[TIME-3 hrs.]   [Total Marks :80]

N.B: Question No.1 is Compulsory.
      Attempt any three question out of remaining questions.
      Make Suitable assumption whenever necessary.

Q.1	**Any -5**	4x5

   a) What are the design issues for the OSI layers?
   b) Differentiate between connection oriented and connectionless Service?
   c) List the advantages of fiber optics as a communication Medium.
   d) Explain with examples the classification of IPv4 addresses.
   e) Explain in short different framing methods.
   f) Explain the need of subnet mask in subnetting.

Q.2 a) What is topology? Explain the types of topologies with diagram, advantages   10
      and disadvantages.
    b) What is IPv4 protocol? Explain the IPv4 header format with diagram.   10

Q.3 a) Explain CSMA Protocols. Explain how collision are handled in *CSMA/CD*.   10
    b) What is Traffic shaping? Explain leaky bucket algorithm and compare   10
      it with token backed algorithm.

Q.4 a) What is ICMP Protocol? Explain the ICMP header format with diagram.   10
    b) Write a program for client server application using Socket Programming(UDP)   10

Q.5 a) Explain the use of TCP timers in detail.   10
    b) Compare Open Loop congestion control and Closed Loop congestion   10
      control.

Q.6 **Write a short note on the following (Any Two)**   20
      A. Internetworking Devices
      B. Distance Vector Routing
      C. ARP/RARP
      D. SMTP

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(3 Hours) [Total Marks: 80]

Note: (1) Question 1 is compulsorys
(2) Solve any three questions out of remaining
(3) Assume suitable data wherever necessary

Q.1. (a) Explain the need of layering for communication and networking (5M)
 (b) Describe in brief the concept of piggybacking. (5M)
 (c) What is subnetting? What are the default subnet masks? (5M)
 (d) Differentiate between TCP and UDP (5M)

Q.2. (a) Explain CSMA protocols. Explain how collisions are handled in CSMA/CD. (10 M)

 (b) What is traffic shaping? Explain leaky bucket algorithm and compare it with token
 Bucket algorithm. (10M)

Q.3. (a) Illustrate TCP three way handshake techniques in TCP connection establishment.
 (10M)

 (b) Explain the need for DNS (Domain Name System) and describe the protocol
 functioning. (10M)

Q.4. (a) Explain the difference between static and dynamic routing. Explain distance vector
 routing in detail. (10M)

 (b) Why does data link protocol always put the CRC in a trailer rather than in a header?
 Given the data word "1101011011" and the divisor "10011", show the generation of
 cyclic redundancy check (CRC) codeword at the sender site. (10M)

Q.5. (a) Write short note on FTP. (10M)

 (b) Discuss different types of guided media in detail. (10M)

Q.6. (a) What is a topology? Explain the types of topology. (10M)

 (b) Explain the Go-back-N protocol. (10M)

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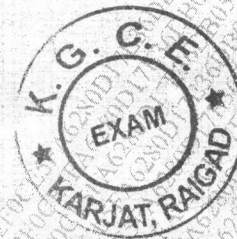
[Time: 3 hrs]   [Marks: 80]

N.B: 1. Question No.1 is compulsory.
2. Assume suitable data if necessary.
3. Attempt any three questions from remaining questions.

Q.1	a)	Explain design issues of layers. Explain ISO OSI reference model with diagram.	10
	b)	Explain design issues of Data Link layer. Explain Sliding Window protocol Selective Repeat.	10
Q.2	a)	Explain with diagram the relationship between Protocol, Interface and Service.	05
	b)	Explain Repeater, Hub, Bridge, Switch Gateway.	05
	c)	Describe TCP header with diagram.	10
Q.3	a)	Explain different framing methods? What are the advantage of variable length frame over fixed layer frame.	10
	b)	Describe IPV4 header format with diagram.	10
Q.4	a)	Classify transmission media and compare them.	10
	b)	Explain Distance vector routing protocol. What is count to infinity problem How to overcome it?	10
Q.5	a)	Explain Channel allocation problem. Explain CSMA/CD protocol. A network with CSMA/CD has 10 Mbps bandwidth and 25.6 ms maximum propogation delay. What is the minimum frame size?	10
	b)	Explain Congestion control. Explain leaky bucket algorithm	10

Short note on (**any 4**)	20

a) HDLC
b) Network Address Translation (NAT)
c) Berkeley Sockets
d) ARP
e) ICMP
f) DNS
g) SMTP

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