

Section A

- 1) Compare the advantages of LANs and WANs.
- 2) Explain how packet switching works in ARPAnet.
- 3) What are the security risks of using cloud storage?
- 4) How does spread spectrum frequency hopping work in Bluetooth?
- 5) What is the role of a switch in a star topology?
- 6) Compare the client-server and peer-to-peer network models.
- 7) What are the main components of a WAN?
- 8) How does a wireless router connect devices to the internet?
- 9) What is the purpose of dynamic IP addresses in a LAN?
- 10) Explain how CSMA/CD detects and resolves collisions.
- 11) Describe the difference between a thick client and a thin client in a network.
- 12) How does Ethernet handle data collisions?
- 13) What is the function of an ISP?
- 14) Explain how a modem enables digital data transmission over analog lines.
- 15) How does signal reflection affect bus topology?
- 16) What are the key differences between a hub and a switch?
- 17) Explain the term "broadcast storm" in networking.
- 18) Describe the process of bit streaming for on-demand video services.
- 19) What is the purpose of a media access control (MAC) address in networking?
- 20) What are the benefits of using cloud computing for businesses?
- 21) Explain the differences between public cloud, private cloud, and hybrid cloud.
- 22) What are the advantages of using fibre optic cables over twisted pair cables?
- 23) How do satellite technologies help in WAN communication?
- 24) What is the difference between IPv4 and IPv6 addressing schemes?
- 25) How does a firewall protect a network?
- 26) What is a subnet and why is it used?
- 27) Explain how the domain name system (DNS) translates domain names into IP addresses.
- 28) Describe the limitations of using a bus topology.

- 29) What is the function of a router in routing data packets across networks?
- 30) How is data redundancy ensured in cloud storage?
- 31) What is the purpose of using a NIC in a computer network?
- 32) Describe the key features of mesh topology.
- 33) Explain the benefits and drawbacks of using a thick client over a thin client.
- 34) How does Wi-Fi differ from Bluetooth in terms of data transmission?
- 35) How is data privacy maintained in cloud computing?
- 36) What are some potential risks of data loss in cloud storage?
- 37) What is the importance of encryption in wireless networking?
- 38) How do public and private IP addresses differ in their usage?
- 39) Explain how routers determine the best path for data transmission.
- 40) What is the difference between bit rate and bandwidth in network communication?
- 41) Explain the importance of MAC addresses in identifying network devices.
- 42) What are the main functions of a wireless access point (WAP)?
- 43) What is signal interference, and how does it affect wireless communication?
- 44) How does buffering improve the quality of real-time streaming?
- 45) What is the main function of a network repeater?
- 46) How does a hybrid network differ from a traditional mesh network?
- 47) What are the key components of a wireless LAN?
- 48) What is the difference between an analog signal and a digital signal?
- 49) How does cloud computing impact the scalability of network systems?
- 50) What is the role of firewalls in protecting cloud-based systems?

Section B

- 1) Compare the pros and cons of circuit switching vs packet switching.
- 2) How does HTTP/2 improve upon the original HTTP protocol?
- 3) Explain how CSMA/CA differs from CSMA/CD in collision avoidance.
- 4) What is the role of metadata in file sharing?
- 5) Explain the concept of decomposition in protocol layers.
- 6) How does TCP/IP ensure reliability in data transmission?
- 7) Describe how packets can get lost in a packet-switched network.
- 8) Explain data encapsulation in the TCP/IP model.
- 9) How do hops affect the routing of packets in a network?
- 10) What are the challenges of peer-to-peer networks like BitTorrent?
- 11) Describe how TCP performs a handshake before transmission.
- 12) Explain how dynamic routing affects packet switching.
- 13) How does checksum detect errors in transmitted packets?
- 14) What are the security vulnerabilities of the FTP protocol?
- 15) Compare IMAP and SMTP in terms of synchronization.
- 16) What is the role of network segmentation in Ethernet?
- 17) How does the IP handle addressing and routing of packets?
- 18) Explain how VLANs extend Ethernet frame size.
- 19) Describe how WiFi protocols maintain network integrity.
- 20) What are the differences between fixed and mobile WiMax?
- 21) Explain how TCP positive acknowledgements work in real-time transmission.
- 22) How does packet priority work in network transmission?
- 23) What does BitTorrent metadata consist of?
- 24) Explain how DNS servers resolve a URL to an IP address.
- 25) What are the key differences between pull and push email protocols?
- 26) How do routers manage large volumes of data traffic?
- 27) Describe the fragmentation offset in packet headers.
- 28) Explain how TCP/IP headers help in packet reassembly.
- 29) How does WiMax handle large-scale data transmission?
- 30) What is the importance of error detection in wireless communication?
- 31) Describe the role of a tracker in BitTorrent file sharing.

- 32) How does hop number reduction help prevent congestion in networks?
- 33) What is the checksum field used for in packet headers?
- 34) Explain how routing protocols optimize packet delivery.
- 35) How does packet switching enable efficient internet communication?
- 36) What is the difference between a public IP address and a private IP address?
- 37) Describe how UDP differs from TCP in terms of error checking.
- 38) Explain how fragmentation impacts the performance of a network.
- 39) What is the purpose of error correction protocols in wireless networks?
- 40) How does packet loss affect real-time video conferencing?
- 41) What are the risks of using unsecured WiFi protocols?
- 42) Describe how positive acknowledgements with retransmission (PAR) work.
- 43) Explain how parity checking ensures data accuracy.
- 44) How do router metrics impact packet routing decisions?
- 45) What are the main differences between RIP and other routing protocols?
- 46) What are the challenges of routing tables in complex networks?
- 47) How does TCP congestion control manage network traffic?
- 48) Describe how VLANs are used to enhance network performance.
- 49) What are the limitations of circuit switching in modern networks?
- 50) Explain how hop number helps prevent packet looping.