(3 Hours) **[Total Marks: 80]**

N.B.: (1) Question No. **1 is compulsory**.
(2) Solve any **three questions** from the **remaining five**
(3) Figures to the right indicate full marks
(4) Assume suitable data if necessary and mention the same in answer sheet.

Q.1 Attempt any 4 questions [20]
a) Explain the persistent strategies of CSMA.
b) Compare between distance vector routing and link state routing.
c) The following is a dump of a TCP header in hexadecimal format :
05320017 00000001 00000000 500207FF 00000000
i) What is the source port number?
ii) What is the destination port number?
iii) What is the length of the header?
iv) What is the type of segment?
v) What is the window size?
d) What is data transparency? How it can be overcome using bit stuffing.
e) Explain Connection establishment in TCP using three way handshaking.

Q.2 a) Explain the OSI-RM model and functions of each layer. [10]

b) Explain in detail the Physical media used for computer communication. [10]

Q.3 a) Explain the various types of frames in HDLC. [10]
b) Explain Go-Back-N ARQ and Selective Repeat ARQ. [10]

Q.4 a) Discuss various Scheduling methods used in Medium access control. [10]
b) An organization is granted the block 211.17.180.0/24. The administrator wants to create 32 subnets. [5]
i) Find the subnet mask.
ii) Find the number of addresses in each subnet.
iii) Find the first and last address in subnet 1.
iv) Find the first and last addresses in subnet 32.

c) Explain Quality of service in terms of flow characteristics. [5]

Q.5 a) Explain the different error reporting messages in ICMP with message format. [10]
b) Explain the features of TCP. [5]
c) List and explain various Timers in TCP. [5]

Q.6 Short notes on: (Attempt any Two) [20]
a) Congestion control in TCP.
b) IPV4 Header.
c) DSL.

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