



Name :

Roll No. :

Invigilator's Signature :

CS/M.Tech (CSE)/SEM-1/CSEM-103/2010-11

2010-11

**COMPUTER NETWORKING AND
DISTRIBUTED SYSTEM**

Time Allotted : 3 Hours

Full Marks : 70

The figures in the margin indicate full marks.

*Candidates are required to give their answers in their own words
as far as practicable.*

GROUP – A

(Multiple Choice Type Questions)

1. Choose the correct alternatives for the following : $10 \times 1 = 10$
 - i) Bridge is a networking device that works in the layer of the OSI reference model.
 - a) application layer
 - b) transport layer
 - c) network layer
 - d) data link layer.
 - ii) An example of connection-oriented protocol is
 - a) TCP
 - b) UDP
 - c) ICMP
 - d) Datagram.
 - iii) While transmitting even-parity coded symbols the number of 1's in each symbol is
 - a) odd
 - b) even
 - c) both (a) & (b)
 - d) unknown.



- iv) Intel m/c. uses format.
 - a) Little endian format b) Big endian format
 - c) XDR format d) any of these.
- v) Ameoba is an example of
 - a) distributed system
 - b) distributed operating system
 - c) virus
 - d) trojan.
- vi) overcomes the registered number issued by assigning each organization one network numbers from the IPv4 address space
 - a) Tracking b) Subnetting
 - c) Packeting d) switching.
- vii) blocks are identified using syntax similar to that of IPv4 addresses : a four-dotted-decimal address, followed by a slash then a number from 0 to 32 : A.B.C.D/N
 - a) IPv4 CICR
 - b) IPv4 MIDR
 - c) IPv4 CIMR
 - d) IPv4 CIDR.
- viii) CSMA is less greedy whereas CSMA is selfish.
 - a) Non-persistent, *l*-persistent
 - b) *l*-persistent, *p*-persistent
 - c) *p*-persistent, *l*-persistent
 - d) *l*-persistent, non-persistent.



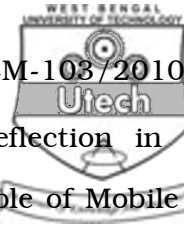
5. What are the problems of DVR ? What do you mean by count-to-infinity problem ? What are the possible solutions of count-to-infinity problem ? 2 + 1 + 1
6. What do you mean by bit-stuffing ? How is selective repeat ARQ advantageous than Go-back-n ARQ protocol ? Define QoS. 1 + 2 + 1
7. What do you mean by PoD and DoS attack ? What do you mean by IP masquerading ? 2 + 2
8. What do you mean by distributed deadlock ? What do you mean by process migration ? 2 + 2

GROUP – C

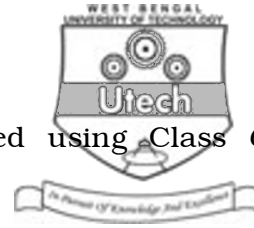
(Long Answer Type Questions)

Answer any *four* of the following. 4 × 10 = 40

9. What do you mean by high-speed LAN ? Explain with example. Describe briefly the CSMA/CD protocol. What is the working principle of Gigabit Ethernet ? 3 + 5 + 2
10. Explain the private-public key encryption technique. Distinguish between loosely coupled and tightly coupled systems. Distinguish between concurrency and parallelism. Explain the DQDB protocol. 2 + 2 + 2 + 4



11. Define the significance of total internal reflection in the context of FDDI. Explain the working principle of Mobile IP. How is IPv6 advantageous than IPv4 ? 2 + 5 + 3
12. Suppose you are hired by a company “XYZ” India Limited to design their computer network based on the following given criteria and parameters. Draw a schematic diagram to design the network according to your own best feasible choice.
- a) XYZ has 4 separate offices at 4 separate geographic locations in the same city, viz., L_1 , L_2 , L_3 and L_4 and the approximate distance between L_1 and L_2 is 500 m, L_2 and L_3 is 2 km, L_3 and L_4 is 5 km.
 - b) The network at L_1 consists of 4 ethernet LANs, each containing 50 stations/computers/PCs.
 - c) The network at L_2 consists of 2 Ethernet WLANs, each containing 25 PCs and 2 wired Ethernet LAN each consisting of 20 PCs.
 - d) The network at L_3 consists of 1 Ethernet LAN and 1 Token Ring network each containing 25 PCs.
 - e) The network at L_4 consists of only one Ethernet LAN that contains 100 PCs.

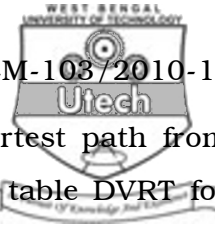


- f) All internal networks are configured using Class C private IP address scheme.
- g) Each office or location has Internet connectivity of configuration 2 Mbps leased line taken from BSNL, which is shared among all the four offices.
- h) However, each office has its own separate 1 Mbps Broadband connection taken from BSNL, which acts as a backup/emergency Internet line.
- i) Use Networks components like repeater, AP, Hub, Switch, Bridge or Router and cables according to your own choice.
- j) Any other parameter, which would be suitable and cost-efficient for the company, can be used to design the network for the company XYZ India Limited.

13. What is the difference between a Distributed Operating System (DOS) and Distributed System (DS) ? What are the major advantages and limitation of a DS ? Show only the 1st octet range for all classes of Classfull IP address scheme.

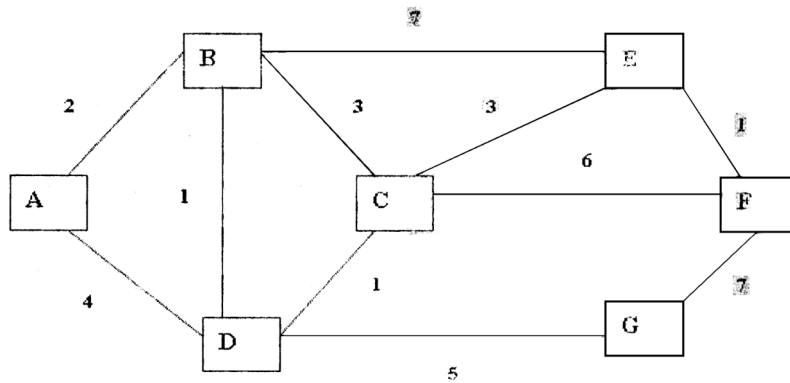
What do you mean by subnetting ? If the IP address of a machine is 191.168.128.8 and its subnet mask is 255.255.0.0, what would be the net ID and host ID of this machine ?

2 + 2 + 2 + 2 + 2



14. For the following network, find out the shortest path from router *A* to router *F*. Construct the routing table DVRT for the router '*C*' using DVR protocol and show the constructed DVRT that consists of three fields, viz., destination, cost and next-hop. If there is a link failure between routers *E* and *F*, will there be any count-to-infinity problem ? In that case, what would be the next feasible shortest path from router *A* to router *F* ?

2 + 6 + 1 + 1



15. Write short notes on any *two* of the following : 2 × 5
- HIPPI protocol
 - ADSL technology
 - RSA algorithm
 - NFS
 - Markov process.

