

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

July/Aug ~~May-June~~ 2025
(B. Tech) Program: Information Technology Scheme: III
Supplementary ~~Regular~~ Examination: SY Semester: IV
Course Code: ITC402 Course Name: Computer Network and Network Design
Date of Exam: ~~21/05/2025~~ *30/07/25* 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.

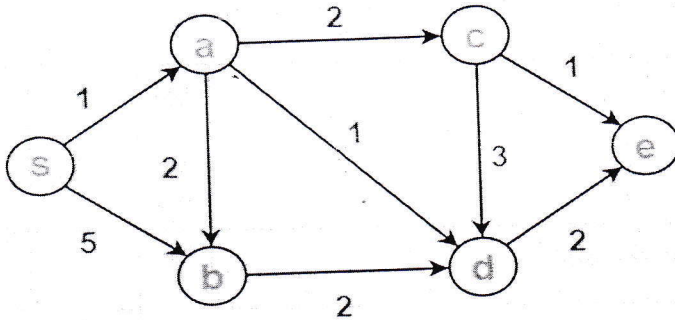
Q. No.	Question	Ma x. Ma rks	CO	BT leve l
Q 1	Solve any two questions out of three: (05 marks each)	10		
a)	Explain LAN, WAN, MAN networks.		CO1	U
b)	Consider error detection CRC with the generator 10101. Compute the transmitted bit sequence for the data bit sequence 1101101		CO2	U
c)	Explain Classes in IPV4 protocol with ranges and analyze the No of Host and No of Network, and starting and ending address in each class.		CO3	An
Q 2	Solve any two questions out of three: (05 marks each)	10		
a)	Differentiate between connection-oriented and connectionless protocols.		CO4	U
b)	Explain Lempel-Ziv-Welch(LZW) coding technique and Apply on given data String: a b b a b a b b a a .		CO5	U
c)	Describe Virtual Private Network (VPN)		CO6	U
Q.3	Solve any two questions out of three. (10 marks each)	20		
a)	Discuss OSI model in detail with a neat diagram and function of each layer.		CO1	U
b)	Discuss packet switching technique and its type in detail (Datagram and Virtual circuit switch technique).		CO2	U
c)	Use Dijkstra's Algorithm to find the shortest distance from source vertex 'S' to		CO3	An

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remaining vertices in the following graph and analyze which path is shortest among all other path



Q.4 Solve any **two** questions out of three. (10 marks each)

20

- a) Explain and sketch the header format for TCP Protocol and describe 3 way handshaking process.
- b) i) Discuss the Domain Name System (DNS) protocol and How does it resolve domain names into IP addresses?(5M)
ii) Discuss the client-server architecture of the World Wide Web.(5M)
- c) Design a Network for a **Corporate** 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.

CO4

U

CO5

U

CO6

Ap
