

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur (GIET University)

M.C.A. (Second Semester - Regular) Examinations, May - 2026

MCA252003 – Data communications and Computer Networks (MCA)

Time: 3 hrs

Maximum: 60 Marks

(The figures in the right hand margin indicate marks)

PART – A

(2 x 5 = 10 Marks)

Q.1. Answer **ALL** questions

	CO #	Blooms Level
a. Compare OSI and TCP/IP models (any two points).	CO1	K2
b. Calculate maximum data rate if bandwidth = 5 kHz and signal levels = 8.	CO2	K3
c. Define data link layer. What are its functions?	CO2	K1
d. Differentiate distance vector and link state routing.	CO3	K2
e. What is IMAP?	CO5	K1

PART – B

(10 x5=50 Marks)

Answer **ALL** questions

	Marks	CO #	Blooms Level
2. a. Draw and explain OSI model of computer network. (OR)	10	CO1	K2
b. Explain different types of network topologies with suitable diagrams.	10	CO1	K2
3.a. Explain block encoding techniques (4B/5B, 8B/10B) with examples. (OR)	10	CO2	K2
b. Explain transmission impairments: attenuation, distortion, and noise.	8	CO2	K2
c. A channel has bandwidth 2 MHz and SNR = 15. Find capacity.	2	CO2	K3
4.a. Apply CRC method to check whether data 11100101 has error using divisor polynomial ($X^3 + X + 1$).	5	CO3	K3
b. Differentiate Stop-and-Wait ARQ and Selective Repeat ARQ. (OR)	5	CO2	K2
c. Explain different modes of HDLC (NRM, ABM) with diagram.	10	CO2	K2
5.a. Given IP address 192.168.10.0/24, create 4 subnets. Find: (i) Subnet mask. (ii) Broadcast IP (iii) Network IP of each subnet (iv) Host IP range (OR)	10	CO3	K3
b. Explain routing in computer networks and discuss different routing algorithms.	10	CO3	K2
6.a. Draw the TCP segment format and explain the function of each field in detail.	8	CO4	K2
b. What are the features of TCP protocol? (OR)	2	CO4	K1
c. Explain TCP Connection Management with all conditions of Data transmission with Example.	10	CO4	K2

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