QP Code: R264E007

Reg. No | | | | | | | | | | |

Gandhi Institute of Engineering and Technology University, Odisha, Gunupur
(GIET University)
B.C.A. (Fourth Semester – Regular/Supplementary) Examinations, April-2026
BCA23403 – Computer Networks

Time: 3 hrs | Maximum: 60 Marks

(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. Define half-duplex transmission with example.	CO1	K1
b. Define Selective Repeat ARQ.	CO2	K2
c. What is a MAC address?	CO3	K1
d. State the main functions of the network layer.	CO4	K2
e. State one difference between TCP and UDP.	CO5	K1

PART – B **(10 x5=50 Marks)**

Answer *ALL* questions	Marks	CO #	Bloom s Level
2. a. Explain the OSI reference model with a diagram and discuss why it is important in modern networking.	5	CO1	K1
b. Explain the TCP/IP protocol suite and differentiate it from the OSI model with suitable examples.	5	CO1	K2
(OR)			
c. Discuss the advantages and limitations of different transmission modes in communication systems.	5	CO1	K1
d. A file of size 1 MB is transmitted over a communication channel with a data rate of 2 Mbps. Explain the concept of transmission time and calculate the time required to transmit the file in simplex mode.	5	CO1	K4
3.a. What do you mean by flow control and Error control? Describe different types of flow control and Error control mechanisms with neat and clean diagram?	5	CO2	K3
b. Explain the term sliding windows. Also illustrate and explain the operation of selective repeat ARQ.	5	CO2	K2
(OR)			
c. Given a data frame 1011101010 and a generator polynomial $G(x) = x^3 + x + 1$, Perform CRC encoding and determine the transmitted frame to be sent over the channel.	5	CO2	K4
d. Explain the Go-Back-N ARQ protocol with a neat diagram. Describe how flow control and error control are achieved in this protocol, and mention its advantages and disadvantages.	5	CO2	K3
4.a. Explain Ethernet technology in detail. Discuss the MAC sub layer protocol in detail.	5	CO3	K3
b. Explain the working principle of Token Ring and Token Bus networks with suitable diagrams. Discuss how token passing is used to control access to the medium in both networks, and compare them in terms of topology, efficiency, delay, and typical applications.	5	CO3	K3
(OR)			

c.	Explain the medium access control (MAC) mechanism used in IEEE 802.11. Discuss the role of CSMA/CA in avoiding collisions.	5	CO3	K3
d.	Discuss the features and limitations of Bluetooth technology. How does it compare with other wireless communication technologies?	5	CO3	K2
5.a.	Explain the IPv4 protocol and describe its header format with a neat diagram. Discuss the function of each field.	5	CO4	K3
b.	Explain the working of ARP with a suitable diagram. Describe how ARP resolves an IP address into a MAC address in a network.	5	CO4	K3
	(OR)			
c.	Discuss how IPv6 addresses are structured. Explain different types of IPv6 addresses such as unicast, multicast, and anycast.	5	CO4	K2
d.	Discuss the role of IP addressing in internetworking. How does it help in routing data across multiple networks?	5	CO4	K2
6.a.	Describe the Transmission Control Protocol (TCP). Explain the TCP header format with a neat diagram and describe the functions of each field in detail.	5	CO5	K3
b.	Explain the client-server model in the application layer. Describe how communication takes place between client and server using socket programming.	5	CO5	K2
	(OR)			
c.	Discuss the User Datagram Protocol (UDP) in detail. Explain its features, advantages, and limitations.	5	CO5	K3
d.	Discuss the Hypertext Transfer Protocol (HTTP) and explain how it enables communication between web browsers and servers.	5	CO5	K2

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