

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

May-June 2026		
(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: 21/05/2026	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)	State the difference between Datagram and Virtual circuit switch technique.		CO2	U
b)	Draw and explain the TCP three-way handshake used in establishing a connection.		CO4	U
c)	Calculate the no of Host Id and Network ID for each class in IPV4.		CO3	Ap
Q 2	Solve any two questions out of three: (05 marks each)	10		
a)	Explain Sliding Window Data link protocol.		CO2	U
b)	Explain the Host to Host and Network Address Translation Network Layer Services.		CO3	U
c)	Differentiate between VLAN and VPN.		CO6	U
Q.3	Solve any two questions out of three. (10 marks each)	20		
a)	Explain OSI model in detail with a neat diagram and function of each layer.		CO1	U
b)	Consider an error detecting CRC with the generator 10101. Assume the CRC bit follow the data bits in any transmission. 1) Compute the transmitted bit sequence for the data bit sequence 01101101. 2) The string of bits 110011001100 is received, Is it acceptable and if so what is the data bit sequence.		CO2	U
c)	Find the shortest path using Bellman Ford algorithm for the subnet shown in fig, consider node A as root(Destination) and Analyze which path is shortest among the all path.		CO3	An

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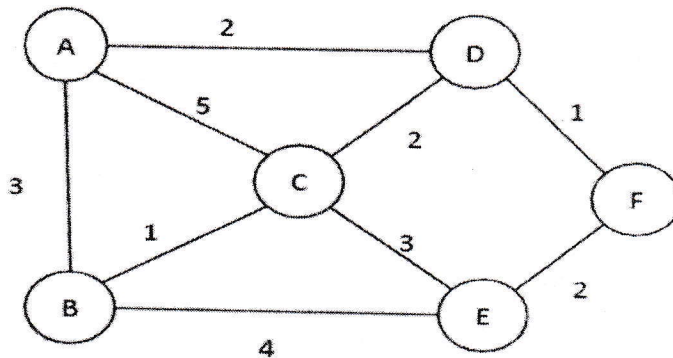
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Q.4 Solve any two questions out of three. (10 marks each)

a) Draw the header format for TCP and UDP protocol and explain in detail.

b) i) Explain Image compression with block diagram. (5M)

ii) Describe the File Transfer Protocol (FTP). How does it ensure reliable file transfer between a client and a server (5M)

c) 1) Explain Dynamic Host Configuration Protocol (5M)

2) Given the IP address 192.168.1.0/24, divide the network into 4 equal subnets. Answer the following: (5M)

1. Determine the subnet mask for each subnet.
2. Find the Network ID of each subnet.
3. Specify the usable IP address range for each subnet.
4. Identify the broadcast address of each subnet.

20

CO4

U

CO5

U

CO6

Ap
