

**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; July / August - 2022****Data Communication**

Time: 3 hrs

Max. Marks: 100

**Course Outcome***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. One question from each unit for maximum of 2 marks.ii) **PART-B** Answer any **TWO** sub questions (from a, b, c) from each unit for a Maximum of 18 marks.

Q. No.	Questions	Marks	BLs	COs
<b>I : PART - A</b>		<b>10</b>		
I a.	List and explain the causes for transmission impairment.	2	L3	CO1
b.	Mention the types of guided media.	2	L2	CO2
c.	Write an algorithm to calculate 8-bit fletches checksum.	2	L4	CO4
d.	Mention the functionalities of controlled access methods.	2	L2	CO3
e.	Mention the characteristics of standard Ethernet.	2	L2	CO2
<b>II : PART - B</b>		<b>90</b>		
<b>UNIT - I</b>		<b>18</b>		
1 a.	Explain the different types of connections along with types of topologies.	9	L2	CO3
b.	Explain different transmission impairment in detail.	9	L1	CO4
c.	Explain OSI model and compare OSI model with TCP/IP along with lack of OSI models success.	9	L3	CO2
<b>UNIT - II</b>		<b>18</b>		
2 a.	List and explain the different types of line coding schemes.	9	L2	CO2
b.	Explain the different categories of multiplexing.	9	L3	CO3
c.	List and explain the unguided media along with its applications.	9	L1	CO1
<b>UNIT - III</b>		<b>18</b>		
3 a.	Explain the virtual circuit network.	9	L1	CO1
b.	Explain the CRC encoder and decoder techniques solve the following problem with data word as 1001 and devices as 1011:			
	i) Show the generation of code word at sender side	9	L4	CO3
	ii) Show the code word generated at receiver side			

c. Explain the procedure to calculate the traditional checksum and solve the following problem using the same procedure:

i) Data numbers as 7, 11, 12, 0, 6 and check whether data is corrupted or not.

9 L4 CO3

Provide the reason

ii) Write the algorithm to calculate traditional checksum

#### UNIT - IV

18

4 a. a) Explain flow and errors control at data link layer.

9 L1 CO2

b) Explain the simple protocol along with finite state machine.

b. Explain stop-and-wait protocol with finite state machine.

9 L2 CO3

c. Explain CSMA with vulnerable time and persistence method with flow diagram.

9 L3 CO1

#### UNIT - V

18

5 a. Explain the frame format types in Bluetooth architecture.

9 L2 CO2

b. Explain IEEE 802.11 project architecture in detail.

9 L3 CO3

c. Briefly explain the fast Ethernet and Giga bit Ethernet.

9 L2 CO2

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