(Affiliated to University of Mumbai)	***End Semester Examination (R-24/R-25) SH 2026 Answer Key with marking scheme***	
Branch: EXTC	Course: Computer Communication Networks	
Year/ Semester: TE SEM V	Course code: ETC502	
Time: 03 hours	Marks: 80	
		Marks
Q. 1	All questions are compulsory.	
A.	Definition of protocols – 2; Definition of standards – 1; Importance – 1; Examples – 1	5
B.	Twisted Pair: characteristics/construction – 1, advantages/disadvantages/applications – 1; Coaxial: characteristics/construction – 1, advantages/disadvantages/applications – 1; Optical Fiber: characteristics/construction, advantages/disadvantages/applications – 1	5
C.	HDLC configurations – 2; Modes of operation – 1; Types of HDLC frames – 2	5
D.	Routing characteristics – 2; Routing strategies – 1; Requirements of efficient routing algorithm – 2	5
E.	Slow Start – 1; Congestion Avoidance – 1; Fast Retransmit – 1; Fast Recovery – 1; Suitable diagram – 1	5
F.	Session Layer functions – 1.5; Presentation Layer functions – 1.5; Application Layer functions – 1.5; Relevant protocols – 0.5	5
Q.2A	Transmission medium1Architecture1.5Bandwidth and download/upload speed1.5Coverage and cost1Advantages and disadvantages2Applications1Overall comparison of Cable Modem, xDSL and HFC	10
	OR	
Q.2B.	Definition/introduction of unguided media1Cellular communication – working, characteristics, advantages, limitations/applications2.25Microwave – working, characteristics, advantages, limitations/applications2.25Infrared – working, characteristics, advantages, limitations/applications2.25Bluetooth – working, characteristics, advantages, limitations/applications2.2	10
Q.3A	Framing – concept and methods2.5Flow control – concept and methods2.5Error control – concept and methods2.5Piggybacking – concept and working with example2.5	10
	OR	
Q.3B	Pure ALOHA – working, advantages and limitations2.5Slotted ALOHA – working, advantages and limitations2.5CSMA – working, advantages and limitations2.5CSMA/CD – working, advantages and limitations2.5	10
Q.4A	Pure ALOHA – working, advantages and limitations2.5Slotted ALOHA – working, advantages and limitations2.5CSMA – working, advantages and limitations2.5CSMA/CD – working, advantages and limitations2.5	10
	OR	
Q.4B	Definition and need of NAT1.5Working of NAT2Types of NAT2Advantages1Limitations1Applications1IPv4 address conservation1.5	10
Q.5A	Transport Layer services3Connection-oriented service – features and working2Connectionless service – features and working2Comparison of both services2Suitable examples/applications	10
	OR	

Q.5B	Introduction/purpose of TCP connection establishment1SYN message2SYN-ACK message2ACK message2Connection establishment explanation1Neat three-way handshake diagram2	10
Q.6A	Introduction and purpose of DNS1DNS hierarchy2Domain names1DNS servers2Name resolution process3Common DNS records	10
	OR	
Q.6B	HTTP – purpose and application1FTP – purpose and application1DNS – purpose and application1SMTP – purpose and application1TELNET and SSH – purpose and application1.5DHCP – purpose and application1Working/interrelationship of the protocols in Internet services2.5Suitable examples	10
	*********** All the Best***********	