Internet and Intranet (10 questions)

1. **What is the Internet?**
   The Internet is a global network of interconnected computers that enables communication and data sharing worldwide. It is open to the public.
2. **What is the Intranet?**
   An intranet is a private network used by an organization for internal communication. It is restricted to authorized users only.
3. **What is one main difference between the Internet and the Intranet?**
   The Internet is public and accessible to everyone, while the Intranet is private and limited to a specific organization.
4. **Name a use of the Internet.**
   The Internet is used for browsing websites, accessing online learning platforms, and communicating through social media.
5. **Name a use of the Intranet.**
   An intranet can be used to share internal company news or access confidential documents securely.
6. **What is a common application of the Internet?**
   Online banking, shopping, and streaming services like Netflix are common applications of the Internet.
7. **How does the Internet work?**
   The Internet uses protocols like TCP/IP to transfer data between devices over a global network.
8. **What is the role of an intranet in businesses?**
   An intranet helps businesses enhance collaboration, store files, and streamline communication among employees.
9. **What does WWW stand for, and how is it related to the Internet?**
   WWW stands for World Wide Web. It is a system of interlinked web pages accessed via the Internet.
10. **How does an intranet improve organizational efficiency?**
    An intranet centralizes information, reduces email overload, and facilitates quick access to internal resources.

IP Address and DNS (10 questions)

11. **What is an IP address?**
    An IP address is a unique number assigned to devices in a network for communication. It acts as an identifier.
12. **What are the two versions of IP addresses?**
    IPv4 uses 32 bits and provides about 4.3 billion addresses, while IPv6 uses 128 bits for an almost unlimited number of addresses.
13. **Why is IPv6 important?**
    IPv6 solves the issue of limited IP addresses in IPv4 and supports growing internet usage.
14. **What is DNS?**
    DNS (Domain Name System) converts human-readable domain names like www.google.com into numerical IP addresses.

15. **What happens if DNS fails?**
    If DNS fails, users cannot access websites using domain names and must use IP addresses directly.
16. **What is the role of a domain name?**
    A domain name is the readable address for a website, such as www.wikipedia.org, linked to its IP address.
17. **What does a DNS server do?**
    A DNS server maps domain names to IP addresses, enabling browsers to locate servers and load websites.
18. **What is the difference between static and dynamic IP addresses?**
    Static IP addresses remain fixed, while dynamic IP addresses change every time a device connects to a network.
19. **What is the role of a hostname in networking?**
    A hostname is the label assigned to a device on a network, making it easier to identify and communicate with.
20. **How does an IP address enable communication?**
    An IP address ensures data packets are sent to the correct device within a network or over the Internet.

Switch, Hub, Router, Gateway (10 questions)

21. **What is a switch in networking?**
    A switch connects multiple devices and forwards data only to the intended recipient, improving efficiency.
22. **What is a hub in networking?**
    A hub connects multiple devices in a network but broadcasts data to all devices, reducing efficiency.
23. **What is a router?**
    A router connects different networks and directs data packets between them, often connecting a LAN to the Internet.
24. **What is a gateway?**
    A gateway acts as a bridge between two different networks, facilitating communication between them.
25. **How is a switch different from a hub?**
    A switch sends data to the intended recipient, while a hub broadcasts data to all devices.
26. **What is the role of a router in the Internet?**
    Routers direct data packets between different networks and manage traffic between devices and the Internet.
27. **How does a gateway work in communication?**
    A gateway converts data from one protocol to another, allowing devices with different protocols to communicate.
28. **Why are switches preferred over hubs?**
    Switches are more efficient as they reduce network traffic by sending data only to specific devices.
29. **What is a core function of a hub?**
    A hub connects devices in a network and replicates incoming data to all connected devices.

30. **Name one use of a router in daily life.**
    Routers are commonly used to provide Wi-Fi connectivity at homes and offices.

Wired and Wireless Transmission Media (10 questions)

31. **What are the types of wired transmission media?**
    Common types are coaxial cables, twisted-pair cables, and fiber optic cables.
32. **What is coaxial cable used for?**
    Coaxial cables are used for cable television and high-speed internet connections.
33. **What is twisted-pair cable used for?**
    Twisted-pair cables are used for telephone lines and local area networks (LANs).
34. **What is fiber optic cable used for?**
    Fiber optic cables are used for high-speed data transmission over long distances, such as in ISPs.
35. **What is the main advantage of fiber optic cables?**
    Fiber optic cables offer faster data transmission and are resistant to electromagnetic interference.
36. **What are examples of wireless transmission media?**
    Wi-Fi, Bluetooth, and radio waves are common wireless transmission media.
37. **What is Wi-Fi?**
    Wi-Fi is a wireless technology that provides high-speed internet connections using radio waves.
38. **What is Bluetooth?**
    Bluetooth is a short-range wireless technology used to exchange data between devices, such as headphones and smartphones.
39. **What is broadband?**
    Broadband is a high-speed internet connection that provides continuous access to the Internet, often using DSL or fiber optics.
40. **What are the advantages of wireless media?**
    Wireless media provides mobility and eliminates the need for physical cables, making it more flexible.

Analog and Digital Signals (5 questions)

41. **What is an analog signal?**
    An analog signal is a continuous wave that varies in amplitude or frequency over time.
42. **What is a digital signal?**
    A digital signal consists of discrete values (0s and 1s), making it less prone to interference.
43. **What is the main difference between analog and digital signals?**
    Analog signals are continuous, while digital signals are discrete and binary in nature.
44. **Why are digital signals preferred?**
    Digital signals are preferred for their accuracy, reliability, and resistance to noise.

45. **Give one example of an analog signal and a digital signal.**
    An analog signal example is an audio wave, while a digital signal example is computer data.

Cloud Computing, Topologies, and ISP (25 questions)

Cloud Computing (5):
46. **What is cloud computing?**
Cloud computing delivers services like storage and software over the Internet.

47. **What is cloud storage?**
    Cloud storage lets users save files online and access them anywhere with an internet connection.
48. **Give one example of cloud computing.**
    Google Drive, which allows online file storage and sharing.
49. **What is the disadvantage of cloud storage?**
    It requires a stable internet connection and may pose privacy risks.
50. **How is cloud computing cost-effective?**
    It reduces the need for physical hardware by providing services online.

Topologies (10):

51. **What is a topology in networking?**
The layout of connected devices in a network.

52. **Name three types of topologies.**
    Bus, star, and ring topology.

Network Topologies (Continued)

53. **What is a bus topology?**
    A bus topology connects all devices along a single communication line. It is simple but prone to failure if the main cable breaks.
54. **What is a star topology?**
    A star topology connects all devices to a central hub or switch. It is reliable because a failure in one cable doesn’t affect the others.
55. **What is a ring topology?**
    A ring topology connects devices in a circular pattern where data travels in one direction.
56. **What is a mesh topology?**
    In a mesh topology, every device is connected to every other device, providing high redundancy.
57. **What is the advantage of a mesh topology?**
    It offers fault tolerance, as communication can take alternate paths if one connection fails.

58. **What is a hybrid topology?**
    A hybrid topology combines two or more basic topologies, like star and bus, to suit complex networks.
59. **Which topology is most commonly used in homes?**
    Star topology is the most commonly used due to its simplicity and reliability.
60. **What is a disadvantage of a bus topology?**
    If the main communication line fails, the entire network stops working.
61. **What is a topology suitable for large networks?**
    Mesh topology is suitable for large networks due to its reliability and fault tolerance.
62. **What is the primary use of a star topology?**
    It is used in LANs where a central device like a switch or hub controls communication.

ISPs and Broadband (5 questions)

63. **What is an ISP?**
    An Internet Service Provider (ISP) is a company that provides internet access to individuals and businesses.
64. **Name one popular ISP in your country.**
    Examples include AT&T in the USA or BSNL in India, providing wired and wireless internet services.
65. **What does broadband mean?**
    Broadband refers to high-speed internet access that is always available, often via DSL or fiber optics.
66. **What are common broadband technologies?**
    Broadband technologies include DSL, cable, fiber optics, and satellite connections.
67. **What is the role of an ISP in internet connectivity?**
    ISPs connect users to the Internet, manage IP addresses, and provide email and hosting services.

Wired Media (10 questions)

68. **What is a twisted-pair cable?**
    A twisted-pair cable consists of pairs of wires twisted together to reduce interference. It is commonly used in LANs.
69. **What are the two types of twisted-pair cables?**
    Shielded Twisted Pair (STP) and Unshielded Twisted Pair (UTP).
70. **What is a coaxial cable?**
    A coaxial cable consists of a central conductor surrounded by insulation and a shielding layer. It is used for TV and broadband.
71. **What is an advantage of coaxial cables?**
    They are less susceptible to electromagnetic interference and provide stable signal transmission.
72. **What is fiber optic cable?**
    A fiber optic cable uses light to transmit data, offering high speed and reliability over long distances.

73. **What are the two types of fiber optic cables?**
    Single-mode for long distances and multi-mode for shorter distances.
74. **Why is twisted-pair cable commonly used?**
    It is cost-effective, easy to install, and suitable for short-distance communication.
75. **What is the limitation of coaxial cables?**
    Coaxial cables are bulkier and harder to install compared to twisted-pair cables.
76. **What is the primary application of fiber optic cables?**
    Fiber optic cables are used for high-speed internet connections and backbone networks.
77. **What makes fiber optic cables superior to others?**
    They support faster speeds, are immune to electromagnetic interference, and can cover longer distances.

Wireless Technologies (10 questions)

78. **What is Wi-Fi?**
    Wi-Fi is a wireless networking technology that uses radio waves to provide internet access to devices.
79. **What is Bluetooth used for?**
    Bluetooth is used for short-range communication between devices, like pairing headphones and smartphones.
80. **What is the frequency range of Wi-Fi?**
    Wi-Fi typically operates in the 2.4 GHz and 5 GHz frequency bands.
81. **How is Bluetooth different from Wi-Fi?**
    Bluetooth is limited to short-range communication, while Wi-Fi covers longer ranges and higher speeds.
82. **What is a hotspot?**
    A hotspot is a physical location where users can access the Internet via Wi-Fi.
83. **What is the advantage of wireless technologies?**
    They allow mobility, easy installation, and flexibility without the need for cables.
84. **What is a limitation of Bluetooth?**
    Bluetooth has a short range of about 10 meters and slower data transfer rates compared to Wi-Fi.
85. **What is a common use of Wi-Fi in homes?**
    Wi-Fi is used to connect multiple devices like laptops, smartphones, and smart TVs to the Internet.
86. **What is the typical range of Wi-Fi?**
    Wi-Fi can cover ranges up to 100 meters in open spaces.
87. **What is NFC, and how is it different from Bluetooth?**
    Near Field Communication (NFC) is a wireless technology for very short distances, used in contactless payments.

LAN, WAN, MAN, CAN, PAN (10 questions)

88. **What is a LAN?**
    LAN (Local Area Network) connects devices within a limited area, such as a home or office.
89. **What is a WAN?**
    WAN (Wide Area Network) connects devices across large geographical areas, like the Internet.
90. **What is a MAN?**
    MAN (Metropolitan Area Network) connects multiple LANs within a city or town.
91. **What is a CAN?**
    CAN (Campus Area Network) is a network that spans multiple buildings within a campus.
92. **What is a PAN?**
    PAN (Personal Area Network) connects personal devices like smartphones and smartwatches.
93. **How is a LAN different from a WAN?**
    A LAN covers a small area, while a WAN spans large areas like countries or continents.
94. **What is the typical range of a PAN?**
    A PAN typically has a range of about 10 meters.
95. **What is a use of a CAN?**
    CANs are used in universities to connect multiple buildings and provide access to shared resources.
96. **Which network type is used for online banking?**
    WAN is used for online banking, as it connects users over large geographical distances.
97. **What is the main advantage of LANs?**
    LANs are cost-effective, offer high-speed data transfer, and are easy to set up within small areas.
98. **What is the difference between MAN and WAN?**
    MAN covers a city or metropolitan area, while WAN connects regions, countries, or even continents.
99. **What is the role of a LAN in schools?**
    LANs allow schools to connect all computers for file sharing, printing, and accessing educational resources.
100. **Why are WANs more complex than LANs?**
    WANs require advanced hardware like routers and gateways to connect distant networks.