DATA COMMUNICATIONS AND COMPUTER NETWORKS (23EC511)

UNIT WISE QUESTION BANK

UNIT–I

DATA COMMUNICATIONS AND PHYSICAL LAYER

S.No		Questions	BT	CO	PO
Part – A (Short Answer Questions)					
1		What are the components of data communication?	L1	CO1	PO1
2		Define simplex, half-duplex, and full-duplex modes.	L1	CO1	PO1
3		List the types of computer networks.	L1	CO1	PO1
4		What are the different types of network topologies?	L1	CO1	PO1
5		Define protocols and standards with examples.	L1	CO1	PO1
6		Explain the purpose of the OSI model.	L1	CO1	PO1
7		List any two example networks and their uses.	L1	CO1	PO1
8		What is multiplexing? Name its types.	L1	CO1	PO1
9		Define circuit switching and packet switching.	L1	CO1	PO1
10		What is virtual circuit switching?	L1	CO1	PO1
Part – B (Long Answer Questions)					
11	a)	Explain in detail the components and categories of computer networks.	L2	CO1	PO1, PO2
	b)	Discuss the direction of data flow in communication systems.	L2	CO1	PO1, PO2
12	a)	Explain different types of network topologies.	L2	CO1	PO1, PO2
	b)	Compare star, bus, and ring topologies.	L2	CO1	PO1, PO2

13	a)	Compare and contrast ATM, ISDN and Frame Relay. Explain their working principles.	L2	CO1	PO1, PO2
	b)	Discuss guided and unguided transmission media with examples.	L2	CO1	PO1, PO2
14	a)	Compare circuit-switched, datagram, and virtual-circuit networks.	L2	CO1	PO1, PO2
	b)	Describe the working of datagram and virtual circuit networks.	L2	CO1	PO1, PO2
15	a)	Define the physical layer and its functions.	L2	CO1	PO1, PO2
	b)	Describe the working of frame relay and ATM. Compare them based on performance and usage.	L2	CO1	PO1

UNIT–II

DATA LINK LAYER AND MEDIUM ACCESS SUBLAYER

S.No	Questions	BT	CO	PO
Part – A (Short Answer Questions)				
1	What is framing in data link layer?	L1	CO2	PO1
2	List error detection methods.	L1	CO2	PO1
3	What is parity bit and how does it work?	L1	CO2	PO1
4	Define CRC and its application.	L1	CO2	PO1
5	What is Hamming Code?	L1	CO2	PO1
6	What is flow control in data communication?	L1	CO2	PO1
7	Differentiate between noiseless and noisy channels.	L1	CO2	PO1
8	Define HDLC protocol.	L1	CO2	PO1
9	What is the role of PPP?	L1	CO2	PO1
10	Explain ALOHA protocol.	L1	CO2	PO1

Part – B (Long Answer Questions)					
11	a)	Explain error detection techniques. Describe parity, CRC, and checksum methods.	L2	CO2	PO1, PO2
	b)	Discuss the working of Hamming Code.	L2	CO2	PO1, PO2
12	a)	Explain flow control mechanisms.	L2	CO2	PO1, PO2
	b)	Compare stop-and-wait and sliding window.	L2	CO2	PO1, PO2
13	a)	Differentiate between noiseless and noisy channels.	L3	CO2	PO1, PO2
	b)	Explain HDLC in detail. Compare it with PPP.	L2	CO2	PO1, PO2
14	a)	Describe various framing techniques.	L4	CO2	PO1, PO2
	b)	Explain random, controlled and channelized access methods.	L2	CO2	PO1, PO2
15	a)	What are the roles of MAC and LLC sublayers?	L2	CO2	PO1, PO2
	b)	Compare Ethernet and Wireless LAN.	L2	CO2	PO1, PO2

UNIT–III

NETWORK LAYER

S.No	Questions	BT	CO	PO
Part – A (Short Answer Questions)				
1	Define logical addressing.	L1	CO3	PO1
2	What is internetworking?	L1	CO3	PO1
3	What is tunneling in networking?	L1	CO3	PO1
4	Define ARP and RARP.	L1	CO3	PO1
5	What is ICMP used for?	L2	CO3	PO1
6	Define IGMP and its purpose.	L1	CO3	PO1
7	What is packet forwarding?	L1	CO3	PO1

8		Differentiate unicast and multicast.	L1	CO3	PO1
9		List any two unicast routing algorithms.	L1	CO3	PO1
10		What is the purpose of multicast routing protocols?	L1	CO3	PO1
Part – B (Long Answer Questions)					
11	a)	Explain the concept of logical addressing. Describe the IPv4 address format	L2	CO3	PO1, PO2
	b)	Explain internetworking and its need.	L2	CO3	PO1, PO2
12	a)	Describe tunneling mechanism.	L2	CO3	PO1, PO2
	b)	Discuss table-driven and destination-based forwarding.	L3	CO3	PO1, PO2
13	a)	Compare unicast, multicast, and broadcast.	L2	CO3	PO1, PO2
	b)	Describe the structure and functions of network layer.	L3	CO3	PO1, PO2
14	a)	Explain fragmentation and reassembly.	L2	CO3	PO1, PO2
	b)	Explain routing algorithms.	L3	CO3	PO1, PO2
15	a)	Describe subnetting and supernetting.	L2	CO3	PO1, PO2
	b)	Discuss mobile IP and tunneling concepts.	L2	CO3	PO1, PO2

UNIT–IV

TRANSPORT LAYER

S.No	Questions	BT	CO	PO
Part – A (Short Answer Questions)				
1	What is process-to-process delivery?	L1	CO4	PO1
2	List features of UDP.	L1	CO4	PO1
3	List features of TCP.	L1	CO4	PO1

4		What is congestion in networks?	L1	CO4	PO1
5		Define flow control.	L1	CO4	PO1
6		What is the need for congestion control?	L1	CO4	PO1
7		What is QoS?	L1	CO4	PO1
8		What is integrated services architecture?	L1	CO4	PO1
9		Define differentiated services.	L1	CO4	PO1
10		What is meant by traffic shaping?	L1	CO4	PO1
Part – B (Long Answer Questions)					
11	a)	Compare UDP and TCP protocols.	L2	CO4	PO1, PO2
	b)	Explain congestion in computer networks.	L3	CO4	PO1, PO 2
12	a)	What is QoS? Explain its parameters and mechanisms.	L2	CO4	PO1, PO2
	b)	Explain TCP operations.	L3	CO4	PO1, PO2
13	a)	Explain UDP segment format. Compare it with TCP.	L2	CO4	PO1, PO2
	b)	Discuss congestion avoidance algorithms.	L3	CO4	PO1, PO2
14	a)	Describe flow control mechanisms in transport layer.	L2	CO4	PO1, PO2
	b)	Explain the congestion control in TCP.	L2	CO4	PO1, PO2
15	a)	Compare connectionless and connection-oriented services.	L2	CO4	PO1, PO2
	b)	Explain the architecture of transport layer.	L2	CO4	PO1, PO2

UNIT-V

APPLICATION LAYER

S.No		Questions	BT	CO	PO
Part – A (Short Answer Questions)					
1		What is domain name space?	L1	CO5	PO1
2		Explain DNS hierarchy.	L1	CO5	PO1
3		What is SMTP?	L1	CO5	PO1
4		List functions of DNS.	L1	CO5	PO1
5		Define FTP and its role.	L2	CO5	PO1
6		What is WWW?	L1	CO5	PO1
7		Explain HTTP protocol.	L1	CO5	PO1
8		What is SNMP used for?	L1	CO5	PO1
9		List layers of DNS.	L1	CO5	PO1
10		Differentiate between HTTP and HTTPS.	L1	CO5	PO1
Part – B (Long Answer Questions)					
11	a)	Explain the structure of DNS.	L2	CO5	PO1, PO2
	b)	Discuss the working of electronic mail.	L3	CO5	PO1, PO2
12	a)	Explain the file transfer process in FTP.	L2	CO5	PO1, PO2
	b)	Explain client-server architecture of web.	L3	CO5	PO1, PO2
13	a)	Describe the concept of WWW.	L2	CO5	PO1, PO2
	b)	Explain HTTP request and response.	L2	CO5	PO1, PO2

14	a)	Discuss domain name space. Explain the working of DNS resolver	L3	CO5	PO1, PO2, PO3
	b)	Explain the components of application layer protocols.	L2	CO5	PO1, PO2
15	a)	Explain mail gateway and mail agents.	L3	CO5	PO1, PO2
	b)	Explain SNMP message types.	L3	CO5	PO1, PO2, PO3