

JAYPEE UNIVERSITY OF INFORMATION TECHNOLOGY, WAKNAGHAT

TEST-1 EXAMINATION-FEBRUARY-2026

B.Tech- IVth Semester (ECE)

COURSE CODE (CREDITS): 25B11EC416 (3)

MAX. MARKS: 15

COURSE NAME: Telecommunication Networks

COURSE INSTRUCTOR: Dr. Pardeep Garg

MAX. TIME: 1 Hour

Note: (a) All questions are compulsory. (b) The candidate is allowed to make suitable numeric assumptions wherever required for solving problems. (c) Use of non-programmable scientific calculator is allowed.

Q.No	Question	CO	Marks
Q1	Define topology. Draw and discuss the basic network topologies. Also compute the number of cable links required in each topology assuming n devices in a network.	CO-1	1+2=3
Q2(a)	The binary data 10110011 has to be transmitted over the channel. Represent the encoding of the data using following line codes: a) Unipolar NRZ b) Polar RZ c) Manchester d) Differential Manchester	CO-1	0.5*4=2
Q2(b)	How are bit rate and baud rate related to each other?	CO-1	1
Q3	25 digital sources each of 1 Mbps capacity are to be multiplexed using synchronous TDM. Each output slot carries 2 bits from each digital source, and one extra bit is added to each frame for synchronization. Answer the following questions: a) What is the output frame rate? b) Size of an output frame in bits. c) Transmission rate of the link. d) Efficiency of the system (ratio of the useful bits to the total bits)	CO-1	0.5+1+0.5+1=3
Q4	Define switch and the need of switching.	CO-2	1
Q5	Discuss the advantages and disadvantages of circuit-switched network and packet-switched network over one another.	CO-2	2
Q6	We need to have a space-division switch with 5000 inputs and outputs. What is the total number of crosspoints in each of the following cases? a) Using one single crossbar. b) Using a multi-stage switch based on the Clos criteria. c) Draw the configuration diagram with values obtained in part b.	CO-2	0.5+1.5+1=3