HLS & SCB SBU

Solution – 2

(1) Ans = A

Operating Systems (OS) like Windows, macOS, Linux, etc., manage all other programs on a computer. *Compilers*, *Interpreters*, and *software suites like MS Office*, while important, do not control how the computer system runs and processes information at the fundamental level that Operating Systems do.

Compilers and **Interpreters** are tools for translating program code into machine-readable forms, and **MS Office** is a productivity software suite.

(2) Ans – B

- RAM stands for **Random-access memory**.
  - RAM is a **Primary memory** in computers.
  - It is a **volatile memory**.
  - RAM loses its data when the computer is turned off.
  - RAM is located on the motherboard.
  - RAM is a **temporary memory**.

(3) Ans – B

- **Gigabit Ethernet** is a variant of the Ethernet technology that is capable of transmitting data at a rate of **1 gigabit per second (Gbps)**.
- Now, **1 gigabit is equal to 1000 megabits.**
- So, Gigabit Ethernet has a data rate of 1000 Mbps. That's why option 2) is correct.

(4) Ans – B

You will not be able to take your presentation to a **PC (Personal Computer)**.
A **personal computer (PC)** is a **multi-purpose** digital device designed for individual use, capable of performing a wide range of tasks including but not limited to word processing, internet browsing, and gaming.
It typically includes components such as a **central processing unit (CPU), memory, and storage**, and interacts with users through output devices like a **monitor** and **input devices** like a keyboard and mouse.

(5) Ans – B

The key used to open the CMOS (Complementary Metal-Oxide-Semiconductor) setup utility, also known as the BIOS (Basic Input/Output System) setup, typically varies by motherboard manufacturer.

(6) Ans – B

(7) Ans – B

T he graphical user interface is used by most of the commercially popular computer operating systems.
A Graphical User Interface (GUI) allows you to enter commands by pointing and clicking at objects that appear on the screen.
It consists of picture-like items (eg. icons and arrows).

(8) Ans – D

Magnetic tape is an example of **sequential access memory**.
Memory is termed as "**sequential access**" when it is necessary to proceed sequentially from one data item to get to the next.
For a magnetic tape, data is **read or written piece by piece** in a linear, i.e., sequential manner. Other listed options like DVD, RAM, and ROM support **random access**, where any location can be accessed without having to move sequentially through other data.

(9) Ans – D

In the **year 1945**, the first electronic **general-purpose** and **digital** computer, **ENIAC** was introduced.
The **full form** of the **ENIAC** is **Electronic Numerical Integrator and Computer**.
ENIAC was first used by the **US Army's Ballistic research**.

(10) Ans – D

Registers are **high-speed storage areas within the CPU that have the least storage capacity**.

(11) Ans – D

The actual timing signals that govern the transfer of data between input unit, processor, memory and output units are generated by the Control Unit (CU) and the Memory Unit stores the processed data.

Control Unit (CU):

- This component of a computer's central processing unit (CPU) directs the operation of the computer.
- It manages and coordinates the hardware of the computer.
- The control unit directs the flow of data between the CPU and other devices, it fetches, decodes, and executes instructions from memory, and employs timing signals to control the other units.

Memory Unit:

- This is where the computer stores data.
- After the data has been processed by the CPU, the Control Unit will guide the storage of this processed data back into memory units, such as RAM, or if the data needs to be stored long term, into secondary storage like a hard-drive or SSD.

(12) Ans – D

(13) Ans – A

The full form of UPS is **Uninterrupted Power Supply.**
An uninterruptible power supply or uninterruptible power source (UPS) is an electrical apparatus that provides emergency power to a load when the input power source or mains power fails.

(14) Ans – A

- **Dots per inch-**
  - It is a measure of spatial printing, video or image scanner **dot density,**
  - It is used to **describe the resolution number** of dots per inch in a digital printer.

(15) Ans – A

A **software interrupt is a type of interrupt** generated by a program or software running on the microprocessor system.
It is used to request a service from the operating system or to perform a specific task.

(16) Ans – D

The **fundamental idea behind how a mouse functions is based on electro-mechanical** principles.

(17) Ans – C

Hard Disks:

- Also known as a **Hard Disk Drive (HDD)**, a hard disk uses magnetism to store data on a rotating platter.
- A read/write head floats above the spinning platter reading and writing data.

- **Tapes:**
  - Also known as **Magnetic Tape**, this is a medium for magnetic recording, made of a thin, magnetizable coating on a long, narrow strip of plastic film.

(18) Ans – C

An operating system (OS) is a software that manages computer hardware and software resources and provides common services for computer programs.

(19) Ans – B

Symbian was a mobile operating system (OS) and computing platform designed for smartphones.
Symbian was initially developed by Symbian Ltd.

(20) Ans – A

In a binary system, each bit represents a power of 2, starting from 2^0. When we have multiple bits, they combine to represent various numbers.

Now, with 4 bits, we can represent 16 different values since $2^4 = 16$. They are: **0000, 0001, 0010, 0011, 0100, 0101, 0110, 0111, 1000, 1001, 1010, 1011, 1100, 1101, 1110, 1111.**

(21) ANS – B

- **Dynamic RAM** is a type of random-access memory that stores each bit of data in a separate capacitor within an integrated circuit.
- Unlike **static RAM (SRAM)**, which uses flip-flops to store bits, DRAM needs to be refreshed periodically to maintain the stored information. This is because the capacitors leak charge over time, and refreshing involves rewriting the data to prevent loss.

(22) ANS – A

Cache Memory is a **high-speed memory** that acts as a **buffer between RAM and the CPU.**
It holds the **data of the main memory** that is used by the CPU frequently. The size of cache memory is **smaller as compared to main memory.**

(23) ANS – D

An input device converts incoming data and instructions into a pattern of electrical signals in binary code that are comprehensible to a digital computer.

An output device reverses the process, translating the digitized signals into a form intelligible to the user.

(24) ANS- C

The Internet of Things or IoT is a collective network of connected devices that facilitates communication among devices and between devices and the cloud. Hence Option 3 is correct.

(25) ANS- B

(26) ANS- A

An **operating system is system software that manages computer hardware, software resources, and provides common services** for computer programs. Operating systems are found on many devices such as a **computer**, **mobile phones**, **video games** etc.

(27) ANS- C

- When the CPU and memory of the computer system are surrounded by the I/O device it behaves as a peripheral device. [**Assertion is true]**
- In this case, the input device enters the data from the outside world into primary storage, and the output device supply results of processing from primary storage to users. **[Reason is false]**

(28) ANS – C

(29) ANS- B

Cache memory is the smallest and fastest memory available in the computer system. Data of main memory that are used frequently is stored in the cache for easy accessibility.

(30) ANS – B

When the system's power is switched off or interrupted, the contents in volatile memory are deleted. **RAM is an example of volatile memory** (random access memory). When you work on a document, it is saved in **RAM.**

(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 – D

DNS uses TCP for zone exchanges between servers and UDP when a client is trying to resolve a hostname to an IP address.

(35) ANS- A

(36) ANS – C

TOS is a field in IPv4 datagram. . It is a type of service that identifies the type of packets.

(37) ANS- B

It Is used to convey information between two entities.
Channel has certain capacity for transmitting information is measured by its bandwidth in hertz.

(38) ANS – B

(39) ANS – B

(40) ANS – D

Multicast address are those addresses by using these we can send information to a group of computers

The Multicast Mac address range is **01-00-5E-00-00-00 to 01-00-5E-7F-FF-FF**.

Explanation:

Since 01:00:5E:FF:FF:FF **does not fall in the range of multicast addresses which is given above**.

(41) ANS – A

It performs the same functions as that of transport layer present in OSI model. Here are the key points regarding transport layer:

1. It uses TCP and UDP protocol for end to end transmission.
2. TCP is reliable and connection oriented protocol.
3. TCP also handles flow control.
4. The UDP is not reliable and a connection less protocol also does not perform flow control.
5. Protocols utilized in this layer: TCP/IP and UDP protocols are deployed in this layer.

(42) ANS- A

Transport, Session, Presentation, Application are Host to Host layers. And top four layers of the OSI model are Host to Host layers. Below three layers are point to point layers (Network, Datalink, physical layer).

(43) ANS – D

Link-state protocols such as **IS-IS and OSPF** rely on each router to **advertise the state** of each **link** to every router within the local network.

Hence, the correct answer is "option 4".

(44) ANS – D

(45) ANS – C

Electronic mails and File encryption both uses pretty good privacy algorithm.

(46) ANS – A

(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 – D

Classful Addressing :

	First byte	Second byte	Third byte	Fourth byte
Class A	0	-	-	-
Class B	10	-	-	-
Class C	110	-	-	-
Class D	1110	-	-	-
Class E	1111	-	-	-

(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 – A

Data: This field carries data encapsulated from the upper-layer protocols. It is a minimum of 46 and a maximum of 1500 bytes

(51) ANS – B

- **Some popular Operating Systems include Linux Operating System, Windows Operating System, VMS, OS/400, AIX, z/OS, etc.**

Where as C++ is a general-purpose programming language and is widely used now a days for competitive programming. It has imperative, object-oriented, and generic programming features.

(52) ANS – D

A **real-time operating system** is an operating system (OS) intended to serve real-time applications that process data as it comes in, without delay.

(53) ANS – A

UBUNTU is an example of an **operating system.**
The **operating system** is a collection of programs that controls the overall operations of the computer.

(54) ANS – D
(55) ANS – A
(56) ANS – C
(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 – C

(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 – B

Process state:- As a process executes, it changes state. The state of a process is defined in part by the current activity of that process. Each process may be in one of the following states:-

- **New:-** The process is being created.
- **Running:-** Instructions are being executed.
- **Ready:-** The process is waiting to be assigned to a processor.
- **Terminated**:- The process has finished execution.

(61) ANS – B

(62) ANS – A

(63) ANS – B

The jobs have fixed deadlines in the case of **real Time Operating systems.**

A **real-time operating system (RTOS)** is a type of operating system designed to run real-time applications that process data as it comes in, with little or no buffering.

(64) ANS – A

It has an operating speed far slower than that of the primary storage is true for auxiliary storage.

(65) ANS – B

(66) ANS – A

Hit Ratio:- A cache hit ratio is calculated by dividing the number of cache hits by the total number of cache hits and misses, and it measures how effective a cache is at fulfilling requests for content.

(67) ANS – A

The operating system contains and manages all the programs and applications that a computer or other device is able to run.

(68) ANS – A

Booting is a **startup sequence** that starts the **operating system** of a **computer** when it is turned on. A boot sequence is the **initial set of operations** that the computer performs when it is switched on. Every computer has a boot sequence.

(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 – C

The average time required to reach a storage location in memory and obtain its contents is called the **access time.**

(71) ANS – A

A web browser is a software application for retrieving, presenting and traversing information resources on the World Wide Web. The major web browsers are Firefox, Google Chrome, Internet Explorer/Microsoft Edge,Opera, and Safari

(72) ANS – B

(73) ANS – B

(74) ANS – C

Following describe the <hr> tag attribute:

- ALIGN specifies the alignment of the horizontal rule.
- NOSHADE removes the usual shading effect that most browsers display.
- SIZE specifies the height of the horizontal rule.
- WIDTH specifies the width of the horizontal rule.
- COLOR specify the color of the horizontal line. It can be specified using a color name, a hexadecimal value, or an RGB value.

Hence, the COLOUR is not an attribute of the <HR> element.

(75) ANS – B

(76) ANS – A

A shopping cart is a piece of e-commerce software on a web server that allows visitors to an Internet site to select items for eventual purchase.

Upon checkout, the software typically calculates a total for the order, including shipping and handling charges and the associated taxes, as applicable.

The shopping cart also bridges the gap between shopping and buying.

(77) ANS –B

Types of E-commerce	Example
B2B(Business-to-Business)	Car Manufacturer ordering tyres from supplier
B2C(Business-to-Consumer)	**Ordering books online on Amazon, Flipkart etc.**
C2B(Consumer-to-Business)	customer reviews, participation in focus groups, or sharing as an influencer
C2C(Consumer-to-Consumer)	Actioning second-hand product online or offline

(78) ANS – C

Tim Berners-Lee invented the World Wide Web in 1989
The World Wide Web (WWW) is an information space where documents and other web resources are identified by URLs (example: https://www.testbook.com/)

(79) ANS – D

(80) ANS – B
(81) ANS – A
(82) ANS- C
(83) ANS – D

Data-Link Layer:- Bridges operate at the Data-Link layer of the OSI Model. They can distinguish between local and remote data, so data traveling from one workstation to another in the same segment doesn't have to cross the bridge.

(84) ANS – C

HTML (Hypertext Markup Language) is the code that is used to structure a web page and its content. For example, content could be structured within a set of paragraphs, a list of bulleted points, or using images and data tables

(85) ANS – A

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