COMSATS University, Abbottabad Campus
Department of Computer Science
Midterm FA-24

Class: BCS
Subject: Computer Networks
Total Time Allowed: 1.5 hours.

Date: 15-11-2024
Max Marks: 50

Name: [redacted] Registration #: [redacted]

Q1. Write short answers of the following. **[CLO-1]** **(15)**

a. **Explain** the difference between a local area network (LAN) and a wide area network (WAN). Provide examples of where each type might be used?

b. **Differentiate** the OSI model and the TCP/IP model of network architecture. Explain the purpose of each layer in the OSI model.

Q2. Solve the following Questions **[CLO-2]** **(15)**

I. Consider a fully connected mesh network topology with **(R%10+5)** nodes. In a fully connected mesh topology, every node is connected to every other node directly. **Calculate** the total number of direct connections in the network.

II. A node pushes a **1600**-byte packet onto a wire with a bandwidth of **(R%5+2)** Mbps. **Calculate** the transmission delay.

Note: R is your Roll Number i.e 60

Q3. You are given the following IPv4 classful address: (R % 100 + 100).R.(R+ 50).R, where R represents your roll number. **[CLO-3]** **(20)**

Using this address, perform the following tasks:

- **Analyze** the given IPv4 address to identify its class.
- **Determine** and outline the subnet mask for this IP address based on its class.
- **Calculate** and distinguish the network address (Network IP) for this IPv4 address.
- **Examine** and find the broadcast address (Broadcast IP) for the identified network.
- **Calculate** and **contextualize** the total number of possible hosts within this subnet.

Note: Assume your roll number (R) is 60.

9/11/24

CamScanner