QP Code: RA22BTECH399 | Reg. No | | | | | | | | | | | AR 22

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)

B. Tech (Sixth Semester - Regular) Examinations, April 2025

22BCMPC36001 – Computer Networks

(CSE-AIML)

Time: 3 hrs | Maximum: 70 Marks

Answer ALL questions

(The figures in the right hand margin indicate marks)

PART – A **(2 x 5 = 10 Marks)**

Q.1. Answer ***ALL*** questions		CO #	Blooms Level
a.	What is the subnet mask for dividing the network 192.168.1.0 into 8 subnets?	CO1	K1
b.	Differentiate between noiseless and noisy channel protocols with examples.	CO2	K2
c.	Write a short note on Pure aloha and Slotted aloha.	CO2	K3
d.	If an organisation is having 200 hosts to connect with internet then which class of IP address should be assigned and why ?	CO3	K3
e.	What is the port number used by HTTP in TCP?	CO3	K1

PART – B **(15 x 4 = 60 Marks)**

Answer ***All*** the questions		Marks	CO #	Blooms Level
2. a.	Compare and contrast the OSI and TCP/IP reference models.	8	CO2	K2
b.	Why Multiplexing is required in data communication? Explain different types of multiplexing techniques.	7	CO2	K2
	(OR)			
c.	By using Polar NRZ-L, NRZ-I, Manchester encoding and differential Manchester encoding techniques convert the following binary data to digital signal. 11000110	8	CO1	K2
d.	Explain the various types of transmission media used in computer networks.	7	CO1	K2
3.a.	If sender sends 110011 but receiver receives 110111 data then using Hamming code techniques find out error and correct the error.	8	CO2	K3
b.	What is the HDLC frame format? Explain different types of frame.	7	CO2	K1
	(OR)			
c.	Write the classification of flow control mechanism. Discuss Selective Repeat ARQ protocol in detail.	8	CO3	K1
d.	Show that there is no error in data if data is 1010100 and the divisor polynomial is X^4+X+1 using CRC method.	7	CO2	K3
4.a.	Discuss different fields of IPv4 header in detail.	8	CO3	K1
b.	Explain the concept of IP addressing and subnetting with relevant examples.	7	CO2	K1
	(OR)			
c.	Find the starting address, subnet mask, last address and number of hosts in the given IP address blocks: (i) 228.35.45.54/ 26 (ii) 168.224.40.34/27	8	CO3	K3
d.	How CSMA technique is used for multiple access control ?	7	CO3	K2
5.a.	Describe DNS resolution with recursive and iterative queries and the role of different DNS servers.	8	CO4	K2

b.	Describe FTP role in application layer.	7	CO4	K1
	(OR)			
c.	A TCP connection is established over a network with the following parameters: Bandwidth = 10 Mbps Round Trip Time (RTT) = 100 ms Maximum Segment Size (MSS) = 1000 bytes (i) Calculate the Bandwidth-Delay Product (BDP). (ii) Calculate the optimal TCP window size to fully utilize the bandwidth. (iii) How many segments can be sent before waiting for an acknowledgment?	8	CO4	K1
d.	Explain congestion control in TCP using Slow Start, Congestion Avoidance, Fast Retransmit and Fast Recovery.	7	CO4	K2

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