TOTAL PAGES: 2

23CTU526N

PSG COLLEGE OF ARTS & SCIENCE
(AUTONOMOUS)

BSc DEGREE EXAMINATION DECEMBER 2025
(Fifth Semester)

Branch - **COMPUTER TECHNOLOGY**

DATA COMMUNICATION AND NETWORKS

Time: Three Hours Maximum: 75 Marks

SECTION-A (10 Marks)
Answer **ALL** questions
ALL questions carry **EQUAL** marks (10 × 1 = 10)

Module No.	Question No.	Question	K Level	CO
1	1	Which of the following is not a component of a data communication system? a) Message b) Protocol c) Decoder d) Receiver	K1	CO1
	2	The main difference between the OSI and TCP/IP models is: a) OSI has 5 layers, TCP/IP has 7 layers b) OSI is a reference model, TCP/IP is an implementation c) OSI supports only TCP protocol d) TCP/IP is used only in LANs	K2	CO1
2	3	In FDM (Frequency Division Multiplexing), the bandwidth is divided into: a) Time slots b) Frequency bands c) Codes d) Packets	K1	CO2
	4	Which of the following is unguided media? a) Optical Fiber b) Coaxial Cable c) Microwave d) Twisted Pair	K2	CO2
3	5	Which error detection method uses parity bits? a) CRC b) Block Coding c) Checksum d) Parity Check	K1	CO3
	6	Which of the following is a multiple access protocol? a) CSMA/CD b) IPv4 c) FTP d) TCP	K2	CO3
4	7	IPv4 addresses are of how many bits? a) 32 bits b) 64 bits c) 128 bits d) 16 bits	K1	CO4
	8	Which routing algorithm uses shortest path calculation? a) Distance Vector b) Link State c) Multicast Routing d) Flooding	K2	CO4
5	9	The transport layer provides: a) Node-to-Node Delivery b) Process-to-Process Delivery c) Hop-to-Hop Delivery d) Application-to-Application Delivery	K1	CO5
	10	Which of the following is asymmetric key cryptography? a) DES b) AES c) RSA d) 3DES	K2	CO5

Cont...

SECTION - B (35 Marks)

Answer **ALL** questions

ALL questions carry **EQUAL** Marks (5 × 7 = 35)

Module No.	Question No.	Question	K Level	CO
1	11.a.	Explain the components of a Data Communication system with neat diagram.	K2	CO1
		(OR)		
	11.b.	Compare the OSI and TCP/IP reference models in detail.		
2	12.a.	Differentiate between guided and unguided transmission media with examples.	K3	CO2
		(OR)		
	12.b.	Explain Frequency Division Multiplexing (FDM) and Time Division Multiplexing (TDM) with neat diagrams.		
3	13.a.	Construct the working of Cyclic Redundancy Check (CRC) with an example.	K3	CO3
		(OR)		
	13.b.	Identify framing methods in Data Link Layer.		
4	14.a.	Examine IPv4 addressing scheme in detail with suitable examples.	K4	CO4
		(OR)		
	14.b.	Compare Distance Vector and Link State routing algorithms.		
5	15.a.	Analyze the functions of UDP and TCP in Transport layer.	K4	CO5
		(OR)		
	15.b.	Distinguish between Symmetric-key and Asymmetric-key cryptography with examples.		

SECTION -C (30 Marks)

Answer **ANY THREE** questions

ALL questions carry **EQUAL** Marks (3 × 10 = 30)

Module No.	Question No.	Question	K Level	CO
1	16	Analyze the differences between analog and digital signals. Discuss situations where each is more effective in communication.	K4	CO1
2	17	Compare circuit switching vs packet switching with real-world examples (e.g., telephone vs. internet).	K4	CO2
3	18	Examine the effectiveness of Error Detection Techniques (CRC, checksum, parity) and justify which is best suited for real-time applications.	K4	CO3
4	19	Compare IPv4 and IPv6 in terms of addressing, header format, and security features. Analyze the challenges in migrating from IPv4 to IPv6.	K4	CO4
5	20	Discover a secure communication system using TCP features and cryptographic methods. Explain how flow control and authentication can be combined.	K4	CO5

Z-Z-Z END