

- g. The minimum data rate of a voice grade channel is _____ .
- (A) 33 kbps (B) 56 kbps
(C) 64 kbps (D) 2 Mbps
- h. Which protocol working at the Transport layer provides a connectionless service between hosts?
- (A) IP (B) ARP
(C) TCP (D) UDP
- i. If a router interface is congested, which protocol in the IP suite is used to tell neighbour routers?
- (A) RARP (B) ARP
(C) ICMP (D) IP
- j. Segmentation of a data stream happens at which layer of the OSI model?
- (A) Physical (B) Data Link
(C) Network (D) Transport

Answer any FIVE Questions out of EIGHT Questions.
Each question 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 and TCP Models. (6)
- c. Explain briefly, the characteristics of Connection-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 implementing networks. (4)
- c. Assuming that a PSTN has a bandwidth of 3000Hz and atypical signal- to-noise power ratio of 20 dB. Determine the maximum theoretical information (data) rate that can be achieved. (4)
- Q.5** a. What is Physical Layer? Write the function performed by Physical Layer. (7)
- b. An analog signal carries four bits per signal element. If 1000 signal elements are sent per 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 layer? Explain in brief their purpose. **(10)**

b. Explain broadcast routing algorithm. **(6)**

Q.7 a. What are the different factors that are responsible for congestion problem? How is congestion problem handled? **(6)**

b. How does Sliding Window protocol handle the problem of lost packets and lost acknowledgements? **(5)**

c. Draw the diagram of X.25 protocol suite that maps to the lower three layers of the OSI reference model and explain the interfacing between X.25 and LAPB at the Data Link Layer. **(5)**

Q.8 a. Give the names of devices/OSI layers for the following given descriptions. **(8)**

Description	Device or OSI Layer
(i) Logical port numbers are used at this layer.	_____
(ii) This device sends and receives information about the Network layer.	_____
(iii) This layer can create a virtual circuit before transmitting between two end stations.	_____
(iv) This layer uses service access points.	_____
(v) This device uses hardware addresses to filter a network.	_____
(vi) Ethernet is defined at these layers.	_____
(vii) This device can measure the distance to a remote network.	_____
(viii) Logical addressing is used at this layer	_____

b. Discuss the advantages and disadvantages of a Star Topology. **(4)**

c. Explain single mode and multimode fibre optical cable used in networking. **(4)**

Q.9. a. Write short note on IPv6. **(5)**

b. Give the diagram of TCP protocol format and explain the purpose of each field in it. **(8)**

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

(3)