

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

Nov – Dec 2025		
(B. Tech) Program: AIDS Scheme III		
Regular Examination: TY Semester: V	Course Code: AIDLC5041 and Course Name: AI in Computer Networks	
Date of Exam: 28/11/2025	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)	What are the functions of layers in the TCP/IP model?		CO1	Un
b)	Compare circuit switching, packet switching, and message switching.		CO2	Un
c)	Define piggybacking and its benefits.		CO3	Un
Q 2	Solve any two questions out of three: (05 marks each)	10		
a)	Define the layer of the OSI model at which the following devices operate: Hub, Bridge, Switch, Router, Gateway.		CO2	Un
b)	For each ARQ method (Stop-and-Wait, Go-Back-N, Selective Repeat), discuss the maximum window size allowed and provide the justification for Selective Repeat ARQ method.		CO5	Un
c)	Explain SDN architecture in detail.		CO6	Un
Q.3	Solve any two questions out of three. (10 marks each)	20		
a)	A binary data word 1101111001 is encoded using CRC with the divisor $x^6 + x^4 + x + 1$. Find the resulting CRC remainder.		CO3	Ap
b)	What is classless addressing? How is it different from classful addressing? An address in a block is given as 10.11.200.15/22. Find: 1. The number of addresses in the block. 2. The network address (first address). 3. The broadcast address (last address). 4. The first usable and last usable host addresses.		CO4	Ap

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c)	<p>Explain step-by-step how the 3-way handshake takes place. Draw the timing diagram and show:</p> <ul style="list-style-type: none"> all sequence and acknowledgment numbers SYN, ACK flags how both sides synchronize before sending actual data <p>Later, the client terminates the connection first. Using the same example, demonstrate the handshake for connection release.</p> <p>Use a client with Initial Sequence Number (ISN) 1400 wants to establish a TCP connection with a server whose ISN is 6200.</p>		CO5	Un
Q.4	Solve any two questions out of three. (10 marks each)	20		
a)	What is congestion and what are its causes? Explain token bucket and leaky bucket algorithm for congestion control.		CO4	Un
b)	Write a short note on application layer protocols, 1. HTTP 2. DNS.		CO5	Un
c)	Explain in detail the IEEE 802.3 Ethernet standard with frame format. Explain the evolution of Ethernet from 10 Mbps to 100 Gbps.		CO3	Un
