**Computer Networks Question Bank**

**Module 1**

1. Define Data Communication? Illustrate Data communication model.
2. What is Internet? Discuss various network types.
3. Compare and contrast Mesh and Star topologies.
4. Explain various connection types.
5. Write short notes on: a) Protocols and standards b) OSI model.
6. Elaborate on TCP/IP model.
7. Define Addressing? Analyze the relationship b/w layers and addresses in TCP/IP.
8. Differentiate b/w various network types.
9. Compare and contrast TCP/IP and OSI models.
10. Elaborate on protocols used in Application layer and session layer.
11. Explain the tasks involved in sending a letter using layered tasks.

**Module2**

1. Define the terms: a) Bandwidth b) Phase c) Wavelength d) Frequency e) Composite signal

Periodic signal.

1. Consider a noiseless channel with B=500Hz transmitting a signal with 6 signal levels. Calculate the max bitrate of the channel.
2. If the signal at the beginning of transmission is -0.3Db/km has 3mW power. What is the power of the signal at 5km?
3. Elaborate on Transmission Impairments with example.
4. Assume we need to download a text file document at the rate of 250pages/min. Calculate the required bitrate of this channel.
5. Analyze under what circumstances we can use Baseband and Broadband transmission.
6. What is the required bandwidth of a low-pass channel if we need to send 6Mbps by using Baseband transmission.
7. Illustrate the ways to measure the network performance.
8. Describe various classes of Transmission media.
9. Compare and contrast guided and un-guided transmission media.
10. Illustrate various types of transmission errors with example.
11. Illustrate the process of Error detection using Block coding with the help of a neat diagram.
12. Write short notes on Cyclic codes.
13. Using the following data, using CRC method, check whether the frame sent from sender to receiver contains any error:

Data word: 11011101

Divisor: 10100.

1. Compare Simplest protocol and Stop-and-wait protocol for Noiseless channels.
2. Compare Stop-and-wait ARQ with Go-back-N ARQ for noisy channels.

Module3

1. Define logical address and explain how it is different from MAC address.
2. Illustrate various classes of IP.
3. Convert following IP addresses into equivalent Binary format:
4. 192.168,10.23
5. 168.239.0.10
6. Convert following Binary IP addresses into equivalent decimal format:
7. 01111000 10000011 11001100
8. 11011000 00001111 10101010
9. Check if any errors in the following IP addresses:
10. 168.04.56.27
11. 257.127.4.67
12. 168.33.25.2.1
13. 100.25.4.67
14. Explain the position of IP and other network layer protocols in TCP/IP protocol suite.
15. Explain IPV4 datagram format.
16. Explain Distance vector routing protocol with example.
17. Explain Link state routing algorithm with example.
18. Explain multi-casting basics in detail.
19. Explain Multicasting with example.
20. Write short notes on OSPF and IGMP protocols.

Module 4

1. Explain Transport layer services in detail.
2. Define the terms: a) Socket b) Port number c) Segment
3. Explain any 3 transport layer protocols in detail.
4. Write short notes on TCP services.
5. Differentiate b/w TCP and UDP.
6. Explain UDP protocol in detail.
7. Explain SCTP services, features and packet format.
8. Explain TCP congestion control and QOS.
9. What are Overlay networks? Explain with example.
10. How overlay networks are helpful to build cloud networks.

Module5

1. What are the services of Application layer.
2. Explain the following commands: a) ping b) tracert c) ipconfig
3. Using Java illustrate how to implement Client-server programming using UDP.
4. Using Java illustrate how to implement Client-server programming using TCP.
5. Write short notes on Application layer paradigms.
6. Write short notes on SCTP.
7. What is Socket programming? List out any 2 languages that supports socket programming.
8. Compare the languages Java and ‘C’ to do Socket programming.