

ADVANCED COMPUTER NETWORKING
(CS-525)

Do all questions.

Q1: SCENARIO

Network Developers Corporation has been assigned to develop a computer network system for a corporate business organization. Corporate offices have been established in two separate buildings on first and fourth floors respectively. Distance between two buildings is around 3Kms. You have to establish a network within each building and between the two buildings. Develop a computer networking plan for the organization.

The networking plan should take all of the basic networking standards and criteria's. You are required to build a complete computer network environment for the organization. Also give brief explanation and reasoning of the network devices you have chosen in your network design. (30-Marks)

Q2: Assuming that a PSTN has a BW of 3300Hz and a typical signal to noise power ratio of 25 dB, determine the maximum theoretical information (data) rate that can be achieved. (10 marks)

Q3: What is an IPv4 address, Compare it with IPv6? Explain how IP addresses are divided into various classes, and the number of networks and hosts in each class? (10 marks)

Q4: Following are some of the Protocols in the TCP/IP suite. Write what each abbreviation stands for, and their functions. (10 marks)

- a) SMTP
- b) ICMP
- c) DHCP
- d) ARP
- e) FTP

Q5: (a) You have a network ID of 172.16.0.0 and you need to divide it into multiple subnets. You need 600 host Ids for each subnet. Which subnet mask should you assign that will allow for growth? (5 marks)

(b) If you have a 19 bit subnet mask, how many subnets and hosts can you have? (5 marks)

Q6: Calculate the Sampling rate and Information rate, of a voice channel of BW 4000 Hz. Hence calculate the data rate of T1 Carrier, that carries 24 Voice messages. (10 marks)

Q7: What is SONET? Discuss its data rates and advantages. (10 marks)

Q8: Write short notes on the following backbone technologies:

- a) FDDI
 - (b) DQDB
- (10 marks)