

- N.B. :** (1) Question No. 1 is **compulsory**.
 (2) Attempt any **four** questions out of remaining **six** questions.
 (3) Assume **suitable** data if **necessary**.

1. (a) Compare the following transmission media : 10
 - (i) Twisted pair and optical fiber
 - (ii) STP and co-axial cable.
- (b) (i) Discuss difference between repeaters, bridge, routers and gateway. 10
 (ii) Explain in brief design factors for transmission media.
2. (a) Compare – 10
 - (i) HDSL (ii) ADSL (iii) SDSL (iv) VDSL.
- (b) What is protocol performance ? Derive the relation for protocol performance for – 10
 - (i) stop and wait flow control mechanism
 - (ii) sliding-window-protocol mechanism.
3. (a) Explain Leaky bucket and Token bucket algorithm in detail. 10
 (b) Explain – 10
 - (i) Dijkstra's (ii) Belman-Ford Algorithm.
4. (a) Explain signalling system 7 (ss7) in detail.
 (b) Write note on – 10
 - (i) IEEE 802.3 10
 - (ii) IEEE 802.5
5. (a) Draw and explain ATM reference model. 8
 (b) Generate the CRC code for message 1101010101 given generate polynomial 8

$$g(x) = x^4 + x^2 + 1$$
- (c) What is DTE – DCE interface ? 4
6. (a) Explain SLIP and PPP protocol used in internet. 10
 (b) Explain HDLC in detail. 10
7. Write short on : 20
 - (a) CSMA/CA
 - (b) ISDN
 - (c) TCP/IP reference model
 - (d) Spanning Tree algorithm.