



## P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

**Fourth Semester, B.E. - Computer Science and Engineering**

**Semester End Examination; August - 2023**

**Data Communication**

Time: 3 hrs

Max. Marks: 100

### Course Outcomes

The Students will be able to:

CO1: Analyze OSI and TCP network models and the layers associated functionalities

CO2 : Analyze and apply different types of signal conversion techniques in physical layer

CO3: Analyze and apply different types of error detection and correction mechanisms

CO4 : Analyze flow control and Error control mechanism using standard data link layer protocols and Compare different categories of Medium Access protocols

CO5: Analyze different protocols used for Ethernet and various connecting devices used in networks.

**Note:** I) PART - A is compulsory. Two marks for each question.

II) PART - B: Answer any **Two** sub questions (from a, b, c) for a Maximum of **18 marks** from each unit.

Q. No.	Questions	Marks	BLs	COs
<b>I : PART - A</b>		<b>10</b>		
1 a.	List fundamental characteristics of data communication.	2	L1	CO1
b.	If you want to digitize human voice then what is the bit rate assuming 8-bits per sample.	2	L4	CO1
c.	Brief out the advantages of cyclic codes.	2	L2	CO2
d.	List out Random access protocols.	2	L2	CO2
e.	Define Piconet and Scatternet.	2	L2	CO2
<b>II : PART - B</b>		<b>90</b>		
<b>UNIT - I</b>		<b>18</b>		
2 a.	Brief out the components of data communication and also explain simplex, half – duplex, full – duplex data flow models.	9	L2	CO1
b.	Discuss the Layers in the TCP / IP protocol suit with neat diagram and also show the logical connection.	9	L2,4	CO1
c.	Brief out the transmission impairment and its causes.	9	L1	CO1
<b>UNIT - II</b>		<b>18</b>		
3 a.	Discuss and brief out the all line – coding schemes in detail.	9	L2	CO2
b.	What is Delta Modulation? Explain working of modulator and demodulator.	3+6	L2,3	CO2
c.	Explain Multiplexing in detail and also explain the categories of multiplexing.	2+7	L2	CO2
<b>UNIT - III</b>		<b>18</b>		
4 a.	Along with neat diagram, explain the structure of the packet switches.	9	L3	CO3
b.	What is cyclic code? Brief out the CRC encoder and decoder.	9	L2	CO3
c.	Write a short note on polynomials and also explain various operations.	3+6	L3	CO3

**UNIT - IV**

**18**

- 5 a. Explain CSMA / CA along with its flow diagram. 9 L3 CO4
- b. Discuss the stop and wait protocol and also discuss the FSM for the same. 9 L2 CO4
- c. What is HDLC? Explain the flow diagram of HDLC in detail. 9 L3,4CO4

**UNIT - V**

**18**

- 6 a. What is Ethernet? Explain the frame format of the Ethernet. 9 L1,2CO5
- b. Explain the Bluetooth Architecture in detail. 9 L3 CO5
- c. Along with neat diagram explain the frame format of the MAC-layer. 9 L3 CO5

\* \* \* \*