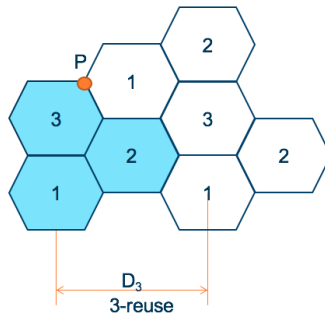


CHAPTER 3: CELLULAR CONCEPT

I. CHANNEL ALLOCATION

Problem 1.1.

Calculate down-link SIR at point P in 3-reuse case. Assume the simplest path-loss model $g(d) = 1/d^3$.



Problem 1.2.

Calculate the worst-case uplink SIR assuming the co-channel interference is caused only by the closest interfering mobiles in radio cells a distance $D = 3.46 R$ away from the cell. Assume the simplest path-loss model $g(d) = 1/d^4$

II. ERLANG-B FORMULA AND SIZING A CELL

Problem 2.1. Calculate the Erlang loads generated by a user, who makes a call attempt every 15 minutes. Each call lasts an average of 2 minutes.

Problem 2.2.

Consider a mobile system supporting 832 frequency channels and $C = 7$ reuse. Probability of call blocking $P_B \leq 1\%$. A typical user makes 200-second-long calls once every 15 minutes on the average. Assume that users are uniformly distributed over the cell. In a rural region, the density of mobile terminals is two terminals per km². Calculate the required cell radius if a hexagonal topology is assumed.