(Please write your Enrollment Number) Enrollment No. 21704091013

End-Term Examination
(CBCS)(SUBJECTIVE TYPE)(OffLine)
Course Name:MCA, Semester:2
(April -May, 2024)

Subject Code: MCA 108	Subject: Data Communications and Computer Networks

Time :3 Hours Maximum Marks :60

Note:Q. 1 is compulsory. Attempt one question each from the Units I, II, III & IV.

Q1		(2.5*8=20)	
	(a) How does the Internet work? Differentiate between Internet and WWW.		
	(b) Differentiate between Web Server and Application Server.		
	(c) Discuss the concept of Error Detection and its importance in ensuring data integrity during transmission. Calculate the Hamming Distance between the binary strings 1101101 and 1001001.		
	(d) Explain the concept of framing in the Data Link Layer.		
	(e) What is UDP? What are the advantages of using UDP over TCP?		
	(f) Explain the concept of Noiseless Channel Protocols. What are the primary objectives of these protocols, and why are they necessary in data communication?		
	(g) What are Cryptographic Protocols and why they are important?		
	(h) What are the objectives of FTP? Why is it needed?		
	UNIT-I		
Q2	Provide a detailed breakdown of the OSI Reference Model, highlighting the specific functions of each layer and their interdependencies.	(10)	
Q3	(a) Analyze a real-world scenario where the use of circuit-switching would be more suitable than packet-switching, and vice versa. (b) Differentiate between guided and unguided media, providing examples of each. Discuss the factors that influence the selection of media in a network design.	(5+5=10)	
	UNIT-II		
Q4	Discuss the CSMA/CD (Carrier Sense Multiple Access with Collision Detection) and CSMA/CA (Carrier Sense Multiple Access with Collision Avoidance) MAC protocols, along with their advantages and disadvantages. Explain the scenarios in which each protocol is most suitable.	(10)	
Q5	Discuss the key characteristics of Distance Vector Routing protocols. What are the advantages and disadvantages of using this approach for routing in computer networks? Identify and discuss common problems associated with Distance Vector Routing protocols.	(10)	
	UNIT-III		
Q6	What is Congestion Control and its effects? Explain the Congestion Control algorithm. Discuss the policies that can prevent congestion.	(10)	
Q7	Describe the Stop-and-Wait ARQ protocol. How does it operate to ensure reliable data transmission over a noiseless channel? Discuss its advantages and limitations compared to other ARQ protocols.	(10)	
	UNIT-IV		
Q8	Write short notes on: (a) Firewall (b) Email	(5+5=10)	
Q9	Write short notes on: (a) HTTP and WWW (b) Domain Name System	(5+5=10)	