



ENGINEERING & MANAGEMENT EXAMINATIONS, JUNE - 2009
DATA COMMUNICATION AND NETWORKING
SEMESTER - 6

Time : 3 Hours]

[Full Marks : 70

GROUP - A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : 10 × 1 = 10
- i) The two parameters used for measuring the performance of a network are
- a) throughput and delay b) power and delay
- c) power and throughput d) throughput and buffer size.
- ii) All the packets in a message follow the same path in
- a) Datagram packet switching
- b) Virtual circuit packet switching
- c) Message switching
- d) none of these.
- iii) Flow control in OSI reference model is performed in
- a) Data link layer b) Network layer
- c) Session layer d) Application layer.
- iv) Which of the following allows devices on one network to communicate with devices on another network ?
- a) Multiplexer b) Gateway
- c) Switch d) Modem.

**GROUP - B****(Short Answer Type Questions)**Answer any *three* of the following questions.

3 × 5 = 15

2. What do you mean by the term 'subnet masking' ? Explain with an example, how that can be achieved. 1 + 4
3. Write short notes on any two topics : 2 × 2½
- User authentication
 - Firewall
 - Sonet
 - Blue-tooth.
4. What do you mean by Network topology ? Explain in brief. 5
5. Explain RSA algorithm with an example. 5
6. Explain 'Selective repeat ARQ protocol' with the help of diagram. 5

GROUP - C**(Long Answer Type Questions)**Answer any *three* of the following questions.

3 × 15 = 45

7. a) What is working operation of stop and wait ARQ for Lost Acknowledgement ?
- b) What is IP datagram ? Write all the fields of IP datagram.
- c) Write four advantages of IPV6 over IPV4.
- d) Write down the main function of network layer. 3 + 5 + 4 + 3
8. a) What is composite signal ?
- b) What is transmission impairment ? How many types of transmission impairments are there ? Discuss them.
- c) We measure decibel in logarithmic forms. What is the actual reason behind this ?



d) Suppose transmission channels become virtually error-free. Is the data link layer still needed ? Explain.

e) Suppose a computer sends a packet at the network layer to another computer somewhere in the internet. The logical destination address of the packet is corrupted. What happens to the packet ? How can the source computer be informed of the situation ? $2 + 3 + 3 + 3 + 4$

9. a) Compare and contrast a random access protocol with a controlled access protocol.

b) The address 43 : 7B : 6C : DE : 10 : 00 has been shown as the source address in an Ethernet frame. The receiver has discarded the frame. Why ?

c) Compare and contrast CSMA/CA with CSMA/CD.

d) What is transparent bridge ? How does a repeater extend the length of a LAN ?

$4 + 2 + 6 + 3$

10. a) What is the difference between classful addressing and classless addressing in IPV4 ?

b) An ISP has a block of 1024 addresses. It needs to divide the addresses among 1024 customers. Does it need subnetting ? Explain your answer.

c) Calculate the HLEN (in IPV4) value if the total length is 1200 bytes, 1176 of which is data from the upper layer.

d) Write the advantages of ICMP and IGMP over the IPV4. $4 + 3 + 3 + 5$

11. Write short notes on any *three* of the following : 3×5

a) FTP

b) Cryptography

c) Routing

d) Leaky bucket algorithm

e) HTTP.

END