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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
	I : PART - A	**10**		
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
	II : PART - B	**90**		
	UNIT - I	**18**		
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
	UNIT - II	**18**		
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
	UNIT - III	**18**		
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 ii) Show the code word generated at receiver side	9	L4	CO3

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. Provide the reason ii) Write the algorithm to calculate traditional checksum	9	L4	CO3

UNIT - IV		**18**		
4 a.	a) Explain flow and errors control at data link layer. b) Explain the simple protocol along with finite state machine.	9	L1	CO2
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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