

- Instructions :** (1) All questions are compulsory.
(2) Illustrate your answers with neat sketches wherever necessary.
(3) Figures to the right indicate full marks.
(4) Assume suitable data if necessary.
(5) Preferably, write the answers in sequential order.

1. (a) Attempt any **SIX** of the following : [12]
(i) Discuss the mode for propagating light along optical channels.
(ii) What are header and trailers and how do they get added and removed?
(iii) Why are protocols needed?
(iv) How are the guided media differing from unguided transmission media?
(v) What are the responsibilities of data link layer?
(vi) What are the four internetworking devices?
(vii) Define IP address.
(viii) What is meant by segmentation?
- (b) Attempt any **TWO** of the following : [8]
(i) What is the difference between network layer delivery and the transport layer delivery?
(ii) Explain about Coaxial Cable.
(iii) Compare circuit-switched and packet-switched networks.
2. Attempt any **FOUR** of the following : [16]
(a) Explain the problems in OSI Model and Protocols.
(b) Describe Bluetooth Architecture
(c) Differentiate Connection-Oriented and Connectionless Services.
(d) Write a short note on Satellite communication
(e) What are the Services provided by Network layer to the Transport layer?
(f) Compare the two methods of serial transmission.
3. Attempt any **FOUR** of the following : [16]
(a) Briefly discuss about Internetwork routing.
(b) Write a short note on Bus and Star Topology.
(c) Explain in detail about ISO-OSI reference Model.
(d) Explain about client-server model.
(e) Explain vertical communication in OSI
(f) Explain about Peer-to-peer Communication.
4. Attempt any **FOUR** of the following : [16]
(a) Compare IPV4 and IPV6 (Any four Point)
(b) Explain subnet masking.

- (c) Explain dual cable and single cable systems in broadband coaxial cable.
- (d) What is the difference between single mode and multimode fibers in fiber optic networks?
- (e) Write short notes on interface, service and protocol.
- (f) Write about the Data Link layer design issues.

5. Attempt any **FOUR** of the following : [16]
- (a) Explain address resolution protocol.
 - (b) Write in short about Hub, Repeater, Bridge and switch
 - (c) Compare Virtual-Circuit and Datagram Subnets
 - (d) Explain TCP/IP model with neat diagram.
 - (e) Write the differences between WiFi and Wi-MAX.
 - (f) Describe TCP and UDP.

6. Attempt any **TWO** of the following : [16]
- (a) Discuss SLIP and PPP in detail
 - (b) Explain IPv6 header format in detail
 - (c) (i) How many subnets and hosts per subnet can you get from the network 172.28.0.0/26?
 - (ii) Which subnet does host 172.24.43.112/25 belong to?
 - (iii) What is the last valid host on the subnetwork 10.33.192.0/20?
 - (iv) Which subnet does host 192.168.51.70/28 belong to?

