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

Supplementary Exam August 2023
(B.Tech.) Program: Artificial Intelligence and Data Science
Examination: TY   Semester: V

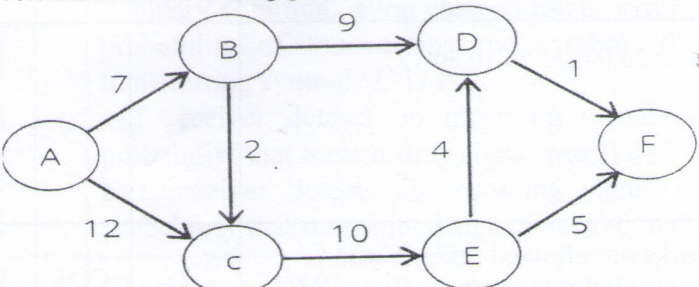| Course Code: AIDLC5051	Course Name: Computer Networks	
Duration: 2.5 Hours	Date:10/8/2023	Max. Marks: 60

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

		Max. Marks	CO	BT level
Q 1	**Solve any six questions out of eight:**	12		
i)	Compare TCP and UDP.	2	CO2	Un
ii)	What is LAN in computer networks?	2	CO1	Un
iii)	Consider a block of IP Addresses ranging from 150.10.20.64 to 150.10.20.127. 1. Is it a CIDR block? 2. If yes, give the CIDR representation.	2	CO3	Un
iv)	In the IPv4 addressing format, how many networks are allowed under Class C addresses?	2	CO4	Un
v)	How is the preamble different from the SFD field?	2	CO4	Ap
vi)	In TCP , what type of flag can totally close the communication in both directions?	2	CO5	Un
vii)	Which are the various types of addresses used in the OSI model?	2	CO5	Un
viii)	Why is software defined networking is important?	2	CO6	Un
Q.2	**Solve any four questions out of six.**	16		
i)	Which protocol is used to access the data on the web? Explain in detail.	4	CO6	Un
ii)	Define the utilization or efficiency of the line and derive the expression for stop and wait flow control.	4	CO2	Un
iii)	In a CDMA/CD network with a data rate of 10 Mbps, the maximum distance between any station pair is found to be 2500 m for the correct operation of the collision detection process. What should be the maximum distance if we increase the data rate to 100 Mbps? To 1 Gbps? To 10 Gbps?	4	CO3	Ap

iv)	Which network topology has a single point of failure? Explain with a diagram.	4	CO1	Un
v)	An organization is granted a block of addresses with the beginning address 14.24.74.0/24. The organization needs to have 3 sub blocks of addresses to use in its three subnets as shown below: ❑ One subblock of 120 addresses. ❑ One subblock of 60 addresses. ❑ One subblock of 10 addresses	4	CO4	Ap
vi)	Write a short note on "FTTX".	4	CO5	Un
Q.3	**Solve any two questions out of three.**	16		
i)	What are the functions of layers in the TCP/IP model?	8	CO1	Un
ii)	Using Dijkstra's Algorithm, find the shortest distance from source vertex 'A' to to remaini vertices in the following graph- 	8	CO4	Ap
iii)	List and explain different ARQ techniques. Specify the maximum window size for each with justification.	8	CO5	Ap
Q.4	**Solve any two questions out of three.**	16		
i)	Explain the various connecting devices used in computer networks with diagrams, advantages and disadvantages.	8	CO6	Un
ii)	A bit stream 10110. is transmitted using the standard CRC method. The generator polynomial is x^3+x^2+1. What is the actual bit string transmitted? At the receiver, how do we come to know if there is error or not.	8	CO3	Ap
iii)	What are the responsibilities of Application Layer and explain the different protocols required for the same.	8	CO2	Un

****