**ASSIGNMENT 1**

**Objective:** To study about Emulators and Simulators and the differences between them with specific reference to Network Simulator NS-3 and then answer the following questions:

**Question 1.** **What is NS-3?**

**Question 2.** **What is the difference between simulation and emulation? Is simulation or emulation done by NS-3?**

**Question 3.** **What Does NS-3 Provide?**

**ASSIGNMENT 2**

**Objective:** Design and configure a simple network model. Collect Statistics and Analyze network performance.

**Tasks Performed:** Report the following-

1. Network Topology
2. Scenario (Interaction Between Input and Output)
3. Steps for Topology Creation and Configuration
4. Network Parameters (Simulation Time, Frames Generated, MAC Protocol Used etc.)
5. Network Performance Metrics (Throughput, Frames dropped etc.)

**ASSIGNMENT 3**

**Objective🡪** Create 2 Wi-Fi Networks with separate access points, the access points being in a point to point connection. Send data packets between devices in these networks and also create trace file and analyze it via wireshark or tcpdump.

**Tasks Performed🡪** Report the following-

1. Network Topology
2. Scenario (Interaction Between Input and Output)
3. Steps for Topology Creation and Configuration
4. Network Parameters

**ASSIGNMENT 4**

**Objective 🡪** Create a scenario for hidden & exposed terminal problem. Find out the packet drop in both of the scenarios. Also propose a solution (RTS/CTS mechanism)

**Tasks Performed 🡪** Report the following-

1. Network Topology
2. Scenario (Interaction Between Input and Output) ( with and without RTS/CTS mechanism )
3. Steps for Topology Creation and Configuration
4. Show difference in throughput and packet drop in both the cases
5. Find out throughput less than the without RTS/CTS mechanism
6. Find situation where throughput will be higher even with RTC/CTS
7. Calculate overhead caused by RTS/CTS packets
8. Network Parameters

**ASSIGNMENT 5**

**Objective🡪** Create a Wireless Sensor Network of 10 Nodes using IEEE 802.15.4 protocol where 9 out of these nodes are sending hello message (ping) to the 10 nodes

**Tasks Performed🡪** Report the following-

1. Network Topology
2. Scenario (Interaction Between Input and Output)
3. Steps for Topology Creation and Configuration
4. Network Parameters

**ASSIGNMENT 6**

**Objective🡪** Use AODV and DSDV for routing in networks and analyze the network and protocol performance.

**AODV**

**Tasks Performed🡪** Report the following-

1. Network Topology
2. Scenario (Interaction Between Input and Output)
3. Steps for Topology Creation and Configuration
4. Network Parameters