

UNIT II DATA LINK LAYER**9**

Link Layer Addressing - ARP - Error Detection and Correction - Data Link Control Services - Data Link Layer Protocols - HDLC - PPP - Media Access Control - Ethernet - Wireless LANs: IEEE 802.11, Bluetooth - Connecting Devices.

PART-A

Q.No	Question	Max. Marks	CO-K Level	PO-PI Code
1.	What are the responsibilities of data link layer?	2	CO2-K2	1.3.1
2.	What is the purpose of hamming code?	2	CO2-K2	1.3.1
3.	Write short notes on ARP and RARP.	2	CO2-K2	1.3.1
4.	List out the sublayers of DLL and also define the purpose of it.	2	CO2-K1	2.2.4
5.	Define Bluetooth.	2	CO2-K1	1.3.1
6.	Compare the data rates for Standard Ethernet, Fast Ethernet, Gigabit Ethernet, and Ten-Gigabit Ethernet.	2	CO2-K2	2.2.4
7.	Analyze the Connecting devices used in computer network.	2	CO2-K2	2.2.4
8.	Compare and contrast byte-stuffing and bit-stuffing.	2	CO2-K2	2.2.4
9.	What are unicast, multicast and broadcast addresses?	2	CO2-K1	1.3.1
10.	Give the ARP Packet format for mapping IP addresses to Ethernet addresses.	2	CO2-K1	2.2.4
11.	Compare and contrast byte-oriented and bit-oriented protocols. Which category has been popular in the past (explain the reason)? Which category is popular now (explain the reason)?	2	CO2-K4	2.2.3
12.	Draw Piconet and Scatternet.	2	CO2-K1	1.3.1
13.	What is the purpose of MAC? Also list its protocols.	2	CO2-K2	1.3.1
14.	How does a given bridge learn whether it should forward a multicast frame over a given port?	2	CO2-K4	2.2.3
15.	Differentiate Switch and Bridge.	2	CO2-K2	2.2.4
16.	Why should Ethernet frame should be 1500 bytes long?	2	CO2-K4	2.2.4
17.	What are the ways to address the framing problem?	2	CO2-K2	1.3.1
18.	How does a single-bit error differ from a burst error?	2	CO2-K2	2.2.3
19.	Discuss the concept of redundancy in error detection and correction.	2	CO2-K2	1.3.1
20.	Distinguish between forward error correction versus error correction by retransmission.	2	CO2-K2	2.2.4
21.	Can the value of a checksum be all 0s (in binary)? Defend your answer. Can the value be all 1s (in binary)? Defend your answer.	2	CO2-K4	2.2.3
22.	Analyze the reason for moving from the Stop-and-Wait ARQ Protocol to the Go-Back-N ARQ Protocol.	2	CO2-K4	2.2.3
23.	Define piggybacking and its usefulness.	2	CO2-K2	1.3.1
24.	Do we need a multiple access protocol when we use the	2	CO2-K4	2.2.3

	localloop of the telephone company to access the Internet? Why?			
25.	Analyze why collision is an issue in a random access protocol but not in controlled access or channelizing protocols.	2	CO2-K4	2.2.3
26.	Define the type of the following destination addresses: a. 4A:30:10:21:10:1A b. 47:20:1B:2E:08:EE c. FF:FF:FF:FF:FF:FF	2	CO2-K3	2.2.3
27.	What is the hexadecimal equivalent of the following Ethernet address? 01011010 00010001 01010101 00011000 10101010 00001111	2	CO2-K3	2.2.3
28	What is the difference between a BSS and an ESS?	2	CO2-K2	2.2.4

PART-B & C

Q.No	Question	Max. Marks	CO-K Level	PO-PI Code
1.	What is the Hamming distance for each of the following codewords: a. d (10000, 00000) b. d (10101, 10000) c. d (11111, 11111) d. d (000, 000)	8	CO2-K3	2.2.3
2.	Assuming even parity, find the parity bit for each of the following data units. a. 1001011 b. 0001100 c. 1000000 d. 1110111	8	CO2-K3	2.2.3
3	(i). Define three types of addresses. (ii). Explain about ARP operations.	13	CO2-K2	1.3.1
4	Analyze "Bluetooth used for Short range communication or long range communication".	13	CO2-K4	2.2.3
5	Describe in detail about the general protocol that can be used for both point-to-point and multipoint configurations.	13	CO2-K2	1.3.1
6	Describe the design procedure for simple, stop and wait, Go-back-N, Selective Repeat .	13	CO2-K2	2.2.4
7	Use IEEE 802.3 and IEEE 802.11 to generalize the differences between wired and wireless LANS.	15	CO2-K2	2.2.4
8	Suppose we want to transmission the message 1011 0010 0111 and protect it from errors using the CRC polynomial X^4+X^2+1 . Use polynomial long division to determine the message that should be transmitted. Suppose the leftmost bit of message is inverted due to noise on the transmission link. What is the result of the receiver's CRC calculation? How does the receiver know that an error has occurred?	15	CO2-K3	2.2.4
9	Explain the IEEE 802.11 wireless LAN architecture in detail with diagram.	13	CO2-K2	1.3.1
10	Describe in detail about the general protocol that can be used for only point-to-point configuration.	13	CO2-K2	1.3.1