

**P.E.S. College of Engineering, Mandya - 571 401***(An Autonomous Institution affiliated to VTU, Belagavi)***Fifth Semester, B.E. - Electrical and Electronics Engineering****Semester End Examination; February / March - 2022****Data Communication and Network**

Time: 3 hrs

Max. Marks: 100

**Course Outcomes***The Students will be able to:**CO1: To understand the different types protocols used in communication network.**CO2: Analyze the different types of analog and digital signals.**CO3: To understand the different types of transmission networks used in networking.**CO4: Analyze the error detection and correction.**CO5: Analyze the different types wireless 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 Maximum of 18 marks from each unit.**

Q. No.	Questions	Marks	BLs	COs	POs
<b>I : PART - A</b>		<b>10</b>			
I a.	The internet is roughly doubling in size every 18 month, the internet users 10,000 in January 2021. Compute the expected internet users in Dec. 2032.	2	L1	CO1	PO1,10
b.	List and draw the network topology of network.	2	L1	CO2	PO1,10
c.	Define Bit rate and Bandwidth.	2	L1	CO3	PO1,10
d.	Classify the MAC protocols.	2	L1	CO5	PO1,10
e.	What is the importance of NAV?	2	L1	CO5	PO1,10
<b>II : PART - B</b>		<b>90</b>			
<b>UNIT - I</b>		<b>18</b>			
1 a.	With suitable diagram, explain LAN and WAN.	9	L2	CO1	PO4
b.	List the different network topology and explain each with suitable diagram.	9	L2	CO1	
c.	Explain TCP/IP protocol suite and functions of each layer.	9	L2	CO1	
<b>UNIT - II</b>		<b>18</b>			
2 a.	Discuss the network performance with respective bandwidth, throughput and latency.	9	L3	CO2	
b.	Explain three causes of impairment in transmission.	9	L2	CO2	
c.	Discuss the different types of transmission mode of binary data.	9	L3	CO2	
<b>UNIT - III</b>		<b>18</b>			
3 a.	Explain light propagation in core region of optical fiber and what are the propagation modes of light in optical fiber?	9	L3	CO3	
b.	What are the unguided media? Explain any two wireless media.	9	L2	CO3	
c.	Explain virtual-circuit network.	9	L3	CO3	

**UNIT - IV****18**

- |  |   |    |     |
|--|---|----|-----|
| 4 a. What is Framing? Explain bit and character stuffing with suitable illustration. | 9 | L2 | CO4 |
| b. Explain CRC and checksum technique of block coding error detection.               | 9 | L4 | CO4 |
| c. With diagram, explain CSMA and CSMA/CD techniques.                                | 9 | L3 | CO4 |

**UNIT - V****18**

- |  |   |    |     |
|--|---|----|-----|
| 5 a. Explain frame format, frame length and addressing of standard Ethernet. | 9 | L3 | CO5 |
| b. Explain IEEE 802.11 frame format, physical layer and architecture.        | 9 | L4 | CO5 |
| c. Explain Bluetooth architecture and layers.                                | 9 | L4 | CO5 |

**\* \* \* \***