Sheet 1

1 Show that the frequency reuse factor for a cellular system is given by k/S, where k is the average number of channels per cell and S is the total number of channels available to the cellular service provider.

2
- What are the basic elements of the mobile communication system?
- What is the difference between the forward and the reverse channels?

3 Differentiate between the three types of a wireless communication system (simplex, half-duplex and full duplex).

4 If 20 MHz of total spectrum is allocated for a duplex wireless cellular system and each simplex channel has 25 kHz RF bandwidth, find:

(a) the number of duplex channels.

(b) the total number of channels per cell site, if $N = 4$ cell reuse is used.

5 If a total of 33 MHz of bandwidth is allocated to a particular FDD cellular telephone system which uses two 25 kHz simplex channels to provide full duplex voice and control channels, compute the number of channels available per cell if a system uses (a) four-cell reuse, (b) seven-cell reuse, and (c) 12-cell reuse. If 1 MHz of the allocated spectrum is dedicated to control channels, determine an equitable distribution of control channels and voice channels in each cell for each of the three systems.

Best wishes

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