K. J. Somaiya Institute of Technology, Sion, Mumbai-22
(Autonomous College Affiliated to University of Mumbai)

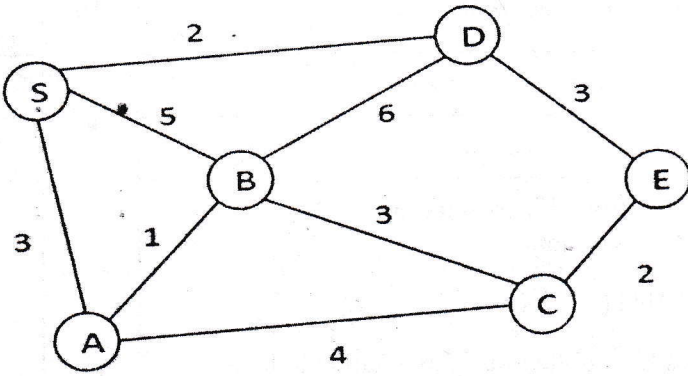|	
May-June 2025	
(B. Tech)Program: Information Technology Scheme :III	
Regular Examination: SY Semester: IV	
Course Code:ITC402 and Course Name: Computer Network and Network Design	
Date of Exam: 21/05/2025	Duration: 02.5 Hours	Max. Marks: 60

Instructions:
(1)All questions are compulsory.
(2)Draw neat diagrams wherever applicable.
(3)Assume suitable data, if necessary.

Q. No.	Question	Max. Marks	CO	BT level
Q 1	**Solve any two questions out of three: (05 marks each)**	10		
a)	Describe the function of the Data link layer and Transport layer.		CO1	U
b)	Explain the difference between Datagram and Virtual circuit switch technique.		CO2	U
c)	i)Change the following IPv4 addresses from binary notation to dotted-decimal notation and analyze if it is valid IP address or not. 10000001 00001011 00001011 11101111 ii)Change the following IPv4 addresses from dotted-decimal notation to binary notation. **Write the ranges of each class.** a)221.34.7.82 b)14.23.120.8		CO3	Ap
Q 2	**Solve any two questions out of three: (05 marks each)**	10		
a)	Explain the difference between TCP and UDP based on the following parameters: connection type, reliability, speed, applications, and error control.		CO4	U
b)	Explain LZW coding method with given input string **ABABBABCABABBA** and find out the encoded sequences.		CO5	U
c)	State the difference between VLAN, VPN.		CO6	U
Q.3	Solve any **two** questions out of three. (10 marks each)	20		

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			CO	U/An
a)	i)State the difference between OSI and TCP/IP model.(5M) ii)Explain LAN, WAN, MAN network topology. .(5M)		CO1	U
b)	i)The received string of bits is 110011001100 is acceptable? If so what is the data bit sequence? Consider the divisor is 10101. (5M) ii)Explain Stop and Wait data link protocol. (5M)		CO2	U
c)	Find the shortest path from source S to all other nodes shown in figure using Dijkstra's algorithm and analyze which is the shortest path from all other path. 	20	CO3	An
Q.4	Solve any **two** questions out of three. (10 marks each)			
a)	i)Draw and explain the TCP three-way handshake used in establishing a connection.(5M) ii)Explain the design issues in session layer.(5M)		CO4	U
b)	i) Explain Image compression with block diagram.(5M) ii)Explain the Domain Name System (DNS) protocol and How does it resolve domain names into IP addresses?(5M)		CO5	U
c)	Design a Network for a **National Bank** Organization Meeting the following Guidelines: Networking Devices, IP Addressing: Subnetting, Supernetting, Routing Protocols to be used, Services to be used: TELNET, SSH, FTP Server, Web Server, File Server, DHCP Server and DNS Server.		CO6	Ap

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