**Vivekanand Education Society's Institute of Technology Department of Information Technology**

**Subject: Wireless Technology**

**Assignment No. 2**

**Topic: Wide Area Wireless Network**

**Class: D15 A Date: 20th Feb 2024**

**Subject Incharge: Dr. Monali Chaudhari**

1. Define the following terms: Frequency reuse, Cochannel cells, cochannel interference, Frequency reuse distance, cluster, cluster size

2. Classify the wireless networks based on coverage, mobility and infrastructure. 3. List the elements of the cellular system and explain the function of each in brief. Explain the main functions of HLR & VLR in GSM system.

4. Why is the cell shape considered Hexagonal?

5. Draw the block diagram of GSM architecture and explain each block in detail. 6. A mobile communication system is allocated a spectrum of 25 MHz and uses RF channel bandwidth of 25 Khz so that total no of 1000 voice channels are available. a) If the service area is divided into 20 cells with a frequency reuse factor of 4, compute the system capacity. b) If the cell size is reduced to the extent that the service area is now covered with 100 cells with a frequency reuse factor of 4, compute the system capacity.

7. Compare and contrast GPRS & EDGE Technology. List their air interface specifications.

8. What are the two additional components added in GPRS and Edge? List their functions.

9. What are the new features added in EDGE Technology to get higher data rates?

10. Name the modulation scheme used in EDGE? What is the advantage of using it?

11. Define one time slot and one super frame structure used in GSM.

12. What is incremental redundancy in EDGE?

13. With reference to UMTS, draw the network architecture and list the functions of RNC & nodeB.

14. With reference to CDMA 2000, draw the network architecture and explain how it is different from UMTS.

15. Draw the network architecture of LTE and explain the functions of each component is brief.

16. write short notes on LoRA and LoRAWAN.