



CENTRAL POLYTECHNIC COLLEGE
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(AN AUTONOMOUS INSTITUTION)

**DEPARTMENT OF ELECTRONICS AND
COMMUNICATION ENGINEERING**

QUESTION BANK

FOR

**EEC41020 – DATA COMMUNICATION AND
NETWORKING**

UNIT	Q NO	QUESTIONS
1	1	Data communication refers to (a) Exchange of programs (b) Exchange of data between devices (c) Exchange of raw signals (d) None Ans:Exchange of data between devices
1	2	A complete data communication system consists of (a) Sender and receiver only (b) Message and medium only (c) Sender, receiver, message, medium, (d) Sender and medium only protocol Ans:Sender, receiver, message, medium, protocol
1	3	The information to be communicated is called (a) Medium (b) Message (c) Protocol (d) Data Ans:Message
1	4	Which is not a component of data communication? (a) Protocol (b) Sender (c) Compiler (d) Medium Ans:Compiler
1	5	Representation of image uses (a) ASCII (b) Pixel grid (c) Binary numbers (d) Huffman code Ans:Pixel grid
1	6	Representation of audio requires (a) Amplitude and frequency (b) ASCII (c) Pixel values (d) Compression only Ans:Amplitude and frequency
1	7	In simplex mode, data flows (a) One direction only (b) Both directions simultaneously (c) Both directions one at a time (d) No flow Ans:One direction only
1	8	In half duplex, data flows (a) Both directions one at a time (b) Both directions simultaneously (c) One direction only (d) Not possible Ans:Both directions one at a time
1	9	In full duplex, data flows (a) One direction only (b) Both directions one at a time (c) Both directions simultaneously (d) No flow Ans:Both directions simultaneously
1	10	Throughput is defined as (a) Total bits sent (b) Useful bits received per second (c) Error rate (d) Delay Ans:Useful bits received per second

UNIT	Q NO	QUESTIONS
1	11	Delay refers to (a) Time taken for processing (c) Time taken for data to travel Ans:Time taken for data to travel (b) Time taken for transmission (d) All of these
1	12	Reliability in networks refers to (a) Accuracy and dependability (c) Delay Ans:Accuracy and dependability (b) Cost (d) Performance
1	13	Security in networks ensures (a) Confidentiality (c) Availability Ans:All of these (b) Integrity (d) All of these
1	14	Point-to-point connection means (a) Many devices connected (c) Devices connected via server Ans:Two devices connected directly (b) Two devices connected directly (d) Broadcast medium
1	15	Multipoint connection means (a) Dedicated link (c) Point-to-point only Ans:Link shared by multiple devices (b) Link shared by multiple devices (d) None
1	16	Star topology uses a (a) Ring connection (c) Bus line Ans:Central hub/switch (b) Central hub/switch (d) Mesh link
1	17	In bus topology, devices share a (a) Ring path (c) Central hub Ans:Single backbone cable (b) Single backbone cable (d) Router
1	18	In ring topology, data flows (a) In both directions (c) Randomly Ans:In a closed loop (b) In a closed loop (d) Only one node
1	19	Mesh topology advantage is (a) Low cost (c) Central failure Ans:High redundancy (b) High redundancy (d) Less cabling
1	20	Which topology has single point failure? (a) Star (c) Bus Ans:Star (b) Mesh (d) Ring

UNIT	Q NO	QUESTIONS
1	21	LAN stands for (a) Local Area Network (b) Large Access Network (c) Linked Area Network (d) Linear Area Node Ans:Local Area Network
1	22	MAN covers (a) Single room (b) Single building (c) City (d) Country Ans:City
1	23	WAN covers (a) Small office (b) Building (c) Locality (d) Country/World Ans:Country/World
1	24	LAN interconnection is possible using (a) Router (b) Switch (c) Hub (d) All of these Ans:All of these
1	25	ISO-OSI has how many layers? (a) 5 (b) 6 (c) 7 (d) 8 Ans:7
1	26	TCP/IP model has how many layers? (a) 3 (b) 4 (c) 5 (d) 7 Ans:4
1	27	OSI Physical layer deals with (a) Data encryption (b) Transmission media (c) Routing (d) Error control Ans:Transmission media
1	28	OSI Data Link layer provides (a) Logical addressing (b) Error detection (c) Routing (d) Application services Ans>Error detection
1	29	Network layer provides (a) Logical addressing & routing (b) Error correction (c) Data representation (d) Encryption Ans:Logical addressing & routing
1	30	Transport layer provides (a) Encryption (b) End-to-end delivery (c) Data representation (d) Cable connection Ans:End-to-end delivery

UNIT	Q NO	QUESTIONS
1	31	Session layer provides (a) Dialog control (c) Data encoding Ans:Dialog control (b) Error correction (d) Hardware connection
1	32	Presentation layer is responsible for (a) Syntax & semantics (c) Transmission medium Ans:Syntax & semantics (b) Routing (d) Error correction
1	33	Application layer is responsible for (a) End-user services (c) Framing Ans:End-user services (b) Routing (d) Error detection
1	34	In OSI, routing is handled by (a) Physical layer (c) Transport layer Ans:Network layer (b) Network layer (d) Session layer
1	35	In OSI, encryption is handled by (a) Transport layer (c) Application layer Ans:Presentation layer (b) Presentation layer (d) Network layer
1	36	In TCP/IP, IP works at (a) Application layer (c) Internet layer Ans:Internet layer (b) Transport layer (d) Network access
1	37	TCP works at (a) Application (c) Network Ans:Transport (b) Transport (d) Data link
1	38	HTTP works at (a) Application (c) Network Ans:Application (b) Transport (d) Data link
1	39	TCP/IP combines OSI's (a) Session, Presentation, Application (c) Network and Transport Ans:Session, Presentation, Application (b) Physical and Data link (d) All layers
1	40	Which model is practical for real networks? (a) OSI (c) Hybrid Ans:TCP/IP (b) TCP/IP (d) None

UNIT	Q NO	QUESTIONS
1	41	Which model is theoretical for teaching? (a) OSI (c) Hybrid Ans:OSI (b) TCP/IP (d) None
1	42	Throughput depends on (a) Transmission rate (c) Protocols Ans:All of these (b) Error rate (d) All of these
1	43	Delay is measured in (a) Hours (c) Milliseconds Ans:Milliseconds (b) Seconds (d) Nanoseconds
1	44	Reliability includes (a) Failure rate (c) Accuracy Ans:All of these (b) Recovery time (d) All of these
1	45	Security attack affecting confidentiality is (a) Interruption (c) Modification Ans:Interception (b) Interception (d) Fabrication
1	46	Security attack affecting integrity is (a) Modification (c) Interruption Ans:Modification (b) Interception (d) Fabrication
1	47	Security attack affecting availability is (a) Interruption (c) Fabrication Ans:Interruption (b) Modification (d) Interception
1	48	Interconnection of networks is called (a) Intranet (c) Internet Ans:Internet (b) Extranet (d) LAN
1	49	Which is not a network category? (a) LAN (c) CAN Ans:CAN (b) MAN (d) WAN
1	50	OSI model was developed by (a) ITU-T (c) IEEE Ans:ISO (b) ISO (d) IETF

UNIT	Q NO	QUESTIONS
2	1	Multiplexing allows (a) Single signal on single channel (c) Single signal on multiple channels Ans:Multiple signals on single channel
2	2	FDM stands for (a) Frequency Division Multiplexing (c) Frame Division Method Ans:Frequency Division Multiplexing
2	3	WDM is mainly used in (a) Radio (c) Fiber optics Ans:Fiber optics
2	4	TDM synchronizes using (a) Time slots (c) Wavelengths Ans:Time slots
2	5	UTP cable connector is (a) BNC (c) SC Ans:RJ-45
2	6	BNC connector is used with (a) Fiber optic (c) Coaxial Ans:Coaxial
2	7	SC and LC are connectors for (a) Coaxial (c) UTP Ans:Fiber optic
2	8	Performance of UTP is (a) Low cost, short distance (c) Very high security Ans:Low cost, short distance
2	9	Which media has maximum bandwidth? (a) UTP (c) Fiber optic Ans:Fiber optic
2	10	Radio waves are used in (a) Remote control (c) Optical fiber Ans:Remote control

UNIT	Q NO	QUESTIONS
2	11	Microwaves are commonly used in (a) Satellite communication (b) LAN (c) Optical fibers (d) Telephone wires Ans:Satellite communication
2	12	Infrared is used in (a) Remote control (b) Fiber optics (c) Satellite (d) Cable TV Ans:Remote control
2	13	Circuit switching requires (a) Dedicated path (b) Packets (c) Virtual circuits (d) None Ans:Dedicated path
2	14	Packet switching datagram is (a) Connectionless (b) Connection-oriented (c) Dedicated path (d) None Ans:Connectionless
2	15	Virtual circuit network is (a) Connectionless (b) Combination of both (c) Connection-oriented (d) None Ans:Connection-oriented
2	16	FDM divides channel based on (a) Time (b) Frequency (c) Wavelength (d) Codes Ans:Frequency
2	17	WDM divides channel based on (a) Time (b) Frequency (c) Wavelength (d) Codes Ans:Wavelength
2	18	TDM divides channel based on (a) Frequency (b) Codes (c) Time slots (d) Wavelength Ans:Time slots
2	19	RJ-45 connector has how many pins? (a) 6 (b) 8 (c) 4 (d) 10 Ans:8
2	20	Which cable is immune to EMI? (a) UTP (b) Coaxial (c) Fiber optic (d) All Ans:Fiber optic

UNIT	Q NO	QUESTIONS
2	21	Coaxial cables are mainly used for (a) Optical communication (c) Cable TV Ans: Cable TV (b) LAN backbone (d) Telephone
2	22	STP cable provides (a) No shielding (c) Full shielding Ans: Full shielding (b) Partial shielding (d) Wireless
2	23	Which has lowest cost? (a) UTP (c) Fiber optic Ans: UTP (b) STP (d) Coaxial
2	24	Fiber optic uses (a) Electrical signals (c) Light signals Ans: Light signals (b) Radio waves (d) Microwave
2	25	Which connector is small form factor? (a) SC (c) BNC Ans: LC (b) LC (d) RJ-45
2	26	Infrared cannot penetrate (a) Walls (c) Glass Ans: Walls (b) Air (d) Plastic
2	27	Radio waves range is (a) Few meters (c) Long distance Ans: Long distance (b) Few km (d) All
2	28	Packet switching is suitable for (a) Real-time voice (c) Video calls Ans: Burst data (b) Burst data (d) Circuit
2	29	Circuit switching is suitable for (a) Data transfer (c) Email Ans: Voice call (b) Voice call (d) Internet
2	30	Optical fiber has loss due to (a) Reflection (c) Dispersion Ans: All (b) Absorption (d) All

UNIT	Q NO	QUESTIONS
2	31	WDM increases capacity of (a) Coaxial (b) Fiber optic (c) Twisted pair (d) Wireless Ans:Fiber optic
2	32	FDM requires (a) Guard bands (b) Guard time (c) No guard (d) Keys Ans:Guard bands
2	33	Which has best security? (a) UTP (b) Coaxial (c) Fiber optic (d) Radio Ans:Fiber optic
2	34	Wireless media example (a) Twisted pair (b) Fiber optic (c) Infrared (d) Coaxial Ans:Infrared
2	35	Which media has highest attenuation? (a) Fiber optic (b) Coaxial (c) UTP (d) Microwave Ans:UTP
2	36	Switching establishes link between (a) Sender only (b) Receiver only (c) Sender and receiver (d) None Ans:Sender and receiver
2	37	Virtual circuit combines features of (a) FDM & TDM (b) Circuit & Packet (c) Fiber & Coaxial (d) None Ans:Circuit & Packet
2	38	FDM guard bands prevent (a) Crosstalk (b) Delay (c) Interference (d) Bandwidth Ans:Crosstalk
2	39	WDM is same as (a) TDM (b) Optical FDM (c) STP (d) Microwave Ans:Optical FDM
2	40	Infrared is mostly used in (a) TV remotes (b) Cable TV (c) Internet backbone (d) Microwave ovens Ans:TV remotes

UNIT	Q NO	QUESTIONS
2	41	Coaxial consists of (a) Two wires twisted (c) Light core Ans:Central core & shield (b) Central core & shield (d) None
2	42	RJ-45 female connector is used in (a) Switch ports (c) Fiber optic Ans:Switch ports (b) Patch cables (d) All
2	43	If 4 channels each need 2 MHz, total in FDM = (a) 4 MHz (c) 8 MHz Ans:8 MHz (b) 6 MHz (d) 10 MHz
2	44	If each channel gets 5 ms slot in TDM, 4 channels cycle = (a) 5 ms (c) 15 ms Ans:20 ms (b) 10 ms (d) 20 ms
2	45	If fiber loss is 2 dB/km, total loss over 5 km = (a) 2 dB (c) 8 dB Ans:10 dB (b) 5 dB (d) 10 dB
2	46	In packet switching, a 1 MB file is divided into (a) Frames (c) Channels Ans:Packets (b) Packets (d) Slots
2	47	For LAN cabling, commonly used media is (a) Coaxial (c) Fiber optic Ans:UTP (b) UTP (d) Infrared
2	48	Which is best for long distance, high bandwidth? (a) UTP (c) Coaxial Ans:Fiber optic (b) Fiber optic (d) Microwave
2	49	If 100 users share channel using TDM, each slot gets (a) 1% (c) 10% Ans:1% (b) 5% (d) 100%
2	50	In circuit switching, delay occurs due to (a) Propagation (c) Coding Ans:Setup time (b) Setup time (d) Encryption

UNIT	Q NO	QUESTIONS
3	1	Main function of Data Link Layer is (a) Routing (b) Error detection & correction (c) Encryption (d) Application Ans:Error detection & correction
3	2	Framing is used to (a) Group bits into frames (b) Encrypt data (c) Compress data (d) Improve bandwidth Ans:Group bits into frames
3	3	Fixed size framing uses (a) Flags (b) Length count (c) Timer (d) None Ans:Length count
3	4	Variable size framing uses (a) Flags/Delimiters (b) Slot time (c) Frequency (d) Timer Ans:Flags/Delimiters
3	5	Stop and Wait protocol works on (a) One frame at a time (b) Multiple frames (c) No frames (d) Random frames Ans:One frame at a time
3	6	Flow control ensures (a) Fast transmission (b) Error correction (c) Sender does not overwhelm receiver (d) Encryption Ans:Sender does not overwhelm receiver
3	7	Noiseless channel means (a) Errors present (b) Errors absent (c) Delay present (d) None Ans:Errors absent
3	8	In Stop-and-Wait ARQ, if ACK lost (a) Frame retransmitted (b) Stop communication (c) Send all frames (d) Ignore Ans:Frame retransmitted
3	9	Go-Back-N retransmits (a) Only wrong frame (b) All frames after error (c) First frame only (d) None Ans:All frames after error
3	10	Selective Repeat retransmits (a) All frames (b) Only erroneous frames (c) First frame (d) None Ans:Only erroneous frames

UNIT	Q NO	QUESTIONS
3	11	Error detection finds (a) Location of error (b) Presence of error (c) Correction automatically (d) None Ans: Presence of error
3	12	Error correction (a) Detect error only (b) Corrects the error (c) Deletes data (d) Ignores error Ans: Corrects the error
3	13	Common error detection code (a) Parity bit (b) Hamming code (c) Repetition (d) All Ans: Parity bit
3	14	CRC stands for (a) Cyclic Redundancy Check (b) Code Repeat Check (c) Correct Redundancy Code (d) Cycle Repeat Code Ans: Cyclic Redundancy Check
3	15	Hamming code is for (a) Error detection (b) Error correction (c) Compression (d) Encryption Ans: Error correction
3	16	In Go-Back-N, window size = (a) 1 (b) N (c) N+1 (d) None Ans: N
3	17	Stop-and-Wait efficiency reduces due to (a) Idle waiting (b) Error (c) More ACKs (d) None Ans: Idle waiting
3	18	A noisy channel introduces (a) Error (b) ACK (c) Flow (d) Frames Ans: Error
3	19	Error correction requires (a) Redundant bits (b) Timing (c) Encryption (d) Bandwidth Ans: Redundant bits
3	20	Which is better in efficiency? (a) Stop and Wait (b) Go-Back-N (c) Both equal (d) None Ans: Go-Back-N

UNIT	Q NO	QUESTIONS
3	21	Selective Repeat needs (a) Large buffer (b) Small buffer (c) No buffer (d) None Ans:Large buffer
3	22	Parity bit can detect (a) Even number of errors (b) Odd number of errors (c) Both (d) None Ans:Odd number of errors
3	23	CRC uses (a) Division (b) Addition (c) Subtraction (d) Multiplication Ans:Division
3	24	ARQ stands for (a) Automatic Repeat request (b) Automatic Receive Queue (c) Apply Request Queue (d) None Ans:Automatic Repeat request
3	25	Stop and Wait protocol requires (a) Sequence numbers (b) ACKs (c) Timer (d) All Ans:All
3	26	Framing is necessary because (a) Identifies data boundaries (b) Encrypts data (c) Increases bandwidth (d) All Ans:Identifies data boundaries
3	27	In Stop-and-Wait, ACK = (a) Acknowledge (b) Access key (c) Actual key (d) Address key Ans:Acknowledge
3	28	Sliding window is used in (a) Go-Back-N (b) Selective Repeat (c) Both (d) None Ans:Both
3	29	Hamming code minimum distance = (a) 1 (b) 2 (c) 3 (d) 4 Ans:3
3	30	Error detection cannot (a) Detect errors (b) Locate errors (c) Correct errors (d) Generate data Ans:Correct errors

UNIT	Q NO	QUESTIONS
3	31	In Go-Back-N, if N=4, maximum outstanding frames = (a) 3 (b) 4 (c) 5 (d) 6 Ans:4
3	32	In Selective Repeat, ACK is (a) Cumulative (b) Individual (c) Random (d) None Ans:Individual
3	33	Flow control prevents (a) Congestion at sender (b) Overflow at receiver (c) Encryption (d) Noise Ans:Overflow at receiver
3	34	Which is simpler? (a) Stop-and-Wait (b) Go-Back-N (c) Selective Repeat (d) Hamming Ans:Stop-and-Wait
3	35	Which is most efficient? (a) Stop-and-Wait (b) Go-Back-N (c) Selective Repeat (d) None Ans:Selective Repeat
3	36	If a frame size is 1000 bits, Stop-and-Wait sends (a) One frame (b) Two frames (c) All frames (d) None Ans:One frame
3	37	If Go-Back-N window size = 4, and frame 2 lost, retransmit from (a) 1 (b) 2 (c) 3 (d) 4 Ans:2
3	38	If Selective Repeat frame 3 lost, retransmit (a) All frames (b) Only 3 (c) None (d) Last Ans:Only 3
3	39	If data = 7 bits, parity bit = (a) 1 (b) 2 (c) 3 (d) None Ans:1
3	40	If CRC remainder = 0, data is (a) Error free (b) Corrupted (c) Corrected (d) Retransmitted Ans>Error free

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3	41	If Hamming code detects 1-bit error, it (a) Ignores (b) Corrects (c) Stops (d) Deletes Ans:Corrects
3	42	If Stop-and-Wait timeout occurs (a) Resend frame (b) Wait (c) Stop (d) Ignore Ans:Resend frame
3	43	If ACK corrupted, sender will (a) Retransmit (b) Stop (c) Discard (d) Ignore Ans:Retransmit
3	44	Sliding window increases (a) Throughput (b) Delay (c) Error (d) Cost Ans:Throughput
3	45	If 4-bit CRC, divisor size = (a) 3 (b) 4 (c) 5 (d) 6 Ans:5
3	46	If frame = 1000 bits, and 10% error, errors = (a) 10 (b) 50 (c) 100 (d) 200 Ans:100
3	47	If Go-Back-N window size = 7, sequence bits = (a) 2 (b) 3 (c) 4 (d) 5 Ans:3
3	48	If Selective Repeat window size = 4, sequence bits = (a) 2 (b) 3 (c) 4 (d) 5 Ans:3
3	49	If parity check fails (a) Error detected (b) Error corrected (c) Frame ignored (d) None Ans:Error detected
3	50	If ARQ retransmits too often (a) Efficiency decreases (b) efficiency increases (c) no effect (d) Security increases Ans:Efficiency decreases
4	1	Hub operates at which OSI layer? (a) Physical (b) Data Link (c) Network (d) Transport Ans:Physical

UNIT	Q NO	QUESTIONS
4	2	Switch operates at which OSI layer? (a) Physical (b) Data Link (c) Network (d) Application Ans:Data Link
4	3	Router operates at which OSI layer? (a) Data Link (b) Network (c) Transport (d) Physical Ans:Network
4	4	Bridge connects (a) Two LANs (b) LAN & WAN (c) Two WANs (d) Two Devices Ans:Two LANs
4	5	Gateway performs (a) Protocol conversion (b) Hub function (c) Switch function (d) Router function Ans:Protocol conversion
4	6	IPv4 address is (a) 32-bit (b) 64-bit (c) 128-bit (d) 16-bit Ans:32-bit
4	7	IPv6 address is (a) 32-bit (b) 64-bit (c) 128-bit (d) 16-bit Ans:128-bit
4	8	IPv4 Dot-decimal notation divides address into (a) 2 octets (b) 4 octets (c) 6 octets (d) 8 octets Ans:4 octets
4	9	Classful addressing uses (a) Default masks (b) Custom masks (c) No masks (d) None Ans:Default masks
4	10	Classless addressing uses (a) Subnet mask (b) Default mask (c) No mask (d) Broadcast Ans:Subnet mask
4	11	Subnet mask for Class A default (a) 255.0.0.0 (b) 255.255.0.0 (c) 255.255.255.0 (d) 255.255.255.255 Ans:255.0.0.0

UNIT	Q NO	QUESTIONS
4	12	Subnet mask for Class B default (a) 255.0.0.0 (c) 255.255.255.0 Ans:255.255.0.0
4	13	Subnet mask for Class C default (a) 255.0.0.0 (c) 255.255.255.0 Ans:255.255.255.0
4	14	Static IP is (a) Manually configured (c) Dynamic Ans:Manually configured
4	15	Dynamic IP is (a) Manually configured (c) Static Ans:Automatically assigned
4	16	IPv4 datagram header includes (a) Source IP (c) TTL Ans:All
4	17	IPv6 has (a) 32-bit (c) 128-bit address Ans:128-bit address
4	18	Transition from IPv4 to IPv6 needed because (a) Address exhaustion (c) Efficiency Ans:Address exhaustion
4	19	ICMP is used for (a) Error messages (c) Flow control Ans>Error messages
4	20	ARP maps (a) IP → MAC (c) Port → IP Ans:IP → MAC
4	21	RARP maps (a) MAC → IP (c) Port → MAC Ans:MAC → IP

UNIT	Q NO	QUESTIONS
4	22	IGMP is used in (a) Multicast (c) Unicast Ans:Multicast (b) Broadcast (d) Anycast
4	23	Hub is (a) Intelligent (c) Protocol-aware Ans:Dumb device (b) Dumb device (d) Router
4	24	Switch forwards based on (a) MAC (c) Port Ans:MAC (b) IP (d) Protocol
4	25	Router forwards based on (a) MAC (c) Port Ans:IP (b) IP (d) Frame
4	26	Gateway converts (a) Protocol (c) Bytes Ans:Protocol (b) Bits (d) Frames
4	27	IPv4 address is divided into (a) Network + Host (c) Host + Port Ans:Network + Host (b) Network + Subnet (d) Source + Dest
4	28	IPv6 header size (a) 20 bytes (c) 32 bytes Ans:40 bytes (b) 40 bytes (d) 64 bytes
4	29	Which protocol handles delivery error in IP? (a) ICMP (c) RARP Ans:ICMP (b) ARP (d) IGMP
4	30	Default TTL in IPv4 header prevents (a) Looping (c) Delay Ans:Looping (b) Loss (d) Congestion
4	31	Broadcast address in Class C (a) 192.168.1.255 (c) 255.255.255.0 Ans:192.168.1.255 (b) 192.168.0.0 (d) 127.0.0.1

UNIT	Q NO	QUESTIONS
4	32	Network Layer handles (a) Routing (b) Framing (c) Flow control (d) Encryption Ans:Routing
4	33	IPv6 uses (a) Hexadecimal notation (b) Decimal only (c) Binary only (d) Octal Ans:Hexadecimal notation
4	34	Subnetting is used to (a) Divide network (b) Encrypt data (c) Route packets (d) Error detect Ans:Divide network
4	35	IP address uniqueness ensures (a) Delivery (b) Error (c) Efficiency (d) Multiplexing Ans:Delivery
4	36	If Class B IP = 172.16.0.0/16, subnet mask? (a) 255.255.0.0 (b) 255.0.0.0 (c) 255.255.255.0 (d) 255.255.255.255 Ans:255.255.0.0
4	37	Static IP used for (a) Server (b) Laptop (c) Mobile (d) DHCP Ans:Server
4	38	Dynamic IP used for (a) DHCP clients (b) Web server (c) Router (d) Switch Ans:DHCP clients
4	39	IPv4 datagram contains (a) Source & Destination (b) Port (c) Protocol (d) MAC Ans:Source & Destination
4	40	ICMP sends (a) Echo request (b) MAC (c) Port (d) VLAN Ans:Echo request
4	41	ARP resolves (a) IP to MAC (b) MAC to IP (c) Subnet (d) Port Ans:IP to MAC

UNIT	Q NO		QUESTIONS
4	42	RARP resolves (a) MAC to IP (c) Network Ans:MAC to IP	(b) IP to MAC (d) Subnet
4	43	IGMP is used for (a) Multicast groups (c) Unicast Ans:Multicast groups	(b) Broadcast (d) Anycast
4	44	Router forwards based on (a) IP address (c) Protocol Ans:IP address	(b) MAC address (d) Port
4	45	Hub forwards based on (a) Electrical signals (c) MAC Ans:Electrical signals	(b) IP (d) Frames
4	46	Gateway converts (a) Protocols (c) Bits Ans:Protocols	(b) Frames (d) Signals
4	47	IPv6 simplifies (a) Routing (c) Flow control Ans:Routing	(b) Framing (d) Encryption
4	48	IPv4 exhaustion reason (a) Limited address space (c) Error Ans:Limited address space	(b) Delay (d) Security
4	49	Subnet mask 255.255.255.0 allows hosts (a) 254 (c) 128 Ans:254	(b) 256 (d) 512
4	50	IPv6 allows (a) Large address space (c) Same as IPv4 Ans:Large address space	(b) Small space (d) None
5	1	Transport layer provides (a) Routing (c) Framing Ans:Reliable end-to-end delivery	(b) Reliable end-to-end delivery (d) Encryption

UNIT	Q NO	QUESTIONS
5	2	Connection-oriented service is (a) TCP (b) UDP (c) IP (d) ICMP Ans:TCP
5	3	Connectionless service is (a) UDP (b) TCP (c) ICMP (d) FTP Ans:UDP
5	4	TCP is used for (a) Reliable transmission (b) Fast transmission (c) Broadcast (d) Multicast Ans:Reliable transmission
5	5	UDP is used for (a) Fast, connectionless (b) Reliable (c) Encryption (d) Framing Ans:Fast, connectionless
5	6	TCP segment contains (a) Source & Destination ports (b) Sequence number (c) Acknowledgment number (d) All Ans:All
5	7	UDP packet contains (a) Ports (b) Length (c) Checksum (d) All Ans:All
5	8	Application layer provides (a) User interface to network (b) Routing (c) Framing (d) Error detection Ans:User interface to network
5	9	DNS resolves (a) Hostname → IP (b) IP → MAC (c) IP → Port (d) IP → Gateway Ans:Hostname → IP
5	10	SMTP is used for (a) Email sending (b) File transfer (c) Web browsing (d) Multicast Ans:Email sending
5	11	FTP is used for (a) File transfer (b) Email (c) Web browsing (d) Chat Ans:File transfer

UNIT	Q NO	QUESTIONS
5	12	HTTP is used for (a) Web browsing (b) Email (c) File transfer (d) Routing Ans: Web browsing
5	13	WWW stands for (a) World Wide Web (b) Wireless Wide Web (c) Web Work Web (d) Wide World Web Ans: World Wide Web
5	14	Network security provides (a) Confidentiality (b) Integrity (c) Availability (d) All Ans: All
5	15	Encryption converts (a) Plaintext → Ciphertext (b) Ciphertext → Plaintext (c) Key → Data (d) Data → Port Ans: Plaintext → Ciphertext
5	16	Decryption converts (a) Ciphertext → Plaintext (b) Plaintext → Ciphertext (c) Data → Port (d) Key → Data Ans: Ciphertext → Plaintext
5	17	TCP provides (a) Flow control (b) Error detection (c) Segmentation (d) All Ans: All
5	18	UDP does NOT provide (a) Reliability (b) Low latency (c) Connectionless (d) Simple header Ans: Reliability
5	19	TCP header contains (a) Sequence number (b) ACK number (c) Flags (d) All Ans: All
5	20	UDP header is (a) Simple (b) Complex (c) Variable (d) Encrypted Ans: Simple
5	21	Port numbers are used in (a) TCP/UDP (b) IP (c) ICMP (d) ARP Ans: TCP/UDP

UNIT	Q NO	QUESTIONS
5	22	Well-known port for HTTP (a) 80 (c) 25 Ans:80 (b) 21 (d) 443
5	23	Well-known port for FTP (a) 21 (c) 25 Ans:21 (b) 22 (d) 80
5	24	Well-known port for SMTP (a) 25 (c) 80 Ans:25 (b) 21 (d) 110
5	25	Transport layer ensures (a) End-to-end delivery (c) Framing Ans:End-to-end delivery (b) Node-to-node delivery (d) Switching
5	26	TCP uses (a) Three-way handshake (c) Go-Back-N Ans:Three-way handshake (b) Stop-and-Wait (d) Sliding Window
5	27	UDP is suitable for (a) Streaming (c) File transfer Ans:Streaming (b) Email (d) TCP handshake
5	28	TCP is suitable for (a) Reliable transfer (c) Video call Ans:Reliable transfer (b) Streaming (d) Fast voice
5	29	Encryption improves (a) Confidentiality (c) Framing Ans:Confidentiality (b) Speed (d) Flow
5	30	Symmetric encryption uses (a) Same key (c) Public key only Ans:Same key (b) Different key (d) Private key only
5	31	Asymmetric encryption uses (a) Public & Private keys (c) No key Ans:Public & Private keys (b) Single key (d) Password only

UNIT	Q NO	QUESTIONS
5	32	TLS provides (a) Secure communication (b) Routing (c) Framing (d) Switching Ans:Secure communication
5	33	HTTPS is (a) HTTP + SSL/TLS (b) HTTP only (c) FTP (d) SMTP Ans:HTTP + SSL/TLS
5	34	Ciphertext is (a) Encrypted data (b) Plain data (c) Password (d) Key Ans:Encrypted data
5	35	Plaintext is (a) Original data (b) Encrypted data (c) Key (d) Port Ans:Original data
5	36	TCP segment has seq=100, ACK=50. It ensures (a) Reliable delivery (b) Fast streaming (c) Multicast (d) Broadcast Ans:Reliable delivery
5	37	UDP used for (a) Live video (b) Email (c) File transfer (d) SMTP Ans:Live video
5	38	DNS translates (a) www.example.com → IP (b) IP → MAC (c) IP → Port (d) MAC → IP Ans:www.example.com → IP
5	39	FTP transfers (a) Files (b) Emails (c) Web pages (d) Videos Ans:Files
5	40	SMTP sends (a) Emails (b) Files (c) Web pages (d) Streaming Ans:Emails
5	41	HTTP allows (a) Browsing web pages (b) Sending email (c) File transfer (d) Encryption Ans:Browsing web pages

UNIT	Q NO	QUESTIONS
5	42	HTTPS provides (a) Encrypted web browsing (b) Plain HTTP (c) FTP (d) SMTP Ans: Encrypted web browsing
5	43	Symmetric encryption uses (a) Same key (b) Two keys (c) No key (d) Hash only Ans: Same key
5	44	Asymmetric encryption uses (a) Two keys (b) One key (c) Password only (d) None Ans: Two keys
5	45	TCP retransmits (a) Lost segments (b) All segments (c) None (d) Only ACK Ans: Lost segments
5	46	UDP header size is (a) 8 bytes (b) 20 bytes (c) 40 bytes (d) 32 bytes Ans: 8 bytes
5	47	SSL/TLS encrypts (a) Data in transit (b) Routing info (c) IP header (d) MAC Ans: Data in transit
5	48	Plaintext → Encryption → ? (a) Ciphertext (b) Plaintext (c) Data (d) Port Ans: Ciphertext
5	49	TCP is connection-? (a) Oriented (b) Less (c) lessless (d) Random Ans: Oriented
5	50	UDP is connection-? (a) Less (b) Oriented (c) Random (d) Reliable Ans: Less

UNIT NO	PART B/C	Q. NO	QUESTION
1	B	1	Explain data representation in terms of text, images, and audio.
1	B	2	Describe the differences between LAN, MAN, and WAN.
1	B	3	What is the OSI model? Briefly explain the functions of any three layers.
1	B	4	What are network topologies? Explain the star and ring topology with advantages.
1	B	5	What is the TCP/IP model? Compare it with the OSI model.
1	B	6	What are the functions of the Data Link Layer in the OSI model?
1	B	7	Distinguish between WAN and MAN.
1	B	8	Explain the data flow for Simplex, Half Duplex, Full Duplex.
1	B	9	Describe three criteria to evaluate network quality.
1	B	10	Explain the star and mesh topologies with their major advantages and disadvantages.
2	B	1	Explain the datagram approach in packet-switched networks.
2	B	2	Explain the working principle of Wavelength Division Multiplexing (WDM).
2	B	3	Explain the working principle of Time Division Multiplexing (TDM).
2	B	4	Explain the working principle of Frequency Division Multiplexing (FDM).
2	B	5	Explain UTP cables in terms of shielding, cost, and performance.
2	B	6	Explain STP cables in terms of shielding, cost, and performance.
2	B	7	Discuss the applications of coaxial cables in modern communication systems.
2	B	8	Explain what a circuit-switched network is. Give one advantage and one disadvantage.
2	B	9	What is datagram packet switching? How does it differ from virtual circuit packet switching?
2	B	10	Describe microwaves and explain why they require line-of-sight transmission
3	B	1	What is framing in data communication?
3	B	2	Differentiate between fixed-size and variable-size framing.
3	B	3	What is error control? Why is it needed?
3	B	4	Explain the Stop-and-Wait protocol with a flow diagram.
3	B	5	What is a noiseless channel? How does Stop-and-Wait work in it?
3	B	6	Explain Go-Back-N ARQ protocol.
3	B	7	Describe Selective Repeat ARQ protocol.
3	B	8	Define the minimum Hamming distance of a block code. Why is it important for error correction?
3	B	9	How CRC (Cyclic Redundancy Check) works ?
3	B	10	Explain the Stop-and-Wait protocol ARQ with a flow diagram.

4	B	1	Compare IPv4 and IPv6 in terms of address length, header format, and why transition from IPv4 to IPv6 is needed.
4	B	2	Differentiate static IP addressing and dynamic IP addressing. Give two applications/examples for each.
4	B	3	Describe the IPv4 datagram format by listing at least five fields in its header and explaining their purposes.
4	B	4	What is subnetting? For each IP class (A, B, C), state the default subnet mask.
4	B	5	Define ARP, RARP. For each protocol, state its function in the network layer.
4	B	6	What is classful vs classless addressing?
4	B	7	How does CIDR (Classless Inter-Domain Routing) improve IP address allocation compared to traditional classful addressing?
4	B	8	Define IGMP. For each protocol, state its function in the network layer.
4	B	9	Explain why subnet masks are used.
4	B	10	Define ICMP. For each protocol, state its function in the network layer.
5	B	1	Compare TCP and UDP based on reliability, connection type, and overhead.
5	B	2	Describe the format of a TCP segment with its key fields.
5	B	3	Explain the structure of a UDP packet and its significance.
5	B	4	Describe the working of DNS and how it resolves domain names.
5	B	5	Explain the role of SMTP in email communication.
5	B	6	Describe how HTTP facilitates communication on the World Wide Web.
5	B	7	Explain the process of data encryption with an example.
5	B	8	Explain the process of data decryption with an example.
5	B	9	List the key features of FTP.
5	B	10	How does HTTP support the World Wide Web?
1	C	1	Explain the different components of data communication.
1	C	2	Explain any three topologies with its advantages and disadvantages.
1	C	3	Explain the OSI reference model in detail.
1	C	4	Explain the various methods of data representation in data communication.
1	C	5	Explain about any two types of network connections.
2	C	1	Explain the Frequency Division Multiplexing (FDM) in detail.
2	C	2	Explain the synchronous TDM in detail.
2	C	3	Explain in detail about the coaxial cable.
2	C	4	Explain the datagram approach of packet switching network.
2	C	5	Explain the virtual circuit approach of packet switching network.
3	C	1	Define framing. Explain the fixed and variable size framing in detail.

3	C	2	Explain the concept of basic stop and wait protocol with flow diagram.
3	C	3	Explain the concept of Go-Back-N ARQ protocol with flow diagram.
3	C	4	Explain the concept of flow and error control.
3	C	5	Explain the concept of stop and wait ARQ protocol with flow diagram.
4	C	1	Explain the following: (i) Hub (ii) Switch (iii) Router
4	C	2	Explain the following : (i) Bridge (ii) Gateway.
4	C	3	Explain the classful addressing in detail.
4	C	4	Explain the functions of ARP and RARP with diagram.
4	C	5	Explain the functions of IGMP, ICMP with diagram.
5	C	1	Explain the TCP segment format and its features.
5	C	2	Explain the UDP datagram format and its features.
5	C	3	Discuss the role of DNS and WWW.
5	C	4	Explain about the application layer protocols FTP, SMTP and HTTP.
5	C	5	Explain about the data encryption and decryption.