



COMSATS University Islamabad, Lahore Campus
Department of Electrical and Computer Engineering

Assignment No 3-Spring 2024

Course Title:	Data Comm & Computer Networks			Course Code:	CPE314	Credit Hours:	4(3,1)
Resource Person	Mr. Ahmad Mudassir			Program Name:	BCE		
Semester:	6 th	Batch:	FALL 21	Section:	A,B	Date:	30 th May 2024
End Time:	4th June 2024			Maximum Marks:	20		
Student's name:				Reg. No.	CUI/	/LHR	

Important Instructions / Guidelines:

- Submit the Solved Assignment(Handwritten) scripts Cuonline before the End Time
- Only handwritten scanned PDF files with clear writing will be acceptable.
- Any copied answer script will be marked with zero grade.
- No Submissions after the End Time strictly.

Question 1:

What network device(s) is (are) used to...

1. connect networks with different logical address ranges?
2. transmit signals over long distances by modulating them to a carrier frequency in the ultra low frequency band?
3. connect physical networks?
4. extend the range of LANs?
5. connect wireless network devices in the infrastructure mode?
6. enable communication between networks, which use different protocols?

Question 2:

For the network devices, protocols, transmission units, line codes and addressing schemes in the table, mark the corresponding layer of the **hybrid reference model**.

*1 stands for the bottom layer and 5 for the top layer in the hybrid reference model.
If more than just one layer are a correct answer, it is sufficient to select at least a single correct layer.*

	Hybrid reference model layer				
	1	2	3	4	5
4B5B					
Address Resolution Protocol (ARP)					
Alternate Mark Inversion (AMI)					
Autonomous Systems					
Border Gateway Protocol (BGP)					
Bridge					
Congestion control					
CSMA/CA					
CSMA/CD					
Cyclic Redundancy Check (CRC)					
Distance vector routing protocols					
Dynamic Host Configuration Protocol (DHCP)					
Ethernet					
File Transfer Protocol (FTP)					
Flow control					
Gateway					
Hub					
Hypertext Transfer Protocol (HTTP)					
ICMP					
Internet Protocol (IP)					
Link state routing protocols					
Logical addresses					
Manchester-Code					
Media access control					
Modem					
Multilevel Transmission Encoding - 3 Levels					
Multiport Bridge					
Non-Return to Zero					
Open Shortest Path First (OSPF)					

	Hybrid reference model layer				
	1	2	3	4	5
Physical addresses					
Port numbers					
Reliable end-to-end data connection					
Repeater					
Router					
Routing Information Protocol (RIP)					
Security					
Spanning Tree Protocol (STP)					
Switch					
Telnet					
Transmission Control Protocol (TCP)					
User Datagram Protocol (UDP)					
Wireless LAN					

Question 3:

Which protocol is used to...

1. provide congestion control and flow control?
2. resolves logical addresses into physical addresses?
3. avoid collisions inside physical networks?
4. provide routing within autonomous systems via the Bellman-Ford algorithm?
5. remote control computers in an encrypted way?
6. provide routing within autonomous systems via the Dijkstra algorithm?
7. assign the network configuration to network devices?
8. remote control computers in a unencrypted way?
9. realize connectionless inter-process communication?
10. resolves domain names into logical addresses?
11. detect collisions inside physical networks?
12. download and upload files in an unencrypted way?
13. exchange (deliver) emails?
14. exchange diagnostic and control messages?

15. reduce a computer network to a loop-free tree?

The End

Good Luck 