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

SEMESTER : V/ADD
SESSION : MO/2025

CLASS: BTECH
BRANCH: CSE

SUBJECT: IT333 DATA COMMUNICATION AND COMPUTER NETWORKS

FULL MARKS: 50

TIME: 3 Hours

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.

			CO	BL
Q.1(a)	Explain the operation of TCP and IP for the user data transmission with Protocol Data Units (PDUs).	[5]	2	2
Q.1(b)	Differentiate between attenuation and delay distortion for a voice channel with equalizing techniques. If A signal has a power of 50 mW at the source and 5 mW at the destination, calculate the attenuation in decibels (dB).	[5]	3	3,4
Q.2(a)	Explain the general structure of a fiber optic link for communication with different transmission modes.	[5]	1,3	2
Q.2(b)	Describe the working principle of Pulse Code Modulation (PCM) with a neat diagram. How the PCM scheme can be refined? Explain	[5]	2	2
Q.3(a)	Explain the error correction approaches. If a 7-bit Hamming code is received as 1011011, assuming that it uses even parity and follows the standard Hamming format, determine whether there is an error in the received code. If so, identify and correct the error.	[5]	3	2,3
Q.3(b)	Illustrate the Sliding Window Protocol with a suitable example. How does it improve efficiency over the Stop-and-Wait protocol? Explain	[5]	4	2,4
Q.4(a)	Discuss a synchronous Time Division Multiplexing (TDM) system with a neat diagram. How are different data sources synchronized in this system? Explain	[5]	4	2,4
Q.4(b)	Illustrate the significant relationship between packet size and transmission time with a neat diagram.	[5]	3	2
Q.5(a)	Explain the working mechanism of Asynchronous Transfer Mode (ATM) with its cell format.	[5]	2	2
Q.5(b)	Illustrate the flooding technique in routing with a neat diagram. How this technique is different from adaptive routing? Explain	[5]	5	2

::::::20/11/2025::::::M