➡ **HLS & SCB SBU**

Solution – 3

(1) Ans = A

(2) Ans – D

SMTP

- Simple Mail Transfer Protocol (SMTP) is the standard protocol for sending emails across the Internet. Therefore, SMTP transfers messages from the sender's mail servers to the recipient's mail server.

TCP:

- TCP is the transfer layer protocol. Electronic mail function is supported by the transfer layer protocol TCP. TCP is a connection-oriented and reliable transport protocol. Therefore, SMTP transfer messages from the sender's mail servers to the recipient's mail servers using TCP

(3) Ans – C

Statement 1: False.

- A router need not necessarily implement any (RIP or OSPF) routing protocol .
- If no routing protocol is specified for a router, default routing with address 0.0.0.0 is implemented.

Statement 2: False

- Re-assembly of IP fragments into a single IP packet is done only at the receiver site.

Therefore both statement are not true

(4) Ans – D

(5) Ans – A

Stream Control Transmission Protocol (SCTP):

- It transports layer protocol combines the features of both TCP and UDP.
- It is message oriented like the UDP, which providing the reliable, connection-oriented service like TCP. It is used for telephony over the Internet.

(6) Ans – A

(7) Ans – B

Calculation

8 bit = 1 byte

× by 4 on both sides

32 bits = 4 bytes

The length of an IP address in bytes (pre-IPv6) is 4.

(8) Ans – B

(9) Ans – C

(10) Ans – C

Simple Mail Transfer Protocol (SMTP) is the standard protocol for sending emails from one machine to another.

(11) Ans – B

TCP / IP model is a communications protocol to interconnect network devices on the internet. TCP / IP model has 4 layers.

The four layers are as follows:

- Application layer
- Transport layer
- Internet layer
- Network access layer

The presentation layer is absent in the TCP / IP model.

(12) Ans – B

(13) Ans – B

Real time streaming lets you stream data and update dashboards in real-time.
In real time streaming of streaming, the multimedia file is delivered to the client, but not shared?

(14) Ans – C

ARP is responsible for converting higher-level protocol addresses (IP Addresses) to Physical network addresses

(15) Ans – B

- It is a type of computer network device that provides interconnection with other bridge networks that use the same protocol.
- Bridge devices work at the data link layer of the Open System Interconnect (OSI) model, connecting two different networks together and providing communication between them.
- Frames from one LAN can be transmitted to another LAN via Bridge

(16) Ans – A

RIP and BGP are two popular examples of distance vector routing protocols.

(17) Ans – D

(18) Ans – A

- **URL stands for Uniform Resource Locator** and is used to specify addresses on the World Wide Web.
- A URL is the fundamental network identification for any resource connected to the web (like images or sound files).

(19)   Ans – C

Point-to-Point Protocol (PPP) is a data link protocol commonly used in establishing a direct connection between two **network entities** or points (points here referred to as nodes, computers, hosts, etc).

(20) Ans – B

Propagation delay is the time that it takes for a bit to reach from one end of a link to the other. The delay depends on the distance (D) between the sender and the receiver, and the propagation speed (S) of the wave signal.

(21) ANS – C

An **Optical Character Reader** device can read data that has been typed or handwritten on a source document.

(22)   ANS – D

An interrupt service routine (ISR) is a software routine that hardware invokes in response to an interrupt.

(23)   ANS – A

(24)   ANS- B

(25)   ANS- A

(26)   ANS- C

Solid State Drive (SSD) is a type of mass storage device similar to a hard disk drive (HDD).

(27)   ANS- B

Peripherals:- A peripheral device is an internal or external device that connects directly to a computer or other digital device but does not contribute to the computer's primary function, such as computing.

(28)   ANS – C

(29)   ANS- B

Both a light pen and a touchscreen are considered pointing devices. They allow users to interact with the computer by positioning the cursor. So this isn't a distinguishing advantage.

(30)   ANS – B

Photoshop is not open source or free. It is a piece of exclusive software created by Adobe.

(31)   ANS- D

Layers	Functions
Application layer	Authentication, Authorization, Encryption, Decryption etc.
Transport layer	End to end connectivity, Segmentation, Multiplexing demultiplexing, Congestion control etc.
Internet layer	Host to host connectivity, Fragmentation etc.
Link layer (data link)	Flow control, Framing etc.

(32)   ANS – D

Real-time Transport Protocol (RTP)

RTP is a network protocol for delivering audio and video over IP networks. It is designed to handle real-time traffic on the internet.

(33)   ANS – D

The data flow between the two devices can be in simplex, half duplex and full duplex modes.

1. Simplex

In Simplex, communication is unidirectional. Only one of the devices sends the data and the other one only receives the data.

Example: A CPU sends data while a monitor only receives data.

2. Half Duplex

In half duplex both the stations can transmit as well as receive but not at the

same time. When one device is sending other can only receive and vice-versa

Example: A walkie-talkie.

3. Full Duplex

In Full duplex mode, both stations can transmit and receive at the same time.

Example: mobile phones

(34)   ANS – A
(35)   ANS- A

Stream Control Transmission Protocol (SCTP):

- It transports layer protocol combines the features of both TCP and UDP.
- It is message oriented like the UDP, which providing the reliable, connection-oriented service like TCP. It is used for telephony over the Internet.

(36)   ANS – A

Network address or **First address** is **used for network identification.**

The **Network address** is calculated by **Bitwise AND operation** of **corresponding binary bits of IP Address & Subnet mask.**

(37)   ANS- B

In the congestion avoidance algorithm, the size of the congestion window increases Additively.

(38)   ANS – C

Dataword = 1001

Divisor = 1011

Since polynomial is of order 3 append 3 0's at the end of message

Message: 1011 00**0**

Message: 1011 00**0**

	1001 **000**
	⊕ 1011
	————————
	10**00**
	⊕ 1011
	————————
	110

CRC = 110

(39)   ANS – D
(40)   ANS – C
(41)   ANS – A

In **IPv4 0.0.0.0** is used for the default route. **IP address 0.0.0.0** is used by hosts when they are being booted. If the packet's destination address is unknown, and the default route is unknown, but the default route is present in the router's routing table, the packet is not discarded but forwarded to the next router.

∴ **Hence the correct answer is** *0.0.0.0.*

(42)   **ANS- B**

(43)   **ANS – C**

(44)   **ANS – B**

- In asymmetric key cryptography each node has 2 keys private key and public key public key.
- Public key of the receiver is used by the sender of an encrypted message.
- The private key held by the receiver which decrypts the data encrypted by sender using public key of receiver.

(45)   **ANS – C**

(46)   **ANS – C**

- TCP uses the persistence timer to deal with a zero-window-size.
- Zero-window-size occurs when the TCP sender receives an acknowledgement with a window of size zero. And this is when the persistence timer starts.
- When this timer goes off, the TCP sender sends a special segment called probe.
- This probe causes the receiving TCP to resend the acknowledgment which was lost.

(47)   **ANS – C**

In networking Port is an endpoint of communication in an operating system, it is a logical construct that identifies a specific process or a type of network service such as Hypertext Transfer Protocol (HTTP) used in the World Wide Web has port number 80.

(48) ANS – B

Minimum header size of IPv4 = 20 byte

Maximum header size of IPv4 = 60 byte

Header length field in IPv4 header is of 4 bits.

Maximum possible value (1111) = 15

Scaling factor of $\frac{60}{15} = 4$ is introduced

Since 50 is not divisible by 4, append in 0's to increase the length to a multiple of 4

Header size = 50 + 0's append = 52 Byte

$$\frac{52}{4} = 13$$

Represent 13 in header length field = 1101

(49) ANS – A

Dynamic Host Configuration Protocol (DHCP):

- It serves as a bootstrap when a host is booted and supposed to be connected to the Internet, but the host does not know its IP address.

(50) ANS – B

Dynamic Host Configuration Protocol (DHCP) is used to provide IP information to hosts on your network. DHCP can provide a lot of information, but the most common is Ip address, subnet mask, default gateway, and DNS information. Dynamic Host Configuration Protocol (DHCP) is a **protocol that will automatically assign TCP/IP addressing information to workstations over the network**

(51) ANS – B

(52)   ANS – D

Least Recently Used (LRU) is a page replacement technique that replaces the least recently used page first from the frame in case of a page miss.

(53)   ANS – D

Deadlock prevention can be done by eliminating any of the below condition:

1. Mutual Exclusion

2. Hold and wait

3. No preemption

4. Circular Wait

(54)   ANS – C

Belady's anomaly is that the page-fault rate may increase as the number of allocated frames increases.

Explanation:

In FIFO Page Replacement Algorithm, page fault rate may increase as the number of allocated frames increase. Hence its suffer from the belady's anomaly

(55)   ANS – A

Dispatcher module gives control of the CPU to the process selected by the short-term schedular?

(56)   ANS – C

The working set model: The memory that is being accessed frequently by an application.

Same thing is done by principle of locality.

(57)   ANS – A

A program in execution is called 'A process'. We don't say that a program is executing; we say that it is running. A computer processor executes an instruction.

In computing, a program is a specific set of ordered operations for a computer to perform.

(58)   ANS – D

The kernel keeps track of the state of each executing program by using a data structure called process control block.

(59)   ANS – D

Mesh topology:

In this, each device has a dedicated point to point link to every other device. Dedicated means that a link carries traffic only between two devices it connects. It is the most reliable topology.

(60)   ANS – C

There are three basic types of switching: Circuit switching, Message switching, and Packet switching:

(61)   ANS – C

DNS, which stands for **Domain Name System, maps domain name into Internet Protocol (IP) address.**

IP → Domain name

Hence, the DNS maps the IP addresses to a hierarchy of domain names.

(62)   ANS – A

(63)   ANS – B

(64)   ANS – C

In class B, the first two octets(16 bits) represent network address and out of these 16 bits first two bits are fixed(10) to specify that its class B and the remaining 14 bits represent 2^{14} networks, and each network has 2^{16} - 2 host.

(65)   ANS – D

1. 10.0.0.0 - 10.255.255.255 (16,777,216 IP addresses) → Class A
2. 172.16.0.0 - 172.31.255.255 (1,048,576 IP addresses) → Class B
3. **192.168.0.0 - 192.168.255.255 (65,536 IP addresses) → Class C**

(66)   ANS – B

Given code words are: 10111 and 1000

Hamming distance can also be calculated by taking XOR of two code words.

	1	0	1	1	1
$\oplus$	0	1	0	0	0
	1	**1**	**1**	**1**	**1**

The number of 1's in XOR result is 5 ∴ Minimum hamming distance is 5 Since only

(67) ANS – B

(68) ANS – D

(69) ANS – A

Segmentation is a method of dividing memory into logical chunks, each of which represents a set of related data. External fragmentation is a problem with the memory allocation system.

(70) ANS – D

Source Port number, Destination Port number and Checksum is present in both TCP header and UDP header.

(71) ANS – A

(72) ANS – C

The Session Layer provides the mechanism for opening, closing and managing a session between end-user application processes. Communication sessions consist of requests and responses that occur between applications.
Session layer is associated with log in and log out from the network

(73) ANS – D

(74) ANS – C

(75) ANS – B

The rendering engine is responsible for displaying web pages in a web browser.
It is the component of the browser that takes the HTML, CSS, and JavaScript code of a web page and converts it into a visual representation that can be displayed on the screen.

(76) ANS – C

In 1995, AltaVista launched as a web search engine. It rose to prominence among early search engines but fell behind Google. In 2003, Yahoo! bought it; it kept the name but switched all AltaVista searches to use its own search engine.

(77)   ANS –D

The **full form** of the **URL** is **Uniform Resource Locator**. A **Uniform Resource Locator** could be a variety of **uniform resource symbols** and is the address of a resource on the **World Wide Web**; the protocol won't access it.
It is to indicate the **placement** of an **Internet resource** to access the web pages.

(78)   ANS – D

A search engine is a service that allows users to search for information or content over the World Wide Web (WWW).

(79)   ANS – A

A Web crawler is an Internet bot that routinely browses the World Wide Web and is often run by search engines for the purpose of Web indexing. It is also known as a spider, spider bot, or just crawler.

(80)   ANS – B
(81)   ANS – B

A web crawler is an important component of a web search engine.

(82)   ANS- C
(83)   ANS – A
(84)   ANS – B

Bookmark is a way to quickly access a favorite website by saving it in your browser.
It stores the title, URL, and favicon of the corresponding page.

(85) **ANS – A**

Many people use search engines like Google, Yahoo, Bing, Baidu, and DuckDuckGo.
Baidu is one of the most well-known search engines and a significant international force online.

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