

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

Nov – Dec 2025
 Program: B. Tech Scheme III
 Regular Examination: TY Semester: V
 Course Code: CEC507 and Course Name: Computer Networks
 Duration: 02.5 Hours
 Max. Marks: 60

Date of Exam: 24/11/2025

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)	Draw the IP header with fields and explain them.		CO4	Ap
b)	Using the CRC algorithm find the data word transmitted if the Given Message bits: 1101011011 Generator polynomial: 10011		CO3	Ap
c)	Draw and explain the coaxial cable with its construction and list types of coaxial cables.		CO2	U
Q 2	Solve any two questions out of three: (05 marks each)	10		
a)	Explain the following TCP header dump in hexadecimal format: E293 0017 00000001 00000000 5002 07FF		CO5	Ap
b)	Draw and Explain the electromagnetic spectrum band		CO2	U
c)	Explain the four phases of TCP congestion control.		CO5	U
Q.3	Solve any two questions out of three. (10 marks each)	20		
a)	Define a network topology. List and explain the different topologies with their merits and demerits		CO1	U
b)	Describe the working of CSMA/CD in Ethernet. Explain collision detection, backoff algorithm, and frame handling.		CO3	U
c)	Routing is the function of which layer? Explain the DVR Protocol with an example.		CO4	U
Q.4	Solve any two questions out of three. (10 marks each)	20		
a)	Write a short note on DNS		CO6	U

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b)	A university receives the network 10.0.0.0/16 for its campus. It has to create subnets for the following buildings: Admin: 400 hosts, Library: 250 hosts, Engineering: 900 hosts, Science: 500 hosts, Hostel: 1000 hosts i) Design the subnetting scheme using variable-length subnet masking (VLSM). ii) Calculate the block sizes and the final table with network mask, and range and broadcast. iii) Represent the solution with a diagram.		CO4	Ap
c)	Explain the Leaky Bucket Algorithm. How does it regulate traffic flow in a network?		CO5	U

Seat No.: