SODIMM memory module?

Small outline dual in-line memory module (SODIMM or SO-DIMM) is a type of random access memory (RAM). It is a smaller version of a dual in-line memory module (DIMM).It is the type of the memory module can be used in laptop.

47) Which is the memory packaging suitable for a sub-note book system? Micro DIMM

48) What is ECC/EPP?

EPP/ECP (Enhanced Parallel Port/Enhanced Capability Port) is a standard signaling method for bi-directional parallel communication between a computer and peripheral devices that offers the potential for much higher rates of data transfer than the original parallel signaling methods. EPP is for non-printer peripherals. ECP is for printers and scanners. EPP/ECP is part of IEEE standard 1284.

49) What is over clocking?

Over clocking is the process of forcing a computer component to run at a higher clock rate.

50) What is memory bank?

Sets of physical memory module is referred to as memory banks. A memory bank serves as a repository for data, allowing data to be easily entered and retrieved.

51) What we need to consider before connecting a memory to the system?

a) Capacity of the RAM required
b) Check if installed memory is supported by motherboard and processor
c) Form factor of the RAM
d) Type of RAM needed
e) Warranty of the RAM

52) What is Upgrading the memory?

Adding a memory module to the existing bank on the available slot or replacing the previous one with the increased memory size is also called upgrading memory. This will surely increase the performance of the computer.

53) What is BIOS beep code? What it does mean?

BIOS beep codes are the signs of different issues of the computer. The beep code may vary depends on the manufacture of BIOS. For example in case of Award BIOS the beep code will be,

1 long beep- shows memory problem

1 long beep and 2 short beeps- failure of DRAM parity

1 log beep and 3 short beeps- signifies Video error

Continuous beep- signifies failure in memory or Video memory.

54) Write any 5 BIOS codes and their indications?

AMERICAN MEGATRENDS (AMI) BEEP CHART

BEEPS	ERROR DESCRIPTION
1 Beep	Memory timing error
2 Beeps	Mismatched memory parity
3 Beeps	Memory malfunction
4 Beeps	Motherboard malfunction
5 Beeps	Bad CPU
6 Beeps	Keyboard controller error
7 Beeps	General exception error
8 Beeps	Video memory error
9 Beeps	Bad ROM checksum
10 Beeps	CMOS error
11 Beeps	Bad cache RAM

55) What is RDRAM?

Short for **RAMBUS DRAM**, a type of memory (DRAM) developed by Rambus, Inc.

56) What is SIMM? Is it is using now?

Acronym for **S**ingle **I**n line **M**emory **M**odule, a small circuit board that can hold a group of memory chip. Typically, SIMMs hold up to eight (on MAC) or nine (on PCs) RAM chips. On PCs, the ninth chip is often used for parity error checking. Unlike memory chips, SIMMs are measured in bytes rather than bits.

Now a days this memory module is not used.

57) Why do we call motherboard a motherboard?

Motherboard is the basic integrated board of the computer on which all other components are

connected. So that usually we call motherboard a "motherboard".

58) What is motherboard? What are the different types of it?

Motherboard is the basic integrated board of the computer on which all other components are connected. This is classified mainly into three Desktop, Laptop and Server motherboard.

59) What is the difference between integrated and non-integrated motherboard?

In integrated motherboard all of the external ports will be present. But in case of non-integrated motherboard only some important ports will be available instead of all. The non-integrated motherboard is an old type of motherboard which now a day's not commonly available.

60) How a server motherboard different from a desktop?

A server motherboard is different from a desktop in features and performance. The number of processor support, RAM slots, Expansion card slots etc...are more. For example the Intel® Server Board **S5000PSL** has the performance and features for growing businesses demand. It provides excellent data protection, and advanced data management. It support 64-bit Multi-Core Intel® Xeon® processor. Eight fully buffered 533/667 MHz DIMMs. Up to six SATA 3Gb/s ports.

61) What is form factor of motherboard?

The form factor of a motherboard determines the specifications for its general shape and size. It also specifies what type of case and power supply will be supported, the placement of mounting holes, and the physical layout and organization of the board. Form factor is especially important if you build your own computer systems and need to ensure that you purchase the correct case and components.

62) What is ATX? How it is different from AT? Which is using now?

AT is a short for advanced technology, the AT is an IBM PC model introduced in 1984. It includes an Intel 80286 microprocessor, a 1.2MB floppy drive, and an 84-key AT keyboard. The ATX form factor specified changes to the motherboard, along with the case and power supply. Some of the design specification improvements of the ATX form factor included a single 20-pin connector for the power supply, a power supply to blow air into the case instead of out for better air flow, less overlap between the motherboard and drive bays, and integrated I/O Port connectors soldered directly onto the motherboard. The ATX form factor was an overall better design for upgrading.

63) What is the need of expansion slot in motherboard?

Alternatively referred to as an expansion port, an expansion slot is a slot located inside a computer on the motherboard or riser board that allows additional boards to be connected to it.

64) What is PCI slot? How is different from PCI Express (PCI-E)?

Short for **P**ERIPHERAL **C**OMPONENT **I**NTERCONNECT, a local bus standard developed by Intel Corporation. PCI Express (Peripheral Component Interconnect Express), officially abbreviated as PCIe, is a computer expansion card standard designed to replace the older PCI, PCI-X, and AGP bus standards.

65) What is AGP slot? What is its use?

The Accelerated Graphics Port (often shortened to AGP) is a high-speed point-to-point channel for attaching a video card to a computer's motherboard, primarily to assist in the acceleration of 3D computer graphics. Since 2004 AGP has been progressively phased out in favor of PCI Express (PCIe).

66) What is jumper? What is the need?

A metal bridge that closes an electrical circuit. Typically, a jumper consists of a plastic plug that fits over a pair of protruding pins. Jumpers are sometimes used to configure expansion boards. By placing a jumper plug over a different set of pins, you can change a board's parameters.

67) What CMOS and CMOS battery?

Short for complementary metal oxide semiconductor. Pronounced see-moss. The CMOS chip holds the date, time, and system setup parameters. This chip is powered by a 3Volt CMOS battery.

68) What is chipset?

A number of integrated circuits designed to perform one or more related functions. This is one of the processing device in a computer.

69) Explain any three Intel chipset?

a) Intel P55 Express Chipset.-Desktop PC platforms based on the Intel® P55 Express Chipset combined with the Intel® Core™ i7-800 series processors and Intel® Core™ i5-700 series processors create intelligent performance for faster multi-tasking, digital media creation and gaming.
b) Intel HD55 Express Chipset- a new architecture designed to deliver quality, performance, and industry-leading I/O technologies on platforms powered by the Intel® Core™ i7-800, Intel® Core™ i5, and Intel® Core™ i3 processors.
c) Intel E7500 Chipset- a volume chipset supports dual-processor (DP) server systems optimized for the Intel® Xeon® processor.

70) Which is the chipset needed for Intel Core i7 and Core i5 processors?

Intel Core i7 900-series uses x58 chip set and Core i7 800-series and Core i5 processors runs on P55 chipset.

71) Which is the socket used by Intel Core i7 and i5 processors?

Intel Core i7 900-series uses LGA1366 socket and Core i5 CPUs--all three run on Intel's latest P55 chipset and LGA1156 socket.

72) What are the motherboard manufacturing companies?

Intel, Gigabyte, ASUS, Mercury, HP, Acer, Biostar, Compaq, Digital, IBM, AMI.

73) Before upgrading/replacing a motherboard what you need to consider?

a) Power Connectors
b) Memory Support

c) Hard Disk Support
d) System Case

74) Can you upgrade motherboard? Yes

75) One system is not starting, but the fan is working. What is the problem?

76) What is Intel LGA 1155 Socket?

LGA 1155, also called Socket H2, is an Intel microprocessor compatible socket which supports Intel Sandy Bridge and the up-coming Ivy Bridge microprocessors. LGA 1155 is designed as a replacement for the LGA 1156(known as Socket H).

77) What is power supply unit?

A power supply unit (PSU) supplies direct current (DC) power to the other components in a computer. It converts general-purpose alternating current (AC) electric power from the mains to low-voltage (for a desktop computer: 12 V, 5 V, 5VSB, 3V3, −5 V, and −12 V) DC power for the internal components of the computer.

78) What are the different types of Form Factors of Power Supply? AT , ATX, Flex ATX, Micro ATX etc…

79) What is NLX?

NLX (New Low Profile Extended) was a form factor proposed by Intel and developed jointly with IBM, DEC.

80) What is Switching Mode Power Supply?

A switched-mode power supply **(switching-mode power supply, SMPS, or simply switcher)** is an electronic power supply that incorporates a switching regulator in order to be highly efficient in the conversion of electrical power. Like other types of power supplies, an SMPS transfer power from a source like the electrical power grid to a load (e.g., a personal computer) while converting voltage and current characteristics. An SMPS is usually employed to efficiently provide a regulated output voltage, typically at a level different from the input voltage.

81) What is the use of Molex Power connector?

Molex is a four pin power connector found in SMPS. It is used to supply power to HDD, CD Drive, DVD Drive etc…

82) What is Berg (mini Molex) connector is used to…. To provide power to Floppy Disk Drive.

83) What are the different color cables found in Molex connector? What is the Power of it.

-12V –Blue, -5V –White, 0V –Black, +3.3V –Orange, +5V –Red, +12V –Yellow.

84) What are the methods used in a system for cooling?

a) Large System Case

b) Arrangement of Internal Components
c) Keeping the System Clean.
d) Proper Working of the System Case Fan.

85) Power supply fan is not working and it emits a lot of sound. What will the probable cause? Most of the time this issue arises due to lots of dust is accumulated on the fan motor.
86) What is the capacity of a Floppy Disk? 1.44MB
87) Which is the medium used in a floppy for storing data? Magnetic Media.
88) What is **write protected notch** in a floppy? What is its use?
This is a switch used to eliminate the accidental deletion of data from the floppy.
89) How many tracts and sectors found in a normal floppy dick? 80 tracks and 18 sectors.
90) Which is the file system of a floppy disk? FAT
91) How can you format a floppy? What is happening if you do so?
Insert the floppy to the system and open my computer. There we can find the icon. Just right click and select format option. Otherwise we can use format command. Formatting a floppy will creates sectors and tracks on the floppy.
92) System is not showing floppy disk drive icon in **Mycomputer**.What will the probable cause? The device is not detected or disabled.
93) I have inserted a new floppy disk into my drive. The data can be read. But not able to make modifications. Why?
The disk may be in write protected mode.
94) What is HDD? What are the different types available in the market now?
A hard disk drive **(HDD; also hard drive or hard disk)** is a non-volatile, random access digital magnetic data storage device. It is the secondary storage media. There are different types of hard disk, based on the the intefaces they used we can classify them as IDE, SATA, SCSI etc...
95) What is SATA?
Serial ATA **(SATA or Serial Advanced Technology Attachment)** is a computer businterface for connecting host bus adapters to mass storage devices such as hard disk drives and optical drives. Serial ATA was designed to replace the older parallel ATA**(PATA)** standard **(often called by the old name IDE),** offering several advantages over the older interface: reduced cable size and **cost (7 conductors instead of 40),**native hot swapping, faster data transfer through higher signalling rates, and

more efficient transfer through an **(optional)** I/O queuing protocol.

96) In Speed how SATA is different from IDE?

SATA- Serial Advanced Technology Attachment (SATA) is high speed serial interface designed to replace IDE and EIDE drive standard SATA has a seven pin connector. SATA transfer speed of data up to 600 MB per second. Now a day use SATA.

IDE- Integrated Drive Electronics (IDE) it has a 40/80 pins connector. IDE transfer speed of data up to 100/133 MB per second few time ago mostly use IDE.

97) What is eSATA?

External Serial Advanced Technology Attachment or eSATA is an external interface for SATA technologies. eSATA cables are narrow and can be up to 6.56 feet (2 meters) in length. eSATA requires its own power connector. It is still an excellent choice for external disk storage.

98) What is SCSI? Is the SCSI Hard Disk is needed for a home purpose?

SCSI is Small Computer System Interface , is a type of interface used for computer components such as hard drives, optical drives, scanners and tape drives. SCSI is a faster, more robust technology than

IDE amd SATA, and has traditionally been utilized in servers. Aside from speed, another great advantage over IDE and SATA is that the SCSI card can connect 15 or more devices in a daisy chain. The controller assigns each device its ownSCSI ID, allowing for great flexibility towards expanding any system. It is more costly. It is not needed for a home purpose.

99) Is there is USB HDD? If yes what is the speed?

Yes. If your HDD is based on USB 3.0 it can offer a maximum transmission speed of up to 5 Gbit/s (640 MB/s), which is over 10 times faster than USB 2.0 (480 Mbit/s, or 60 MB/s).

100) What is IEEE 1394 Interface?

The IEEE 1394 interface is a serial bus interface standard for high-speed communications. The interface is also known by the brand names of FireWire (Apple), i.LINK (Sony), and Lynx (Texas Instruments). IEEE 1394 replaced parallel SCSI in many applications, because of lower implementation costs and a simplified, more adaptable cabling system. The original release of IEEE 1394-1995 specified what is now known as FireWire 400. It can transfer data between devices at 100, 200, or 400Mbit/s. EEE 1394c-2006 was published on June 8, 2007 that provides 800 Mbit/s.

101) What are Solid State Drive means?

A solid-state drive (SSD), sometimes called a solid-state disk or electronic disk, is a data storage device that uses solid-state memory to store data. SSDs use microchips which retain data in non-volatile memory chips and contain no moving parts. Compared to electromechanical HDDs, SSDs are typically less susceptible to physical shock, are silent, have lower access time and latency, but are more expensive per gigabyte (GB).

Networking : N+

1) What is a Link?

A link refers to the connectivity between two devices. It includes the type of cables and protocols used in order for one device to be able to communicate with the other.

2) What are the layers of the OSI reference model?

There are 7 OSI layers: Physical Layer, Data Link Layer, Network Layer, Transport Layer, Session Layer, Presentation Layer and Application Layer.

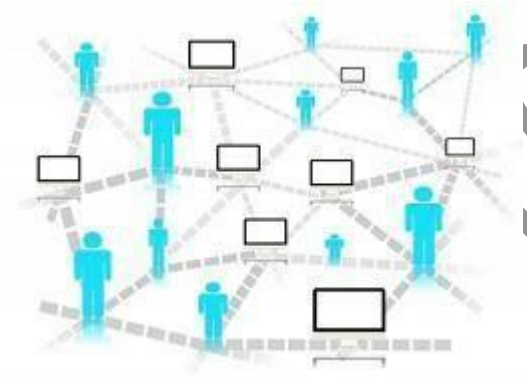
3) What is backbone network?

A backbone network is a centralized infrastructure that is designed to distribute different routes and data to various networks. It also handles management of bandwidth and various channels.

4) What is a LAN?

LAN is short for Local Area Network. It refers to the connection between computers and other network devices that are located within a small physical location.

5) What is a node?



A node refers to a point or joint where a connection takes place. It can be computer or device that is part of a network. Two or more nodes are needed in order to form a network connection.

6) What are routers?

Routers can connect two or more network segments. These are intelligent network devices that store information in its routing table such as paths, hops and bottlenecks. With this info, they are able to determine the best path for data transfer. Routers operate at the OSI Network Layer.

7) What is point to point link?

It refers to a direct connection between two computers on a network. A point to point connection does

not need any other network devices other than connecting a cable to the NIC cards of both computers.

8) What is anonymous FTP?

Anonymous FTP is a way of granting user access to files in public servers. Users that are allowed access to data in these servers do not need to identify themselves, but instead log in as an anonymous guest.

9) What is subnet mask?

A subnet mask is combined with an IP address in order to identify two parts: the extended network address and the host address. Like an IP address, a subnet mask is made up of 32 bits.

10) What is the maximum length allowed for a UTP cable?

A single segment of UTP cable has an allowable length of 90 to 100 meters. This limitation can be overcome by using repeaters and switches.

11) What is data encapsulation?

Data encapsulation is the process of breaking down information into smaller manageable chunks before it is transmitted across the network. It is also in this process that the source and destination addresses are attached into the headers, along with parity checks.

12) Describe Network Topology

Network Topology refers to the layout of a computer network. It shows how devices and cables are physically laid out, as well as how they connect to one another.

13) What is VPN?

VPN means Virtual Private Network, a technology that allows a secure tunnel to be created across a network such as the Internet. For example, VPNs allow you to establish a secure dial-up connection to a remote server.

14) Briefly describe NAT.

NAT is Network Address Translation. This is a protocol that provides a way for multiple computers on a common network to share single connection to the Internet.

15) What is the job of the Network Layer under the OSI reference model?

The Network layer is responsible for data routing, packet switching and control of network congestion. Routers operate under this layer.

16) How does a network topology affect your decision in setting up a network?

Network topology dictates what media you must use to interconnect devices. It also serves as basis on what materials, connector and terminations that is applicable for the setup.

17) What is RIP?

RIP, short for Routing Information Protocol is used by routers to send data from one network to another. It efficiently manages routing data by broadcasting its routing table to all other routers within the network. It determines the network distance in units of hops.

18) What are different ways of securing a computer network?

There are several ways to do this. Install reliable and updated anti-virus program on all computers. Make sure firewalls are setup and configured properly. User authentication will also help a lot. All of these combined would make a highly secured network.

19) What is NIC?

NIC is short for Network Interface Card. This is a peripheral card that is attached to a PC in order to connect to a network. Every NIC has its own MAC address that identifies the PC on the network.

20) What is WAN?

WAN stands for Wide Area Network. It is an interconnection of computers and devices that are geographically dispersed. It connects networks that are located in different regions and countries.

21) What is the importance of the OSI Physical Layer?

The physical layer does the conversion from data bits to electrical signal, and vice versa. This is where network devices and cable types are considered and setup.

22) How many layers are there under TCP/IP?

There are four layers: the Network Layer, Internet Layer, Transport Layer and Application Layer.

23) What are proxy servers and how do they protect computer networks?

Proxy servers primarily prevent external users who identifying the IP addresses of an internal network. Without knowledge of the correct IP address, even the physical location of the network cannot be identified. Proxy servers can make a network virtually invisible to external users.

24) What is the function of the OSI Session Layer?

This layer provides the protocols and means for two devices on the network to communicate with each other by holding a session. This includes setting up the session, managing information exchange during the session, and tear-down process upon termination of the session.

25) What is the importance of implementing a Fault Tolerance System? Are there limitations?

A fault tolerance system ensures continuous data availability. This is done by eliminating a single point of failure. However, this type of system would not be able to protect data in some cases, such as in accidental deletions.

26) What does 10Base-T mean?

The 10 refers to the data transfer rate, in this case is 10Mbps. The word Base refers to base band, as oppose to broad band. T means twisted pair, which is the cable used for that network.

27) What is a private IP address?

Private IP addresses are assigned for use on intranets. These addresses are used for internal networks and are not routable on external public networks. These ensures that no conflicts are present among internal networks while at the same time the same range of private IP addresses are reusable for multiple intranets since they do not “see” each other.

28) What is NOS?

NOS, or Network operating system is specialized software whose main task is to provide network connectivity to a computer in order for it to be able to communicate with other computers and connected devices.

29) What is DoS?

DoS, or Denial-of-Service attack, is an attempt to prevent users from being able to access the internet or any other network services. Such attacks may come in different forms and are done by a group of perpetuators. One common method of doing this is to overload the system server so it cannot anymore process legitimate traffic and will be forced to reset.

30) What is OSI and what role does it play in computer networks?

OSI (Open Systems Interconnect) serves as a reference model for data communication. It is made up of 7 layers, with each layer defining a particular aspect on how network devices connect and communicate with one another. One layer may deal with the physical media used, while another layer dictates how data is actually transmitted across the network.

31) What is the purpose of cables being shielded and having twisted pairs?

The main purpose of this is to prevent crosstalk. Crosstalks are electromagnetic interferences or noise that can affect data being transmitted across cables.

32) What is the advantage of address sharing?

By using address translation instead of routing, address sharing provides an inherent security benefit. That's because host PCs on the Internet can only see the public IP address of the external interface on the computer that provides address translation and not the private IP addresses on the internal network.

33) What are MAC addresses?

MAC, or Media Access Control, uniquely identifies a device on the network. It is also known as physical address or Ethernet address. A MAC address is made up of 6-byte parts.

34) What is the equivalent layer or layers of the TCP/IP Application layer in terms of OSI reference model?

The TCP/IP Application layer actually has three counterparts on the OSI model: the Session layer, Presentation Layer and Application Layer.

35) How can you identify the IP class of a given IP address?

By looking at the first octet of any given IP address, you can identify whether it's Class A, B or C. If the first octet begins with a 0 bit, that address is Class A. If it begins with bits 10 then that address is a Class B address. If it begins with 110, then it's a Class C network.

36) What is the main purpose of OSPF?

OSPF, or Open Shortest Path First, is a link-state routing protocol that uses routing tables to determine the best possible path for data exchange.

37) What are firewalls?

Firewalls serve to protect an internal network from external attacks. These external threats can be hackers who want to steal data or computer viruses that can wipe out data in an instant. It also prevents other users from external networks from gaining access to the private network.

38) Describe star topology

Star topology consists of a central hub that connects to nodes. This is one of the easiest to setup and maintain.

39) What are gateways?

Gateways provide connectivity between two or more network segments. It is usually a computer that runs the gateway software and provides translation services. This translation is a key in allowing different systems to communicate on the network.

40) What is the disadvantage of a star topology?

One major disadvantage of star topology is that once the central hub or switch get damaged, the entire network becomes unusable.

41) What is SLIP?

SLIP, or Serial Line Interface Protocol, is actually an old protocol developed during the early UNIX days. This is one of the protocols that are used for remote access.

42) Give some examples of private network addresses.

10.0.0.0 with a subnet mask of 255.0.0.0
172.16.0.0 with subnet mask of 255.240.0.0
192.168.0.0 with subnet mask of 255.255.0.0

43) What is tracert?

Tracert is a Windows utility program that can used to trace the route taken by data from the router to the destination network. It also shows the number of hops taken during the entire transmission route.

44) What are the functions of a network administrator?

A network administrator has many responsibilities that can be summarize into 3 key functions: installation of a network, configuration of network settings, and maintenance/troubleshooting of networks.

45) Describe at one disadvantage of a peer to peer network.

When you are accessing the resources that are shared by one of the workstations on the network, that workstation takes a performance hit.

46) What is Hybrid Network?

A hybrid network is a network setup that makes use of both client-server and peer-to-peer architecture.

47) What is DHCP?

DHCP is short for Dynamic Host Configuration Protocol. Its main task is to automatically assign an IP address to devices across the network. It first checks for the next available address not yet taken by any device, then assigns this to a network device.

48) What is the main job of the ARP?

The main task of ARP or Address Resolution Protocol is to map a known IP address to a MAC layer address.

49) What is TCP/IP?

TCP/IP is short for Transmission Control Protocol / Internet Protocol. This is a set of protocol layers that is designed to make data exchange possible on different types of computer networks, also known as heterogeneous network.

50) How can you manage a network using a router?

Routers have built in console that lets you configure different settings, like security and data logging. You can assign restrictions to computers, such as what resources it is allowed access, or what particular time of the day they can browse the internet. You can even put restrictions on what websites are not viewable across the entire network.

51) What protocol can be applied when you want to transfer files between different platforms, such between UNIX systems and Windows servers?

Use FTP (File Transfer Protocol) for file transfers between such different servers. This is possible because FTP is platform independent.

52) What is the use of a default gateway?

Default gateways provide means for the local networks to connect to the external network. The default gateway for connecting to the external network is usually the address of the external router port.

53) One way of securing a network is through the use of passwords. What can be considered as good passwords?

Good passwords are made up of not just letters, but by combining letters and numbers. A password that combines uppercase and lowercase letters is favorable than one that uses all upper case or all lower case letters. Passwords must be not words that can easily be guessed by hackers, such as dates, names, favorites, etc. Longer passwords are also better than short ones.

54) What is the proper termination rate for UTP cables?

The proper termination for unshielded twisted pair network cable is 100 ohms.

55) What is netstat?

Netstat is a command line utility program. It provides useful information about the current TCP/IP settings of a connection.

56) What is the number of network IDs in a Class C network?

For a Class C network, the number of usable Network ID bits is 21. The number of possible network IDs is 2 raised to 21 or 2,097,152. The number of host IDs per network ID is 2 raised to 8 minus 2, or 254.

57) What happens when you use cables longer than the prescribed length?

Cables that are too long would result in signal loss. This means that data transmission and reception would be affected, because the signal degrades over length.

58) What common software problems can lead to network defects?

Software related problems can be any or a combination of the following:

– client server problems

– application conflicts

– error in configuration

– protocol mismatch

– security issues

– user policy and rights issues

59) What is ICMP?

ICMP is Internet Control Message Protocol. It provides messaging and communication for protocols within the TCP/IP stack. This is also the protocol that manages error messages that are used by network tools such as PING.

60) What is Ping?

Ping is a utility program that allows you to check connectivity between network devices on the network. You can ping a device by using its IP address or device name, such as a computer name.

61) What is peer to peer?

Peer to peer are networks that does not reply on a server. All PCs on this network act as individual workstations.

62) What is DNS?

DNS is Domain Name System. The main function of this network service is to provide host names to TCP/IP address resolution.

63) What advantages does fiber optics have over other media?

One major advantage of fiber optics is that is it less susceptible to electrical interference. It also supports higher bandwidth, meaning more data can be transmitted and received. Signal degrading is also very minimal over long distances.

64) What is the difference between a hub and a switch?

A hub acts as a multiport repeater. However, as more and more devices connect to it, it would not be able to efficiently manage the volume of traffic that passes through it. A switch provides a better alternative that can improve the performance especially when high traffic volume is expected across all

ports.

65) What are the different network protocols that are supported by Windows RRAS services?

There are three main network protocols supported: NetBEUI, TCP/IP, and IPX.

66) What are the maximum networks and hosts in a class A, B and C network?

For Class A, there are 126 possible networks and 16,777,214 hosts For Class B, there are 16,384 possible networks and 65,534 hosts For Class C, there are 2,097,152 possible networks and 254 hosts

67) What is the standard color sequence of a straight-through cable?

orange/white, orange, green/white, blue, blue/white, green, brown/white, brown.

68) What protocols fall under the Application layer of the TCP/IP stack?

The following are the protocols under TCP/IP Application layer: FTP, TFTP, Telnet and SMTP.

69) You need to connect two computers for file sharing. Is it possible to do this without using a hub or router?

Yes, you can connect two computers together using only one cable. A crossover type cable can be use in this scenario. In this setup, the data transmit pin of one cable is connected to the data receive pin of the other cable, and vice versa.

70) What is ipconfig?

Ipconfig is a utility program that is commonly used to identify the addresses information of a computer on a network. It can show the physical address as well as the IP address.

71) What is the difference between a straight-through and crossover cable?

A straight-through cable is used to connect computers to a switch, hub or router. A crossover cable is used to connect two similar devices together, such as a PC to PC or Hub to hub.

72) What is client/server?

Client/server is a type of network wherein one or more computers act as servers. Servers provide a centralized repository of resources such as printers and files. Clients refers to workstation that access the server.

73) Describe networking.

Networking refers to the inter connection between computers and peripherals for data communication. Networking can be done using wired cabling or through wireless link.

74) When you move the NIC cards from one PC to another PC, does the MAC address gets transferred 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 NIC card was replace by another one.

75) Explain clustering support

Clustering support refers to the ability of a network operating system to connect multiple servers in a fault-tolerant group. The main purpose of this is the in the event that one server fails, all processing will continue on with the next server in the cluster.

76) In a network that contains two servers and twenty workstations, where is the best place to install an Anti-virus program?

An anti-virus program must be installed on all servers and workstations to ensure protection. That's because individual users can access any workstation and introduce a computer virus when plugging in their removable hard drives or flash drives.

77) Describe Ethernet.

Ethernet is one of the popular networking technologies used these days. It was developed during the early 1970s and is based on specifications as stated in the IEEE. Ethernet is used in local area networks.

78) What are some drawbacks of implementing a ring topology?

In case one workstation on the network suffers a malfunction, it can bring down the entire network. Another drawback is that when there are adjustments and reconfigurations needed to be performed on a particular part of the network, the entire network has to be temporarily brought down as well.

79) What is the difference between CSMA/CD and CSMA/CA?

CSMA/CD, or Collision Detect, retransmits data frames whenever a collision occurred. CSMA/CA, or Collision Avoidance, will first broadcast intent to send prior to data transmission.

80) What is SMTP?

SMTP is short for Simple Mail Transfer Protocol. This protocol deals with all Internal mail, and provides the necessary mail delivery services on the TCP/IP protocol stack.

81) What is multicast routing?

Multicast routing is a targeted form of broadcasting that sends message to a selected group of user, instead of sending it to all users on a subnet.

82) What is the importance of Encryption on a network?

Encryption is the process of translating information into a code that is unreadable by the user. It is then translated back or decrypted back to its normal readable format using a secret key or password. Encryption help ensure that information that is intercepted halfway would remain unreadable because the user has to have the correct password or key for it.

83) How are IP addresses arranged and displayed?

IP addresses are displayed as a series of four decimal numbers that are separated by period or dots. Another term for this arrangement is the dotted decimal format. An example is 192.168.101.2

84) Explain the importance of authentication.

Authentication is the process of verifying a user's credentials before he can log into the network. It is normally performed using a username and password. This provides a secure means of limiting the access from unwanted intruders on the network.

85) What do mean by tunnel mode?

This is a mode of data exchange wherein two communicating computers do not use IPSec themselves. Instead, the gateway that is connecting their LANs to the transit network creates a virtual tunnel that uses the IPSec protocol to secure all communication that passes through it.

86) What are the different technologies involved in establishing WAN links?

Analog connections – using conventional telephone lines; Digital connections – using digital-grade telephone lines; switched connections – using multiple sets of links between sender and receiver to move data.

87) What is one advantage of mesh topology?

In the event that one link fails, there will always be another available. Mesh topology is actually one of the most fault-tolerant network topology.

88) When troubleshooting computer network problems, what common hardware-related problems can occur?

A large percentage of a network is made up of hardware. Problems in these areas can range from malfunctioning hard drives, broken NICs and even hardware startups. Incorrectly hardware configuration is also one of those culprits to look into.

89) What can be done to fix signal attenuation problems?

A common way of dealing with such a problem is to use repeaters and hub, because it will help regenerate the signal and therefore prevent signal loss. Checking if cables are properly terminated is also a must.

90) How does dynamic host configuration protocol aid in network administration?

Instead of having to visit each client computer to configure a static IP address, the network administrator can apply dynamic host configuration protocol to create a pool of IP addresses known as scopes that can be dynamically assigned to clients.

91) Explain profile in terms of networking concept?

Profiles are the configuration settings made for each user. A profile may be created that puts a user in a group, for example.

92) What is sneakernet?

Sneakernet is believed to be the earliest form of networking wherein data is physically transported using removable media, such as disk, tapes.

93) What is the role of IEEE in computer networking?

IEEE, or the Institute of Electrical and Electronics Engineers, is an organization composed of engineers that issues and manages standards for electrical and electronic devices. This includes networking devices, network interfaces, cablings and connectors.

94) What protocols fall under the TCP/IP Internet Layer?

There are 4 protocols that are being managed by this layer. These are ICMP, IGMP, IP and ARP.

95) When it comes to networking, what are rights?

Rights refer to the authorized permission to perform specific actions on the network. Each user on the network can be assigned individual rights, depending on what must be allowed for that user.

96) What is one basic requirement for establishing VLANs?

A VLAN is required because at switch level there is only one broadcast domain, it means whenever new user is connected to switch this information is spread throughout the network. VLAN on switch helps to create separate broadcast domain at switch level. It is used for security purpose.

97) What is IPv6?

IPv6 or Internet Protocol version 6, was developed to replace IPv4. At present, IPv4 is being used to control internet traffic, butis expected to get saturated in the near future. IPv6 was designed to overcome this limitation.

98) What is RSA algorithm?

RSA is short for Rivest-Shamir-Adleman algorithm. It is the most commonly used public key encryption algorithm in use today.

99) What is mesh topology?

Mesh topology is a setup wherein each device is connected directly to every other device on the network. Consequently, it requires that each device have at least two network connections.

100) what is the maximum segment length of a 100Base-FX network?

The maximum allowable length for a network segment using 100Base-FX is 412 meters. The maximum length for the entire network is 5 kilometers.

CCNA :

1) What is Routing?

Routing is the process of finding a path on which data can pass from source to destination. Routing is done by a device called routers, which are network layer devices.

2) What is the purpose of the Data Link?

The job of the Data Link layer is to check messages are sent to the right device. Another function of this layer is framing.

3) What is the key advantage of using switches?

When a switch receives a signal, it creates a frame out of the bits that was extracted from that signal. With this process, it gains access and reads the destination address, after which it forwards that frame to the appropriate port. This is a very efficient means of data transmission, instead of broadcasting it on all ports.

4) When does network congestion occur?

Network congestion occurs when too many users are trying to use the same bandwidth. This is especially true in big networks that do not resort to network segmentation.

5) What is a Window in networking terms?

A Window refers to the number of segments that is allowed to be sent from source to destination before an acknowledgement is sent back.

6) Does a bridge divide a network into smaller segments?

Not really. What a bridge actually does is to take the large network and filter it, without changing the size of the network.

7) Which LAN switching method is used in CISCO Catalyst 5000?

This model uses the Store-and-forward switching method. It stores the entire frame to its buffers and performs a crc check before deciding whether or not to forward that data frame.

8) What is the role of the LLC sublayer?

The LLC sublayer, short for Logical Link Control, can provide optional services to an application developer. One option is to provide flow control to the Network layer by using stop/start codes. The LLC can also provide error correction.

9) How does RIP differ from IGRP?

RIP relies on the number of hops in order to determine the best route to a network. On the other hand, IGRP takes consideration many factors before it decides the best route to take, such as bandwidth, reliability, MTU and hop count.

10) What are the different memories used in a CISCO router?

– NVRAM stores the startup configuration file
– DRAM stores the configuration file that is being executed
– Flash Memory – stores the Cisco IOS.

11) What is BootP?

BootP is a protocol that is used to boot diskless workstations that are connected to the network. It is short for Boot Program. Diskless workstations also use BootP in order to determine its own IP address as well as the IP address of the server PC.

12) What is the function of the Application Layer in networking?

The Application Layer supports the communication components of an application and provides network services to application processes that span beyond the OSI reference model specifications. It also synchonizes applications on the server and client.

13) Differentiate User Mode from Privileged Mode

User Mode is used for regular task when using a CISCO router, such as to view system information, connecting to remote devices, and checking the status of the router. On the other hand, privileged mode includes all options that are available for User Mode, plus more. You can use this mode in order to make configurations on the router, including making tests and debugging.

14) What is 100BaseFX?

This is Ethernet that makes use of fiber optic cable as the main transmission medium. The 100 stands for 100Mbps, which is the data speed.

15) Differentiate full-duplex from half-duplex.

In full-duplex, both the transmitting device and the receiving device can communicate simultaneously, that is, both can be transmitting and receiving at the same time. In the case of half-duplex, a device cannot receive while it is transmitting, and vice versa.

16) What is MTU?

MTU stands for Maximum Transmission Unit. It refers to the maximum packet size that can be sent out onto the data line without the need to fragment it.

17) How does cut-through LAN switching work?

In Cut-Through LAN switching, as soon as the router receives the data frame, it will immediately send it out again and forward it to the next network segment after reading the destination address.

18) What is latency?

Latency is the amount of time delay that measures the point from which a network device receives a data frame to the time it sends it out again towards another network segment.

19) Utilizing RIP, what is the limit when it comes to number of hops?

The maximum limit is 15 hop counts. Anything higher than 15 indicates that the network is considered unreachable.

20) What is a Frame Relay?

Frame Relay is a WAN protocol that provides connection-oriented communication by creating and maintaining virtual circuits. It has a high performance rating and operates at the Data Link and Physical Layers.

21) How do you configure a Cisco router to route IPX?

The initial thing to do is to enable IPX routing by using the “ipx routing” command. Each interface that is used in the IPX network is then configured with a network number and encapsulation method.

22) What are the different IPX access lists?

There are two access lists: Standard and Extended. Standard Access List can only filter the source or destination IP address. An Extended Access List uses the source and destination IP addresses, port, socket and protocol when filtering a network.

23) Explain the benefits of VLANs.

VLANs allow the creation of collision domains by groups other than just physical location. Using VLANs, it is possible to establish networks by different means, such as by function, type of hardware, protocol, among others. This is a big advantage when compared to conventional LANs wherein collision domains are always tied to physical location.

24) What is subnetting?

Subnetting is the process of creating smaller networks from a big parent network. Being a part of a network, each subnet is assigned some additional parameters or identifier to indicate its subnet number.

25) What are the advantages of a layered model in the networking industry?

A layered network offers many advantages. It allows administrators to make changes in one layer without the need to make changes in the other layers. Specialization is encouraged, allowing the network industry to make progress faster. A layered model also lets administrators troubleshoot problems more efficiently.

26) Why is UDP lease favored when compared to TCP?

It's because UDP is unreliable and unsequenced. It is not capable of establishing virtual circuits and acknowledgements.

27) What are some standards supported by the Presentation layer?

Presentation layer supports many standards, which ensures that data is presented correctly. These include PICT, TIFF and JPEG for graphics, MIDI, MPEG and QuickTime for Video/Audio.

28) What's the simplest way to remotely configure a router?

In cases when you need to configure a router remotely, the most convenient is to use the Cisco AutoInstall Procedure. However, the router must be connected to the WAN or LAN through one of the interfaces.

29) What does the show protocol display?

– routed protocols that is configured on the router
– the address assigned on each interface
– the encapsulation method that was configured on each interface

30) How do you depict an IP address?

It can be done in three possible ways:
– using Dotted-decimal. For example: 192.168.0.1
– using Binary. For example: 10000010.00111011.01110010.01110011
– using Hexadecimal. For example: 82 1E 10 A1

31) How do you go to privileged mode? How do you switch back to user mode?

To access privileged mode, you enter the command "enable" on the prompt. In order to get back to user mode, enter the command "disable"

32) What is HDLC?

HDLC is short for High Level Data Link Control protocol, and is a propriety protocol of CISCO. It is the default encapsulation operated within CISCO routers.

33) How are internetworks created?

Internetworks are created when networks are connected using routers. Specifically, the network administrator assigns a logical address to every network that connects to the router.

34) What is Bandwidth?

Bandwidth refers to the transmission capacity of a medium. It is a measure of how much volume a transmission channel can handle, and is measured in Kbps.

35) How does Hold-downs work?

Hold-downs prevent regular update messages from reinstating a downed link by removing that link from update messages. It uses triggered updates to reset the hold-down timer.

36) What are packets?

Packets are the results of data encapsulation. These are data that has been wrapped under the different protocols of the OSI layers. Packets are also referred to as datagrams.

37) What are segments?

Segments are sections of a data stream that comes from the upper OSI layers and ready for transmission towards the network. Segments are the logic units at the Transport Layer.

38) Give some benefits of LAN switching.

– allows full duplex data transmission and reception
– media rate adaption
– easy and efficient migration

39) What is Route Poisoning?

Route Poisoning is the process of inserting a table entry of 16 to a route, making it unreachable. This technique is used in order to prevent problems caused by inconsistent updates on a route.

40) How do you find valid hosts in a subnet?

The best way to go about this is to use the equation 256 minus the subnet mask. The hosts that are considered valid are those that can be found between the subnets.

41) Differentiate Logical Topology from Physical Topology

Logical Topology refers to the signal path through the physical topology. Physical Topology is the actual layout of the network medium.

42) What causes a triggered update to reset the router hold-down timer?

This may happen when the hold-down timer has already expired, or when the router received a processing task that incidentally was proportional to the number of links in the internetwork.

43). Mention what is the size of IP address?

Size of IP address is 32 bit for IPv4 and 128 bit for IPv6.

44) **Mention what does data packets consist of?**

A data packet consists of sender's information, recipient's information, and the data contained. It also has the numeric identification number that defines the packet number and order. When data is send across the network, that information is segmented into data packets. In short, data packets carry the information and routing configuration for your transferred message.

44). Mention what is DHCP?

DHCP stands for Dynamic Host Configuration Protocol. DHCP assigns an IP address automatically to a given workstation client. You can also make static IPS for machines like printers, servers, routers and scanners.

45). Mention what is BOOTP?

BOOTP is a computer networking protocol used to deploy an IP address to network devices from a configuration server.

46). Explain why is UDP lease favored when compared to TCP?

It is because UDP is un-sequenced and unreliable. It is not capable of creating virtual circuits and acknowledgments

47). Mention what is the difference between dynamic IP and static IP addressing?

Dynamically IP addresses are provided by DHCP server and static IP address are given manually.

48). Mention what are the ranges for the private IPS?

Ranges for private IPS are

- Class A: 10.0.0.0 – 10.0.0.255
- Class B: 172.16.0.0 – 172.31.0.0
- Class C: 192.168.0.0 – 192.168.0.255

49). In how many ways you can access router?

You can access it in three ways

- Telnet (IP)
- AUX (Telephone)
- Console (Cable)

50) . Explain what is EIGRP?

EIGRP stands for **Enhanced Interior Gateway Routing Protocol**; it is a routing protocol designed by Cisco Systems. It is availed on a router to share routes with other routers within the same autonomous system. Unlike other routers like RIP, EIGRP only sends incremental updates, decreasing the workload on the router and the amount of data that needs to be transferred.

51). Mention what is the matric of EIGRP protocol?

EIGRP protocol consists of

- Bandwidth
- Load
- Delay
- Reliability
- MTU
- Maximum Transmission Unit

52). Mention what does the clock rate do?

Clockrate enables the routers or DCE equipment to communicate properly.

53). Mention what command you must use if you want to delete or remove the configuration data that is stored in the NVRAM?

Erase startup- coding is the command you must use if you want to delete the configuration data that is stored in the NVRAM

54). Mention what is the difference between TCP and UDP?

TCP and UDP both are protocols for sending files across computer network

TCP (Transmission Control Protocol)	UDP (User Datagram Protocol)
TCP is connection oriented protocol. When connection lost during transferring files, the server would request the lost part. While transferring a message, there is no corruption while transferring a message	UDP is based on connectionless protocol. When you send data, there is no guarantee whether your transferred message will reach there without any leakage
The message will deliver in the order it is sent	The message you sent may not be in the same order
Data in TCP is read as a stream, where one packet ends, and another begins	Packets are transmitted individually and are guaranteed to be whole if they arrive
Example of TCP includes World Wide Web, file transfer protocol, e-mail,	Example for UDP are VOIP (Voice Over Internet Protocol) TFTP (Trivial File Transfer Protocol),

55). Explain the difference between half-duplex and full-duplex?

Full duplex means that the communication can occur in both directions at the same time, while half duplex means that the communication can occur in one direction at time.

56).**Mention the conversion steps of data encapsulation?**

Conversion steps of data encapsulation includes

Layer one, two and Three (Application/presentation/session) : Alphanumeric input from the user is converted into Data

- Layer Four (Transport): Data is converted into small segments
- Layer Five (Network): Data converted into packets or datagrams and Network header is added
- Layer Six (Data Link): Datagrams or packets are built into frames
- Layer Seven (Physical): Frames are converted into bits