Roll No.	2	0	2	1	1	0	2	3	8	

NIST INSTITUTE OF SCIENCE & TECHNOLOGY
(Autonomous)

B. Tech 3rd Semester (2021 Batch)				Branch(s)	CSE/IT
Subject Code	19CS3PC02T/ 19IT3PC02T	Subject Name		Computer Network & Data Communication	
Time	90 min	Exam	Mid Semester	Max. Marks	50
Examination Superintendent		Dr.Manabendra Patra			
Name of the Instructor(s)		Prof. Rabindra Kumar Shial, Prof. Swadhin Mishra, Prof.Swetanjali Maharana & Prof.Sukanti Pal			
Date of Examination		24-11-2022	Sitting	1st Sitting	

Answer Question No.1 from PART-I *which is compulsory, any four from PART-II and any one from* PART-III.

The figures in the right hand margin indicate marks.

PART-I

(Answer all the questions)

Q1.		CO	Level	Level-1: Knowledge Level-2: Comprehension Level-3: Application Level-4: Analysis Level-5: Synthesis Level -6: Evaluation	2 X 5
	(a)	1	2	Difference between simplex and full-duplex transmission modes?	2
	(b)	1	3	A constellation diagram consists of eight equally spaced points on a circle.If the bit rate is 4800bps. What is the baud rate?	2
	(c)	1	4	Assume that a voice channel occupies a bandwidth of 4khz.We need to multiplex 12 voice channels with guard bands of 50 Hz using FDM. Calculate the required bandwidth.	2
	(d)	2	2	Differentiate between flow control and error control.	2
	(e)	2	4	A receiver receives a bit pattern 11010110101. The system is using even parity. Is the pattern in error? Justify.	2

1 1 0 1 0 1 1 0 1 0 1

$P_1 = 1\ 1\ 1\ 0\ 0\ 1$

$P_1 = 0$

PART-II

(Answer Any Four questions out of six)

Q2.		CO	Level	Level-1: Knowledge Level-2: Comprehension Level-3: Application Level-4: Analysis Level-5: Synthesis Level -6: Evaluation	4 X 6
	(a)	1	4	Define linecoding. Show the Manchester and differential Manchester encoding of the bit pattern given below: 11010011	6
	(b)	1	2	What is sampling? Define the techniques of converting an analog signal to digital signal.	6
	(c)	1	2	Explain Time division multiplexing. Differentiate between TDM and FDM.	6
	(d)	2	2	Describe the stop-and wait ARQ. What is the difference between Go-Back N ARQ Protocol with selective Repeat ARQ?	6
	(e)	2	2	Why there is more than one type of frames in HDLC ? Give an account of the frame format of I-Frame in HDLC protocol, describing the function of each field.	6
	(f)	2	3	Find the checksum for the following bit sequence. Assume a 16 bit segment size. 0101001011010011 1010100111001101	6

PART-III

(Answer Any One question out of two)

		CO	Level	Level-1: Knowledge Level-2: Comprehension Level-3: Application Level-4: Analysis Level-5: Synthesis Level -6: Evaluation	1 X 16
Q3.	(a)	1	2	Draw and Explain briefly all the function of the OSI model.	8
	(b)	2	3	Define Hamming distance. Construct the Hamming code for the bit sequence 11001010	8
Q4.	(a)	2	3	What is the operation of CRC? Given a 10-bit sequence 1011001001 and a divisor of 1101, find the CRC. Verify your answer	8
	(b)	1	2	What do you mean by topology? Draw and Explain different types of topology with their advantages and disadvantages.	8