Simulation

```
clc;

clear all;

close all;

K = input("Enter the number of channels : ");

N = input("Enter the number of cells in a cluster : ");

a = input("Enter the number of sector cell : ");

x = N*a;

disp('The total sectors in the given resion');

disp(x);

z = K/x;

disp('Number of voice channels available in a cell when
    directional antenna is used');

disp(z);
```

Cell Sectoring

- A technique in which a cell is divided into a number of wedge-shaped sectors, each with their own set of channels.
- Splits the channel sets into smaller groups, thereby reducing the trunking efficiency.
- To co-channel reuse ratio is decreased, while the cell radius remains unchanged.
- Cell sectoring is another method to increase capacity. It keeps the radius of the cell constant and decreases the co-channels reuse ratio D/R to reduce the cluster size N.
- Size of clusters in particular service area can be reduced because the cell sectoring increases the SIR.
- Generally cell is devided into 120° & 60° sectors.
- The single to noise ratio improvement allows the cellular provider to decreases the cluster size N in order to

Output:

Enter the number of channels:

168

Enter the number of cells in a cluster:

7

Enter the number of sectors cell:

120

The total sectors in a given resion

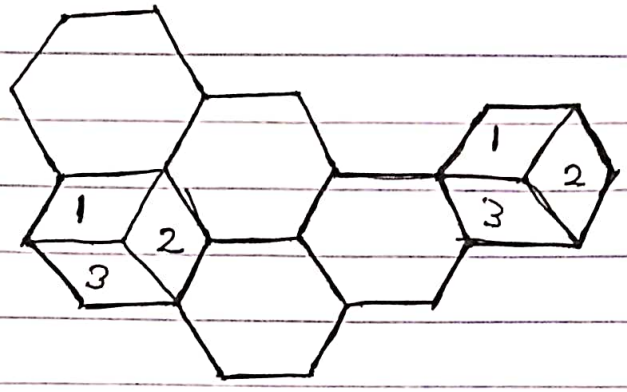
840

Number of voice channels available in a cell when directional

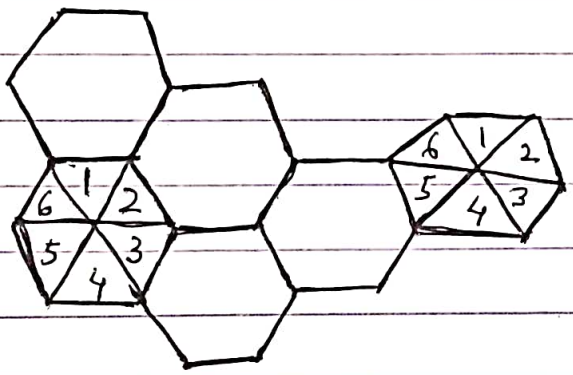
antenna is used

0.2000

Improve the frequency reuse and thus, the system capacity.



120°



60°.

Simulation Tool: MATLAB.

MATLAB (MATrix LABoratory) is a proprietary multi paradigm programming language and numeric computing environment developed by MathWorks. Matlab allows plotting, claculations etc. In this simulation matlab is used for the calculation of cell sectoring parameters.

Matlab is a tool used by Millions of engineers and Scientists worldwide use in industry and academia, including deep learning and machine learning, signal processing and communications, image and video processing, control systems, test and measurement, computational finance, and computational biology. Matlab is capable to develop test, verify and explore various algorithms.

Advantages of cell sectoring:

- Better S/I ratio
- Reduces interference
- Increases capacity
- Reduces cluster size
- more freedom in assigning a channel.

Disadvantages of cell sectoring:

- Increases number of antennas per base stations.
- A decrease in trunk efficiency.
- Loss of traffic.
- Increases number of handoffs.

Results:

Number of channels using cell sectoring method is calculated and simulated.