**Code: DE-21/DC-11 Subject: DATA COMMUNICATION & NETWORKS JUNE 2007** Time: 3 Hours Max. Marks: 100 **NOTE:** There are 9 Questions in all. Question 1 is compulsory and carries 20 marks. Answer to Q. 1. must be written in the space provided for it in the answer book supplied and nowhere else. Out of the remaining EIGHT Questions answer any FIVE Questions. Each question carries 16 marks. Any required data not explicitly given, may be suitably assumed and stated. Choose the correct or the best alternative in the following: (2x10)**Q.1** Which LAN switch method runs a CRC on every frame? (A) Cut-through **(B)** Store and forward **(C)** Fragment Check **(D)** Fragment Free b. Minimum size of an Ethernet frame without headers and checksum is **(A)** 72 **(B)** 46 (C) Zero **(D)** 66 Where are routers defined in the OSI model? (A) Physical **(B)** Transport (C) Data Link (D) Network d. Bridges are defined at what layer of the OSI model? (A) Physical **(B)** Transport (D) Network (C) Data Link e. Which LAN switch type waits for the collision window to pass before looking up the destination hardware address in the MAC filter table and forwarding the frame? (A) Cut-through **(B)** Store and forward (C) Fragment Check **(D)** Fragment Free Which of the following is required to communicate between two computers? (A) Communications hardware & software

(B) Protocol

**(D)** All of the above

(C) Access to transmission medium

	g.	The minimum data rate of a voice grade channel is			
		<ul><li>(A) 33 kbps</li><li>(C) 64 kbps</li></ul>	( <b>B</b> ) 56 kbps ( <b>D</b> ) 2 Mbps		
	h.	Which protocol working at the Transport layer provides a connectionless service between hosts?			
		(A) IP (C) TCP	( <b>B</b> ) ARP ( <b>D</b> ) UDP		
	i.	If a router interface is congested, which	h protocol in the IP suite is used to tell n	tell neighbour routers?	
		(A) RARP (C) ICMP	(B) ARP (D) IP		
	j. Segmentation of a data stream happens at which layer of the OSI model?				
		<ul><li>(A) Physical</li><li>(C) Network</li></ul>	<ul><li>(B) Data Link</li><li>(D) Transport</li></ul>		
		-	tions out of EIGHT Questions. on carries 16 marks.		
Q.2	a.	What are the three Major issues in layer 3? What are the major differences between virtual circuit and datagram service models? (8)			
	b.	Explain the advantages of OSI model		(8)	
Q.3	a.	What is congestion? Explain in brief.	(6)		
	b.	What is the difference between OSI ar	nd TCP Models.	(6)	
	c.	Explain briefly, the characteristics of C	onnection-Oriented Service.	(4)	
Q.4	a.	Explain the functioning of CSMA/CD	protocol in a LAN.	(8)	
	b.	Write the advantages of optical fibre in	n implementing networks.	(4)	
	c.		idth of 3000Hz and atypical signal- to-retical information (data) rate that can be	•	
Q.5	a.	What is Physical Layer? Write the fund	ction performed by Physical Layer.	(7)	
	h	An analog signal carries four hits ner	sional element   If 1000 sional elements a	re sent ner second	

		Find the baud rate and bit rate. (3)	
	c.	Write a short notes on flow control.	(6)
Q.6	a	. What are the main services that are provided by the presentation la purpose. (10)	yer? Explain in brief thei
	b.	Explain broadcast routing algorithm.	(6)
Q.7	a.	What are the different factors that are responsible for congestion proposed problem handled? (6)	oblem? How is congestion
		b. How does Sliding Window protocol handle the problem acknowledgements? (5)	of lost packets and loss
	c.	Draw the diagram of X.25 protocol suite that maps to the lower three la model and explain the interfacing between X.25 and LAPB at the Data	•
Q.8	a.	Give the names of devices/OSI layers for the following given description	ns. (8)
		Description Device or O	SI Layer
		<ul> <li>(i) Logical port numbers are used at this layer.</li> <li>(ii) This device sends and receives information about the Network layer.</li> <li>(iii) This layer can create a virtual circuit before transmitting between two end stations.</li> <li>(iv) This layer uses service access points.</li> <li>(v) This device uses hardware addresses to filter a network.</li> <li>(vi) Ethernet is defined at these layers.</li> <li>(vii) This device can measure the distance to a remote network.</li> <li>(viii) Logical addressing is used at this layer</li> </ul>	
	b.	Discuss the advantages and disadvantages of a Star Topology.	(4)
	c.	Explain single mode and multimode fibre optical cable used in networking	ng. (4)
Q.9.	a.	Write short note on IPv6.	(5)
		b. Give the diagram of TCP protocol format and explain the it. (8)	purpose of each field in

c. Write any three 'methods' used in HTTP and explain the functions. (3)