1. What type of network covers a small geographical area, such as a home, office, or campus?
   a) Local Area Network (LAN)
   b) Metropolitan Area Network (MAN)
   c) Wide Area Network (WAN)
   d) Personal Area Network (PAN)

2. Which network covers a larger geographical area, such as a city or town, and connects multiple LANs?
   a) Local Area Network (LAN)
   b) Metropolitan Area Network (MAN)
   c) Wide Area Network (WAN)
   d) Personal Area Network (PAN)

3. What type of network spans across vast geographical distances, often connecting networks in different cities or countries?
   a) Local Area Network (LAN)
   b) Metropolitan Area Network (MAN)
   c) Wide Area Network (WAN)
   d) Personal Area Network (PAN)

4. Which network is used for communication between devices in close proximity to an individual, typically within a few meters?
   a) Local Area Network (LAN)
   b) Metropolitan Area Network (MAN)
   c) Wide Area Network (WAN)
   d) Personal Area Network (PAN)

5. Which network topology connects each device to a central hub or switch?
   a) Bus Topology
   b) Ring Topology
   c) Star Topology
   d) Mesh Topology

6. In which network topology, devices are connected in a closed loop, and data travels in a circular manner?
   a) Bus Topology

b) Ring Topology
c) Star Topology
d) Mesh Topology

7. Which network topology provides multiple redundant paths between devices, increasing fault tolerance and reliability?
a) Bus Topology
b) Ring Topology
c) Star Topology
d) Mesh Topology

8. Which type of network connection uses radio signals to provide wireless access to the internet and local network resources?
a) Dial-up Connection
b) DSL Connection
c) Fiber-optic Connection
d) Wi-Fi Connection

9. Identify the device used to boost up a weak signal.
A. Modem
B. Repeater
C. Switch
D. Router

10. What does MAC stand for?
A. Media Access Control
B. Mass Access Control
C. Media Access Carriage
D. None

11. Network of networks
A. Sub Network
B. Hierarchical Network
C. Internet
D. All the above

12. Mutiple LANs can be connected to form a single MAN (Metropolitan Area Network). State TRUE/FALSE.

A) TRUE

B) FALSE

C) None of the above

13. The types of transmission channel or media used for LAN or WAN are __.

A) Twisted Pair Cables

B) Coaxial Cables

C) Fiber-Optic Cables and Radio Waves

D) All the above

14. A simple WIFI modem forms a __ wireless network.

A) LAN

B) MAN

C) WAN

D) None

15. In a bus topology, what happens if the main communication line (bus) is damaged?

a) Only the affected devices lose connectivity.

b) The entire network is unaffected.

c) The entire network loses connectivity.

d) The central hub fails.

16. A combination of two or more different network topologies is known as:

a) Hybrid Topology

b) Star Topology

c) Mesh Topology

d) Bus Topology

17. Identify the device used at Physical Layer.
    A. Modem
    B. Hub
    C. Switch
    D. Router
18. IEEE 802.3 referred as
    A. Wired LAN
    B. Wireless LAN
    C. Ethernet
    D. Both A and C are correct
19. Wireless LAN standard _____
    A. IEEE 802.3
    B. IEEE 802.1
    C. IEEE 802.11
    D. IEEE 802.10.
20. Identify the device used at Network Layer.
    A. Repeater
    B. Hub
    C. Switch
    D. Router

_____ * _____

21. The OSI model is divided into how many layers?
a) 4 layers
b) 5 layers
c) 6 layers
d) 7 layers

22. Which layer of the OSI model is responsible for translating data into a format that the application layer can accept?
a) Data Link Layer
b) Physical Layer
c) Presentation Layer
d) Transport Layer

23. Which layer of the OSI model deals with logical addressing, routing, and forwarding of data packets?
a) Network Layer
b) Transport Layer
c) Session Layer
d) Data Link Layer

24.The Data Link Layer is divided into two sub-layers: _____ and _____.
a) Logical Link Control (LLC); Media Access Control (MAC)
b) Network Layer; Physical Layer
c) Presentation Layer; Transport Layer
d) Session Layer; Application Layer

25. Which layer of the OSI model is responsible for establishing, managing, and terminating sessions between applications?
a) Application Layer
b) Presentation Layer
c) Session Layer
d) Transport Layer

26. Error detection and correction is a function performed at which layer of the OSI model?
a) Data Link Layer
b) Physical Layer

c) Transport Layer
d) Application Layer

27.Which layer of the OSI model deals with encryption and decryption of data for secure communication?
a) Application Layer
b) Presentation Layer
c) Session Layer
d) Transport Layer

28.What is the primary function of the Transport Layer in the OSI model?
a) Physical addressing of devices
b) Packet forwarding and routing
c) Error detection and correction
d) End-to-end communication and data segmentation

29.Which layer of the OSI model is responsible for defining the electrical, mechanical, and procedural characteristics for transmitting data over a physical medium?
a) Data Link Layer
b) Physical Layer
c) Transport Layer
d) Network Layer

30.Which layer of the OSI model is closest to the end-users and interacts directly with software applications?
a) Application Layer
b) Transport Layer
c) Data Link Layer
d) Network Layer

31. OSI stands for
    a) open system interconnection
    b) operating system interface
    c) optical service implementation

d) none of the mentioned

32. Segmentation and reassembly is the responsibility of
    a. 7th Layer
    b. 6th Layer
    c. 5th Layer
    d. 4th layer

33. Which layer is responsible for process to process delivery in a general network model?
    a. network layer
    b. transport layer
    c. session layer
    d. data link layer

34.Which layer provides the services to users?
    a) application layer
    b) session layer
    c) presentation layer
    d) physical layer

35. Transmission data rate is decided by _____
    a) network layer
    b) physical layer
    c) data link layer
    d) transport layer

36. MAC address
    a) network layer
    b) physical layer
    c) data link layer
    d) transport layer

37. The data link layer takes the packets from _____ and encapsulates them into frames for transmission.

a) network layer

b) physical layer

c) transport layer

d) application layer

38.Which sublayer of the data link layer is responsible for addressing and identification of devices on a local network?

a) LLC (Logical Link Control)

b) MAC (Media Access Control)

c) HDLC (High-Level Data Link Control)

d) CRC (Cyclic Redundancy Check)

39. The data link layer is responsible for:

a) Formatting data into frames

b) Routing data packets

c) Providing end-to-end communication

d) Modulating and demodulating signals

40. In bit stuffing, what is the purpose of adding an extra 0 bit after every five consecutive 1 bits?

a) To indicate the end of the frame

b) To ensure byte alignment

c) To prevent long sequences of 1s, which may be mistaken as a frame delimiter

d) To provide error correction

41. Which framing technique inserts an extra character before and after the frame data, and if that character appears in the data, an escape character is used?

a) Bit stuffing

b) Byte stuffing

c) Character count

d) Frame delimiter

42.In character count framing, what information is included in the frame to specify the length of the data?

a) The number of characters in the frame

b) The ASCII value of the first character

c) The number of bits in the data

d) The binary representation of the data length

43.Which sublayer of the data link layer is responsible for error detection and correction?

a) LLC (Logical Link Control)

b) MAC (Media Access Control)

c) HDLC (High-Level Data Link Control)

d) CRC (Cyclic Redundancy Check)

44. Which error detection technique involves the use of a divisor polynomial to generate a checksum?

a) Parity Check

b) Hamming Code

c) Checksum

d) CRC (Cyclic Redundancy Check)

45. In CRC, what is the purpose of the sender appending a CRC value to the data before transmission?**

a) To encrypt the data

b) To provide error correction

c) To provide error detection

d) To compress the data

46 : Which error correction technique allows the receiver to correct single-bit errors

a) Parity Bit

b) Hamming Code

c) Checksum

d) CRC (Cyclic Redundancy Check)

47. In which error detection method does the sender add an extra bit to the data so that the total number of ones in the data including the extra bit is even (even parity) or odd (odd parity)?

a) Parity Check

b) Hamming Code

c) Checksum

d) LRC (Longitudinal Redundancy Check)

48: Which error control technique allows the sender to continue sending multiple frames without waiting for individual acknowledgments?**

a) Stop-and-Wait

b) Go-Back-N

c) Selective Repeat

d) Sliding Window

49.Which error control mechanism retransmits only the frames that have been damaged or lost, rather than retransmitting all subsequent frames?**

a) Stop-and-Wait

b) Go-Back-N

c) Selective Repeat

d) Sliding Window

50 Which error control technique uses sequence numbers to keep track of sent and received frames to ensure their correct order and to detect missing frames?**

a) Parity Check

b) Hamming Code

c) Checksum

d) Sliding Window

51.In the Go-Back-N ARQ protocol, what happens if a receiver detects an error in a received frame?

a) The receiver discards the frame without any response.

b) The receiver sends a negative acknowledgment (NAK).

c) The receiver sends a selective acknowledgment (SACK).

d) The receiver sends a positive acknowledgment (ACK).

52 What is the primary purpose of the Network Layer in the OSI model?

a) Physical addressing

b) Error detection

c) Data link management

d) Routing and forwarding

53 Which of the following protocols operates at the Network Layer?

a) HTTP

b) IP

c) TCP

d) ARP

54. Which routing algorithm calculates the shortest path based on the number of hops between nodes?

a) Link-State Routing

b) Distance Vector Routing

c) OSPF (Open Shortest Path First)

d) BGP (Border Gateway Protocol)

55.Which of the following is a function of the Network Layer?

a. Framing

b. Flow Control

c. Logical Addressing

d. Error Correction