CN Theory Remedial Assignment -1

1. **Submit the assignment before 12/April/23.**
2. **All questions are mandatory.**
3. **There is no any choice or option, so complete the assignment including OR questions.**
4. **Write neat and clean on A4 size paper only.**

Section-A				**(2X10=20)**
Q. 1		**Competitive Exam**	**CO**	**BL/ KC***
a	Determine the reason of twisting the wires in twisted pair cable?		1	3/C
b	Calculate the number of cable links required for the 6 devices connected in mesh, ring, bus and star topology?		1	3/P
c	Which layer is used for Hop-to-Hop delivery and Source to Destination delivery. Write the addressing mechanism used on these respective layers with their size length.		1	1/C
d	Write the full form of following addresses? 1. DNS 2. ARP 3. DHCP 4. RARP Also answer that which protocol among given is NOT used to resolve one form of address to another one?	GATE 2016	1	1/C
e	In the following pairs of OSI protocol layer/sub-layer and its functionality, the INCORRECT pair is. 1. Network layer and Routing 2. Transport layer and End-to-end process communication 3. Data Link Layer and Bit synchronization 4. Medium Access Control sub-layer and Channel sharing	GATE 2014	1	2/C
f	Differentiate between a bus backbone and a star backbone.		2	2/P
g	In data communication, a network has 4 intermediate nodes and then how many times physical layer is used? Discuss your answer with neat and clean diagram.		2	3/P
h	A bit-stuffing based framing protocol uses an 8-bit delimiter pattern of 01111110. If the output bit-string after stuffing is 01111100101, then the input bit-string is. 1. 0111110100 2. 0111110101 3. 0111111101 4. 0111111111 Explain your answer.		2	2/P
i	What is Framing? Whole message could be packed in one frame, which is not normally done. Justify reason for your answer.		2	2/C
j	What is the difference between the delivery of a frame in the data link layer and the delivery of a packet in the network layer?		2	2/C
Section-B				**(5X4=20)**
Q. 2	KIET has multiple departments located in different areas of a building. The IT department needs to connect all the departments to the KIET's network. Which network topology would be the most suitable for this scenario, and why?		1	4/C
	OR			
	Suppose you are working as a network administrator for a large organization that has multiple departments spread across several buildings. The company wants to connect all the departments and buildings to its network infrastructure. a) Which device(s) would you use to connect the computers within a single department?			

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- **Bloom's Level (BL) - Bloom's taxonomy framework is planning and designing of assessment of student's learning.**
- *Knowledge Categories (KCs): **F**-Factual, **C**-Conceptual, **P**-Procedural, **M**-Metacognitive
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	b) Which device(s) would you use to connect the departments within a building? c) Which device(s) would you use to connect the buildings together? d) Which device(s) would you use to connect the company's network to the internet? Explain the differences between among each of these devices and why you chose them for each scenario.			
Q. 3	Discuss and differentiate among LAN, WAN, Intranet, Extranet and VPN. OR Discuss the different types of guided transmission media.		1	2/C
Q. 4	Expolre the design issues of layers. OR Illustrate the importance of parity check mechanism? Suppose the sender wants to send the word *world*. In ASCII the five characters are coded as **1110111 1101111 1110010 1101100 1100100** Show the actual bits sent after using even parity mechanism.		2	3/C
Q. 5	Discuss the major duties of Data Link Layer. OR If the data link layer can detect errors, then why do we need another error checking mechanism at the transport layer?		2	2/C
Section-C				**(10X2=20)**
Q. 6	Illustrate the circuit, message and packet switching techniques and also outline their advantages and disadvantages. OR Illustrate the OSI reference model and also outline the differences with TCP/IP protocol suite.		1	4/C
Q. 7	The following character encoding is used in a data link protocol: A: 01000111; B: 11100011; FLAG: 01111110; ESC: 11100000. Show the bit sequence transmitted (in binary) for the six-character frame: A ESC FLAG ESC B FLAG when each of the following farming methods are used: a. Starting and ending flag bytes, with byte stuffing b. Starting and ending flag bytes, with bit stuffing OR The following character encoding is used in a data link protocol: A: 01000111; B: 11100011; FLAG: 01111110; ESC: 11100000 Show the bit sequence transmitted (in binary) for the frame: FLAG A B ESC FLAG when each of the following farming methods are used: a. Character count. b. Flag bytes with character stuffing.		2	3/P

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