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Solved MCQs with Explanations

CLASS 9 • COMPUTER SCIENCE & ENTREPRENEURSHIP

Chapter 06

Introduction to Computer Networks

**Every answer highlighted & ticked, with a clear
explanation**

88

Solved MCQs

12

Topic Sections

100%

Explained

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01

SECTION 1 • 7 MCQs

Section 6.1: Network as a System & Objectives

Q1

Which of the following best defines a computer network?

- A** A single computer processing data at high speeds.
- B** A system of linked devices and computers that exchange data and operate together. ✓
- C** A software program used to browse the internet.
- D** A type of hardware used only for printing documents.

✓ **Correct Answer: B****EXPLANATION**

A computer network is fundamentally a collection of interconnected devices (nodes) that communicate and share resources. It is not just one computer, but a system of them working in harmony.

Q2 In a network diagram, what are the physical or wireless connections between nodes called?

A Switches

B Routers

C Links



D Protocols

✓ Correct Answer: C

EXPLANATION

Nodes are the devices (like computers or phones), while links are the transmission media (like Ethernet cables or Wi-Fi signals) that physically or wirelessly connect those nodes together.

Q3 Which device connects multiple nodes within a single network and forwards data using MAC addresses?

A Router

B Switch



C Modem

D Firewall

✓ Correct Answer: B

EXPLANATION

A switch operates at the Data Link layer and uses MAC addresses to intelligently forward data only to the intended device within a Local Area Network (LAN), unlike a hub which broadcasts to everyone.

Q4 What is the primary function of a router in a network?

A To connect devices within the same room.

B To connect different networks and direct data packets between them. ✓

C To convert digital signals to analog.

D To store files for the entire network.

✓ Correct Answer: B

EXPLANATION

Routers act as traffic directors between different networks (like your home network and the internet). They determine the best path for data packets to reach their destination across interconnected networks.

Q5 Which of the following is NOT a primary objective of a computer network?

A Resource Sharing

B Data Communication

C Connectivity and Collaboration

D Increasing the physical weight of the computer ✓

✓ Correct Answer: D

EXPLANATION

The main objectives are resource sharing (like printers), data communication (email, video), and connectivity/collaboration (cloud docs). Increasing physical weight is not a goal of networking.

Q6 Sharing a single printer among multiple computers in an office is an example of:

A Data Communication

B Resource Sharing



C Connectivity

D Cloud Computing

✓ Correct Answer: B

EXPLANATION

Resource sharing allows hardware (like printers) and software to be used by multiple users, reducing costs and improving efficiency, as stated in the chapter.

Q7 Which of the following is the largest network connecting all networks worldwide?

A WAN

B MAN

C The Internet



D LAN

✓ Correct Answer: C

EXPLANATION

The chapter explicitly states that the Internet is the largest network, connecting all the networks worldwide.

SECTION 2 • 3 MCQs

02 Section 6.2: Fundamental Concepts in Data Communication

Q8 What are the five basic components of data communication?

A Sender, Receiver, Message, Protocol, Medium



B Switch, Router, Hub, Cable, Computer

C Input, Output, Process, Storage, Memory

D Email, Video, Audio, Text, Image

✓ Correct Answer: A

EXPLANATION

Data communication requires a sender (source), receiver (destination), message (data), protocol (rules), and medium (path). All five must be present for successful communication.

Q9 The physical or wireless path through which data travels is called the:

A Protocol

B Message

C Medium 

D Receiver

✓ Correct Answer: C

EXPLANATION

The medium is the channel (like an Ethernet cable or Wi-Fi radio waves) that carries the data from the sender to the receiver.

Q10 In data communication, what does the term "Protocol" refer to?

A The physical cable used.

B A set of rules governing data communication. 

C The device that receives the data.

D The speed of the internet connection.

✓ Correct Answer: B

EXPLANATION

Protocols are essentially the language and rules that devices agree upon to communicate effectively. Without them, data would be incomprehensible (like two people speaking different languages).

03

SECTION 3 • 7 MCQs

Section 6.3: Networking Devices

Q11

At which layer of the OSI model does a switch primarily operate?

- A Layer 1 (Physical)
- B Layer 2 (Data Link)**
- C Layer 3 (Network)
- D Layer 4 (Transport)

✓ Correct Answer: B**EXPLANATION**

The text specifies that a switch is used at the Data Link layer (Layer 2) and uses MAC addresses to forward data.

Q12 How does a switch differ from a hub?

- A** A switch broadcasts data to all devices, while a hub sends it to one.
- B** A switch sends data only to the destination device, while a hub broadcasts to all. ✓
- C** A switch is wireless, while a hub is wired.
- D** A switch connects different networks, while a hub connects the same network.

✓ Correct Answer: B

EXPLANATION

The chapter highlights that a switch learns MAC addresses and forwards data only to the correct port, making it more efficient than a hub, which blindly broadcasts to every connected device.

Q13 What does the acronym MAC stand for in networking?

- A** Media Access Control ✓
- B** Multiple Access Computer
- C** Main Application Channel
- D** Managed Access Code

✓ Correct Answer: A

EXPLANATION

MAC stands for Media Access Control. Every network interface card (NIC) has a unique MAC address used for physical addressing on a LAN.

Q14 What is the main job of a router when handling data packets?

A To find the best path for each data packet to deliver it to its destination. ✓

B To amplify the signal to extend Wi-Fi range.

C To convert analog signals to digital.

D To assign MAC addresses to devices.

✓ Correct Answer: A

EXPLANATION

Routers use routing tables to determine the most efficient path for data packets across different networks, ensuring they reach their final destination.

Q15 Which statement about a home router is true based on the text?

A It only acts as a modem.

B It often combines a switch, a wireless access point, and a router. ✓

C It cannot connect wired devices.

D It is only used for enterprise environments.

✓ Correct Answer: B

EXPLANATION

The text explains that your home router often includes a switch and a wireless access point, allowing multiple wired and wireless devices to connect simultaneously.

Q16 What is the primary function of a Wireless Access Point (AP)?

A To route traffic between different networks.

B To connect wireless devices to a wired network. ✓

C To assign IP addresses to devices.

D To encrypt all network traffic.

✓ Correct Answer: B

EXPLANATION

An Access Point acts as a bridge. It receives data from the wired network and transmits it wirelessly to devices, and vice versa.

Q17 How do Access Points transmit data to wireless devices?

A Through fiber optic cables.

B Using radio waves. ✓

C Using infrared light.

D Through Bluetooth only.

✓ Correct Answer: B

EXPLANATION

The text states that Access Points use radio waves to transmit data, similar to how a radio station broadcasts music.

04

SECTION 4 • 6 MCQs

Section 6.4: Network Topologies

Q18

Which network topology connects all devices to a single central communication line?

A Star

B Ring

C Bus



D Mesh

✓ Correct Answer: C

EXPLANATION

In a Bus topology, all devices share a single backbone cable. It is easy to set up but has a major disadvantage: if the main cable fails, the entire network goes down.

Q19 In a Star topology, what happens if the central switch or hub fails?

- ☐ A Only one computer loses connection.
- ☒ B **The entire network goes down.**
- ☐ C Data reroutes automatically through other nodes.
- ☐ D The network speed increases.

✓ Correct Answer: B

EXPLANATION

The central hub/switch is the single point of failure in a Star topology. If it fails, all communication between nodes stops because all data must pass through it.

Q20 Which topology connects each device to two other devices, forming a circular data path?

- ☐ A Bus
- ☐ B Star
- ☒ C **Ring**
- ☐ D Mesh

✓ Correct Answer: C

EXPLANATION

In a Ring topology, data travels in one direction around the circle, passing through each device until it reaches the destination.

Q21 In a Mesh topology, how are devices connected?

A In a single line.

B Through a central hub.

C Every device is connected to every other device. ✓

D In a circular loop.

✓ Correct Answer: C

EXPLANATION

A Mesh topology provides high redundancy and reliability because every device has multiple paths to reach any other device. If one link fails, data can be rerouted.

Q22 Which network topology is considered the most reliable due to multiple alternative routes for data?

A Bus

B Star

C Ring

D Mesh ✓

✓ Correct Answer: D

EXPLANATION

Because every node is interconnected in a Mesh topology, there is no single point of failure. Data can take many different paths to reach its destination, making it highly reliable.

Q23**What is a major disadvantage of a Bus topology?**

- A** It requires a lot of cables.
- B** If the main cable fails, the whole network goes down. ✓
- C** It is very difficult to set up.
- D** It cannot handle small networks.

✓ Correct Answer: B**EXPLANATION**

The text explicitly notes that while easy to set up, a Bus topology's reliance on a single backbone cable means a failure there brings down the entire network.

05

SECTION 5 • 5 MCQs

Section 6.5: Transmission Modes

Q24

Which transmission mode allows data to flow in only one direction?

A Half-Duplex

B Full-Duplex

C Simplex



D Multiplex

✓ Correct Answer: C

EXPLANATION

Simplex communication is unidirectional. A keyboard sending data to a computer is a classic example; the computer never sends data back to the keyboard.

Q25 A walkie-talkie is an example of which transmission mode?

A Simplex

B Half-Duplex



C Full-Duplex

D Broadband

✓ Correct Answer: B

EXPLANATION

In Half-Duplex, both parties can talk, but not at the same time. You must press a button to speak and release it to listen, meaning transmission happens in both directions but not simultaneously.

Q26 Which transmission mode allows simultaneous two-way communication?

A Simplex

B Half-Duplex

C Full-Duplex



D Unicast

✓ Correct Answer: C

EXPLANATION

Full-Duplex allows both devices to transmit and receive data at the exact same time. A telephone conversation is a perfect example.

Q27

Which of the following is an example of Simplex communication?

A Telephone conversation

B Walkie-talkie

C Keyboard to computer



D Video call

✓ Correct Answer: C

EXPLANATION

The keyboard only sends data to the computer; it does not receive data back from the computer. This one-way flow is Simplex.

Q28

Modern mobile phones use which transmission mode for voice calls?

A Simplex

B Half-Duplex

C Full-Duplex



D None of the above

✓ Correct Answer: C

EXPLANATION

Modern phones allow both people to talk and listen simultaneously, which is Full-Duplex. The text notes that early telephones were Half-Duplex, but modern ones are Full-Duplex.

06

SECTION 6 • 8 MCQs

Section 6.6: The OSI Networking Model

Q29

How many layers are in the OSI networking model?

A 4

B 5

C 6

D 7



✓ Correct Answer: D

EXPLANATION

The Open Systems Interconnection (OSI) model is a conceptual framework with 7 distinct layers, each performing a specific function in network communication.

Q30 Which OSI layer is responsible for the actual physical connection between devices and transmitting raw bits?

A Layer 1 (Physical) 

B Layer 2 (Data Link)

C Layer 3 (Network)

D Layer 4 (Transport)

✓ Correct Answer: A

EXPLANATION

The Physical Layer (Layer 1) deals with hardware, cables, voltage levels, and the transmission of unprocessed data bits over a physical medium.

Q31 Error detection and correction, as well as node-to-node data transport, happen at which layer?

A Physical

B Data Link 

C Network

D Transport

✓ Correct Answer: B

EXPLANATION

Layer 2 (Data Link) is responsible for error-free transmission from one node to another. The text compares it to traffic lights managing the flow of cars (data).

Q32 Which layer determines the best path for data to travel from the source to the destination?

- A** Transport
- B** Session
- C** Network 
- D** Application

✓ Correct Answer: C

EXPLANATION

Layer 3 (Network) handles routing. It uses IP addresses to determine the best path, much like a GPS system finds the best route for a trip.

Q33 The Transport Layer ensures reliable data transfer using which protocol?

- A** HTTP
- B** TCP 
- C** IP
- D** FTP

✓ Correct Answer: B

EXPLANATION

The Transport Layer (Layer 4) manages flow control and error checking. It uses protocols like TCP (Transmission Control Protocol) to ensure data arrives safely and on time.

Q34 Which OSI layer establishes, maintains, and terminates connections between devices?

A Session



B Presentation

C Application

D Network

✓ Correct Answer: A

EXPLANATION

Layer 5 (Session) manages the dialogue between two devices. It sets up the call, keeps it connected, and ends it when you hang up.

Q35 Data encryption and compression are handled by which OSI layer?

A Application

B Presentation



C Session

D Data Link

✓ Correct Answer: B

EXPLANATION

Layer 6 (Presentation) translates, formats, encrypts, and compresses data to ensure it is readable by the receiving system.

Q36 Which layer is closest to the end user and provides network services directly to applications?

A Application 

B Presentation

C Transport

D Network

✓ Correct Answer: A

EXPLANATION

Layer 7 (Application) is where users interact with the network (e.g., web browsers, email clients). The text compares it to a waiter taking your order in a restaurant.

07 SECTION 7 • 5 MCQs Section 6.7: IPv4 and IPv6

Q37 How many bits are used in an IPv4 address?

A 16 bits

B 32 bits 

C 64 bits

D 128 bits

✓ Correct Answer: B

EXPLANATION

IPv4 uses a 32-bit address scheme, allowing for approximately 4.3 billion unique addresses (2^{32}).

Q38 What is the format of an IPv4 address?

- ☐ A Six sets of hexadecimal numbers.
- ☒ B Four sets of decimal numbers ranging from 0 to 255. ✓
- ☐ C Eight sets of binary numbers.
- ☐ D A single long string of letters.

✓ Correct Answer: B

EXPLANATION

IPv4 addresses are written as four decimal numbers separated by dots (e.g., 192.168.1.1), where each number ranges from 0 to 255.

Q39 Why was IPv6 developed?

- ☐ A To make addresses shorter.
- ☒ B To address the depletion of IPv4 addresses. ✓
- ☐ C To slow down internet speeds.
- ☐ D To replace MAC addresses.

✓ Correct Answer: B

EXPLANATION

The rapid growth of the internet exhausted the available IPv4 addresses. IPv6 was developed with a 128-bit scheme to provide an almost limitless number of unique addresses.

Q40 How many bits are in an IPv6 address?

A 32 bits

B 64 bits

C 128 bits



D 256 bits

✓ Correct Answer: C

EXPLANATION

IPv6 uses a 128-bit address scheme. This massive increase allows for a virtually unlimited number of devices to connect to the internet.

Q41 Which of the following is an example of an IPv6 address?

A 192.168.1.1

B 2001:0DB8:0000:0000:0000:0000:1428:57ab



C 00:1A:2B:3C:4D:5E

D 255.255.255.0

✓ Correct Answer: B

EXPLANATION

IPv6 addresses are written in hexadecimal and separated by colons. Option A is IPv4, Option C is a MAC address, and Option D is a subnet mask.

08

SECTION 8 • 4 MCQs

Section 6.8: Protocols and Network Services

Q42

What is the primary function of the Domain Name System (DNS)?

- A To assign IP addresses automatically.
- B To translate domain names into IP addresses.**
- C To encrypt web traffic.
- D To route data packets between networks.

✓ Correct Answer: B

EXPLANATION

DNS acts as the phonebook of the internet. It translates human-readable domain names (like `www.example.com`) into computer-readable IP addresses.

Q43 Which protocol automatically assigns IP addresses to devices on a network?

- A** DNS
- B** DHCP
- C** FTP
- D** SMTP

✓ Correct Answer: B

EXPLANATION

DHCP (Dynamic Host Configuration Protocol) simplifies network management by automatically assigning IP addresses to devices when they connect to a network.

Q44 Which of the following is a set of rules that governs data communication?

- A** Hardware
- B** Protocol
- C** Topology
- D** Medium

✓ Correct Answer: B

EXPLANATION

Protocols are the agreed-upon rules and standards that allow different devices and software to communicate effectively over a network.

Q45 HTTP is used for transferring:

A Emails

B Files

C Web pages



D Video calls

✓ Correct Answer: C

EXPLANATION

HyperText Transfer Protocol (HTTP) is the foundation of data communication for the World Wide Web, used to transfer web pages.

09 SECTION 9 • 7 MCQs Section 6.9: Network Security

Q46 What is the primary purpose of a firewall?

A To speed up the internet connection.

B To monitor and control incoming and outgoing network traffic.



C To assign IP addresses.

D To translate domain names.

✓ Correct Answer: B

EXPLANATION

Firewalls act as a barrier or security checkpoint between trusted internal networks and untrusted external networks (like the internet), blocking unauthorized access.

Q47 The process of converting plaintext into ciphertext is called:

- A** Decryption
- B** Encryption ✓
- C** Translation
- D** Compression

✓ Correct Answer: B

EXPLANATION

Encryption transforms readable data (plaintext) into an unreadable format (ciphertext) to protect it from unauthorized access.

Q48 Which of the following is NOT a common threat to network security?

- A** Malware
- B** Phishing
- C** DoS Attacks
- D** Encryption ✓

✓ Correct Answer: D

EXPLANATION

Malware, Phishing, and DoS (Denial of Service) are malicious threats. Encryption is a security measure used to protect against threats.

Q49 What does a Denial of Service (DoS) attack do?

- A** Steals passwords.
- B** Encrypts all files for ransom.
- C** Overwhelms a network with traffic to make it unavailable. ✓
- D** Intercepts communication between two parties.

✓ Correct Answer: C

EXPLANATION

A DoS attack floods a network or server with so much traffic that it cannot respond to legitimate requests, effectively shutting it down.

Q50 A Man-in-the-Middle attack involves:

- A** Intercepting communication between two parties to steal or alter information. ✓
- B** Sending deceptive emails to trick users.
- C** Installing malicious software on a computer.
- D** Overloading a network with traffic.

✓ Correct Answer: A

EXPLANATION

In a Man-in-the-Middle attack, the attacker secretly relays and possibly alters the communication between two parties who believe they are directly communicating with each other.

Q51 What is the purpose of authentication in network security?

A To ensure only authorized users can access network resources. ✓

B To speed up data transmission.

C To compress files.

D To assign IP addresses.

✓ Correct Answer: A

EXPLANATION

Authentication (like using passwords) verifies the identity of a user or device, ensuring that only authorized individuals can access the network and its resources.

Q52 Which security method involves transforming data into a secure format using a mathematical algorithm?

A Firewall

B Encryption ✓

C Antivirus

D Authentication

✓ Correct Answer: B

EXPLANATION

Encryption uses algorithms (like a shift cipher) to scramble data so that only someone with the correct decryption key can read it.

10

SECTION 10 • 8 MCQs

Section 6.10: Types of Networks

Q53

What does PAN stand for?

A Personal Area Network

B Public Access Network

C Private Area Network

D Protocol Area Network

✓ Correct Answer: A

EXPLANATION

PAN stands for Personal Area Network, which is a small network used for communication between personal devices within a short range (e.g., Bluetooth).

Q54

What is the typical range of a PAN?

A A few meters

B Up to 50 kilometers

C Across a city

D Worldwide

✓ Correct Answer: A

EXPLANATION

A PAN is designed for personal device communication and typically covers a very short range, usually just a few meters (like a smartphone connected to a wireless headset).

Q55 Which type of network connects computers within a limited area like a home, school, or office?

A WAN

B MAN

C LAN



D PAN

✓ Correct Answer: C

EXPLANATION

A Local Area Network (LAN) is used for a single location, such as a home, school lab, or office building.

Q56 What does MAN stand for in networking?

A Metropolitan Area Network



B Main Area Network

C Managed Access Network

D Multiple Access Network

✓ Correct Answer: A

EXPLANATION

MAN stands for Metropolitan Area Network, which spans a city or a large campus, connecting multiple LANs together.

Q57 What is the maximum area a MAN can cover?

- A** A few meters
- B** Up to 50 kilometers
- C** Up to 100 meters
- D** Worldwide

✓ Correct Answer: B

EXPLANATION

The text specifies that a MAN can cover an area of up to 50 kilometers, making it ideal for city-wide connectivity.

Q58 Which network type covers a large geographical area, connecting multiple LANs and MANs?

- A** PAN
- B** LAN
- C** WAN
- D** CAN

✓ Correct Answer: C

EXPLANATION

A Wide Area Network (WAN) covers a broad area (like countries or continents). The Internet is the largest example of a WAN.

Q59 What does CAN stand for?

A Campus Area Network



B City Area Network

C Computer Access Network

D Central Area Network

✓ Correct Answer: A

EXPLANATION

CAN stands for Campus Area Network. It connects multiple LANs within a limited geographical area, like a university campus or a business park.

Q60 Which network type is the largest example of a WAN?

A LAN

B MAN

C The Internet



D PAN

✓ Correct Answer: C

EXPLANATION

The Internet is a global network of networks, making it the ultimate and largest example of a WAN.

SECTION 11 • 5 MCQs

11 Section 6.11 & 6.12: Real-World Applications & Standard Protocols

Q61 In a business environment, what is an intranet used for?

A To share information and resources securely within the organization. 

B To connect to the public internet only.

C To allow hackers to access data.

D To replace all hardware.

✓ Correct Answer: A

EXPLANATION

An intranet is a private network accessible only to an organization's staff, used for secure internal communication and resource sharing.

Q62 Which of the following is an example of a Learning Management System (LMS)?

- A** Google Drive
- B** Blackboard or Moodle
- C** Microsoft Word
- D** Adobe Photoshop

✓ Correct Answer: B

EXPLANATION

The text mentions that educational institutions use LMS like Blackboard and Moodle to deliver course content and assessments.

Q63 What is the primary function of the Transmission Control Protocol (TCP)?

- A** To provide faster, but less reliable, data transfer.
- B** To ensure reliable data transfer.
- C** To translate domain names.
- D** To assign IP addresses.

✓ Correct Answer: B

EXPLANATION

TCP is a core protocol of the Internet Protocol Suite. It ensures reliable data transfer by managing packet sequencing and error checking.

Q64 Which protocol provides faster, but less reliable, data transfer?

A TCP

B UDP



C HTTP

D FTP

✓ Correct Answer: B

EXPLANATION

User Datagram Protocol (UDP) is used when speed is more critical than reliability (e.g., live video streaming). It does not guarantee delivery or order of packets.

Q65 TCP/IP stands for:

A Transmission Control Protocol / Internet Protocol



B Transfer Control Program / Internal Protocol

C Total Control Protocol / Internet Process

D Transmission Company Protocol / Internet Provider

✓ Correct Answer: A

EXPLANATION

TCP/IP is the foundational suite of protocols for internet communication, combining TCP (reliable delivery) and IP (addressing and routing).

SECTION 12 • 23 MCQs

12 Section 6.13: Network Security Methods & General Review

Q66 Which of the following is a combination that provides robust network security?

A Firewalls, encryption, and antivirus software



B Hubs, switches, and routers

C TCP, UDP, and IP

D LAN, WAN, and MAN

✓ Correct Answer: A

EXPLANATION

The text states that a combination of firewalls (traffic control), encryption (data protection), and antivirus software (malware detection) provides robust security.

Q67 What does antivirus software do?

- A** Encrypts data.
- B** Detects and removes malicious software. ✓
- C** Assigns IP addresses.
- D** Routes data packets.

✓ Correct Answer: B

EXPLANATION

Antivirus software scans a system for known malicious programs (viruses, worms, etc.) and removes or quarantines them.

Q68 Which OSI layer is responsible for translating data between the application layer and the network?

- A** Presentation ✓
- B** Session
- C** Transport
- D** Network

✓ Correct Answer: A

EXPLANATION

The Presentation Layer (Layer 6) formats and encrypts data to ensure it is readable by the receiving system, acting like a translator.

Q69 What is the function of a routing table in a router?

A To list the possible paths and help the router make efficient decisions. ✓

B To store MAC addresses.

C To encrypt data packets.

D To assign IP addresses to devices.

✓ Correct Answer: A

EXPLANATION

Routers use routing tables to keep track of known networks and determine the best path for forwarding data packets.

Q70 Which network topology is easiest to set up but has a single point of failure that can bring down the whole network?

A Mesh

B Star

C Bus ✓

D Ring

✓ Correct Answer: C

EXPLANATION

The Bus topology is easy and inexpensive to set up, but if the main backbone cable fails, the entire network ceases to function.

Q71 In a Star topology, what device acts as a data flow repeater?

A Router

B Hub



C Modem

D Firewall

✓ Correct Answer: B

EXPLANATION

In a Star topology, the central hub (or switch) acts as a repeater, receiving data from one node and forwarding it to the destination node.

Q72 What is the binary representation of an IPv4 address composed of?

A 4 sets of 8 bits



B 8 sets of 4 bits

C 16 sets of 2 bits

D 2 sets of 16 bits

✓ Correct Answer: A

EXPLANATION

An IPv4 address is 32 bits long, divided into four octets (sets of 8 bits), which are then represented as decimal numbers (0-255).

Q73 Which of the following is an example of a network protocol?

- A** Microsoft Word
- B** Google Chrome
- C** HTTP
- D** Windows 10

✓ Correct Answer: C

EXPLANATION

HTTP (HyperText Transfer Protocol) is a set of rules used for transferring web pages. The others are software applications or operating systems.

Q74 What happens during a DHCP transaction?

- A** A domain name is translated to an IP address.
- B** An IP address is automatically assigned to a device.
- C** Data is encrypted.
- D** A firewall blocks traffic.

✓ Correct Answer: B

EXPLANATION

DHCP (Dynamic Host Configuration Protocol) automatically provides an IP address, subnet mask, and default gateway to a device when it joins a network.

Q75 Which of the following is NOT a component of data communication?

- A** Sender
- B** Receiver
- C Router** ✓
- D** Medium

✓ Correct Answer: C

EXPLANATION

The five components are Sender, Receiver, Message, Protocol, and Medium. A Router is a networking device, not a fundamental component of the communication model itself.

Q76 Which layer of the OSI model is responsible for end-to-end delivery and flow control?

- A** Network
- B Transport** ✓
- C** Session
- D** Data Link

✓ Correct Answer: B

EXPLANATION

The Transport Layer (Layer 4) ensures that data is transferred from a process on the source system to a process on the destination system, managing flow control and error checking.

Q77 The World Wide Web (WWW) was invented by:

A Bill Gates

B Tim Berners-Lee



C Steve Jobs

D Vint Cerf

✓ Correct Answer: B

EXPLANATION

The text mentions that Tim Berners-Lee invented the World Wide Web in 1989, revolutionizing how we access and share information.

Q78 What is a MAC address used for?

A To identify a device uniquely on a local network.



B To route data across the internet.

C To translate domain names.

D To encrypt data.

✓ Correct Answer: A

EXPLANATION

A MAC (Media Access Control) address is a unique hardware identifier assigned to a network interface card, used by switches to forward data within a LAN.

Q79 Which of the following is a characteristic of Full-Duplex communication?

- A** Data travels in one direction only.
- B** Data travels in both directions, but not at the same time.
- C** Data travels in both directions simultaneously. ✓
- D** It is only used in walkie-talkies.

✓ Correct Answer: C

EXPLANATION

Full-Duplex allows simultaneous transmission and reception, making it highly efficient for modern communication systems like phone calls and video conferencing.

Q80 What is the primary purpose of network security?

- A** To make the network slower.
- B** To protect data and prevent unauthorized access. ✓
- C** To increase the number of IP addresses.
- D** To replace the need for protocols.

✓ Correct Answer: B

EXPLANATION

Network security involves measures (like firewalls, encryption, and passwords) to protect data integrity, confidentiality, and availability from unauthorized access and attacks.

Q81 In the context of the OSI model, what does "encapsulation" refer to?

A Adding headers and trailers to data as it moves down the layers. 

B Encrypting data at the Application layer.

C Sending data packets across the internet.

D Converting analog signals to digital.

✓ Correct Answer: A

EXPLANATION

As data moves down the OSI layers (from Application to Physical), each layer adds its own header (and sometimes trailer) information. This process is called encapsulation.

Q82 Which network type is used for communication between personal devices within a short range, like Bluetooth?

A LAN

B PAN 

C MAN

D WAN

✓ Correct Answer: B

EXPLANATION

A Personal Area Network (PAN) is specifically designed for short-range communication between personal devices, such as a smartphone and a wireless headset.

Q83 What is the binary equivalent of the decimal number 255 used in IPv4?

A 11111111



B 00000000

C 10101010

D 11001100

✓ Correct Answer: A

EXPLANATION

An 8-bit binary number can represent values from 0 to 255. 11111111 in binary equals 255 in decimal, which is the maximum value for an IPv4 octet.

Q84 Which of the following is a common application of computer networks in healthcare?

A Electronic Health Records (EHR)



B Online gaming

C Social media

D Stock trading

✓ Correct Answer: A

EXPLANATION

The text highlights that healthcare networks facilitate the sharing of patient information and telemedicine through Electronic Health Records (EHR) systems.

Q85 What is the role of the Network Layer in the OSI model?

A To provide physical connections.

B To route data packets between different networks. ✓

C To encrypt data.

D To manage sessions.

✓ Correct Answer: B

EXPLANATION

The Network Layer (Layer 3) is responsible for logical addressing (IP addresses) and routing, determining the best path for data to travel across interconnected networks.

Q86 Which of the following is a disadvantage of a Ring topology?

A It requires a central hub.

B If one connection fails, the whole network is affected. ✓

C It is very expensive to install.

D It cannot handle high traffic.

✓ Correct Answer: B

EXPLANATION

The text states that in a Ring topology, if one connection fails, the whole network is affected. A dual-ring setup can solve this to some extent, but the basic ring has this vulnerability.

Q87 Why is encryption important for network security?

- A** It makes data transfer faster.
- B** It ensures data can only be read by authorized parties with the decryption key. ✓
- C** It automatically assigns IP addresses.
- D** It blocks all incoming traffic.

✓ Correct Answer: B

EXPLANATION

Encryption protects sensitive information by scrambling it into ciphertext. Even if intercepted, the data is useless without the correct decryption key.

Q88 What is the function of the Session Layer in the OSI model?

- A** To establish, maintain, and terminate connections between devices. ✓
- B** To translate data formats.
- C** To route packets.
- D** To detect errors.

✓ Correct Answer: A

EXPLANATION

The Session Layer (Layer 5) manages the dialogue between two devices, setting up the connection, keeping it active, and tearing it down when finished.

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§ 6.1

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