Code No.: (R22IT501PC)

R22	H.T.No.			8	R					

CMR ENGINEERING COLLEGE: : HYDERABAD
UGC AUTONOMOUS
III–B.TECH–I–Semester End Examinations (Regular) - December- 2024
DATA COMMUNICATIONS AND COMPUTER NETWORKS
(IT)

[Time: 3 Hours] **[Max. Marks: 60]**

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 10 marks. Answer all questions in Part A.
Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks.

PART-A **(10 Marks)**

1. a)	Differentiate between circuit-switched and packet-switched networks.	[1M]
b)	What are Virtual Circuit Networks?	[1M]
c)	Compare channelization techniques (FDMA, TDMA, CDMA).	[1M]
d)	Explain the purpose of flow control in the data link layer.	[1M]
e)	Evaluate the importance of IGMP in multicast communication.	[1M]
f)	Define logical addressing in the network layer.	[1M]
g)	What is the primary difference between TCP and UDP?	[1M]
h)	Differentiate between flow control and congestion control.	[1M]
i)	Explain the purpose of SNMP in network management.	[1M]
j)	Define the term domain namespace (DNS).	[1M]

PART-B **(50 Marks)**

2.	Explain the ISO/OSI reference model with the function of each layer.	[10M]
	OR	
3.	Evaluate the performance of different transmission media in terms of bandwidth, cost, and noise immunity.	[10M]
4.	Assess the effectiveness of error detection and correction mechanisms (parity, CRC, Hamming Code).	[10M]
	OR	
5.	Describe the HDLC protocol and its modes of operation with diagrams.	[10M]
6.	Demonstrate the working of a multicast routing protocol with an example.	[10M]
	OR	
7.	Analyze the advantages of tunneling in IPv6-over-IPv4 communication and explain IPv4 protocol.	[10M]
8.	Explain the working of TCP (Header format), including connection establishment and congestion control algorithms (Leaky bucket).	[10M]
	OR	
9.	Analyze the role of QoS in ensuring high-priority data delivery.	[10M]
10.	Illustrate the workflow of an email system using SMTP, POP3, and IMAP.	[10M]
	OR	
11.	Design a secure Electronic Mail communication system with encryption and authentication mechanisms.	[10M]

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