

Chapter Three

Q\Define the following terms:

1. Trunking
2. Grade of Service (GOS)
3. Traffic Intensity.

Solution:

1. **Trunking:** is a communications line or link designed to carry multiple signals simultaneously to provide network access between two points.
2. **Grade of Service (GOS):** Is a measure of the ability of a user to access a trunked system during the busiest hour.
3. **Traffic Intensity:** is the average number of calls simultaneously in progress during a particular period of time. It is measured either in units of *Erlangs* or *CCS*.

Q\ Define Sectoring and what are the main features of it?

Sectoring: is the technique for decreasing co-channel interference by using directional antennas. A single Omni-directional antenna at the base station is replaced by several directional antennas, each radiating within a specified *sector*.

- a) SIR improvement due to reduced interference.
- b) Capacity improvement due to reduced cluster size (increased frequency re-use).
- c) Decreased trunking efficiency due to channel sectoring at the BS.
- d) Increased number of handoffs. (Modern BSs support handoff without the MSC).

Q\ Define cell splitting? What are the main features?

Cell splitting: is the process of subdividing a congested cell into smaller cells, each with its own base station and a corresponding reduction in antenna height and transmitter power.

- a) By decreasing the cell radius R and keeping the co-channel reuse ratio D/R unchanged.
- b) The increased number of cells would increase the number of clusters over the coverage region, which in turn would increase the number of channels, and thus capacity, in the coverage area.

Q\ How you can improving capacity in cellular systems (wireless service increases) ? and give the features of them

As the demand for wireless service increases, the number of channels assigned to a cell eventually becomes insufficient to support the required number of users. At this point, cellular design techniques are needed to provide more channels per unit coverage area.

Techniques such as cell splitting and sectoring approaches are used in practice to expand the capacity of cellular systems.

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