

**BIRLA INSTITUTE OF TECHNOLOGY, MESRA, RANCHI
(END SEMESTER EXAMINATION)**

**CLASS: B.TECH
BRANCH: AIML**

**SEMESTER : V/ADD
SESSION : MO/2025**

SUBJECT: AI323 DATA COMMUNICATION AND COMPUTER NETWORKS

TIME: 3 Hours

FULL MARKS: 50

INSTRUCTIONS:

1. The question paper contains 5 questions each of 10 marks and total 50 marks.
 2. Attempt all questions.
 3. The missing data, if any, may be assumed suitably.
 4. Before attempting the question paper, be sure that you have got the correct question paper.
 5. Tables/Data hand book/Graph paper etc. to be supplied to the candidates in the examination hall.
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		CO	BL
Q.1(a)	Describe the structure and working of the Internet Protocol (IPv4). Explain the purpose of each major field in the IPv4 header.	[5] 2	2
Q.1(b)	Explain the architecture of the TCP/IP model, describing the functions of each of its layers.	[5] 2	2
Q.2(a)	Explain the complete process of Pulse Code Modulation (PCM).	[5] 1	2
Q.2(b)	Describe the complete process of satellite microwave communication and how is it different from terrestrial microwave communication.	[5] 1	4
Q.3(a)	What is sliding window protocol ? Differentiate between stop-and wait ARQ and Go-back-N protocol.	[5] 3	4
Q.3(b)	Given the 10-bit data sequence 1010011110 and the generator polynomial represented by 1011, compute the Cyclic Redundancy Check (CRC) bits. Show all steps of the CRC calculation.	[5] 4	3
Q.4(a)	Describe and distinguish between Aloha, CDMA/CA and CDMA/CD FDMA, TDMA, and CDMA.	[5] 2	4
Q.4(b)	Describe the role of the Logical Link Control (LLC) sublayer within the IEEE 802 LAN architecture. Also explain the service types provided by the LLC sublayer.	[5] 3	2
Q.5(a)	Explain the concept of internetworking and its primary objectives. Discuss/describe its Key Characteristics and Design Requirements.	[5] 3	2
Q.5(b)	Compare and contrast circuit switching and packet switching in data communication networks.	[5] 2	4

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