GE\_IV\_3: (Superposition- cond.)

**Special case:**

(1)If α = 0 (no phase difference, α1 - α2  = 0, 2л, 4л or even multiple of л, the resultant amplitude will be

 A2 = a2 + b2 + 2ab cos (0 )

 = (a + b)2

Or, A = a + b

 Displacement Y = A sin ωt = (a + b) sin ωt

 And tan ф = 0 or, ф = 0.

(2) If α = л, 3 л, 5 л… or odd-multiple of л, then

 A2 = a2 + b2 + 2ab cos л = a2 + b2 - 2ab = (a – b)2

 Or, A = a – b and tan ф = 0.

If a = b, the particle in the case not execute SHM but Y=0 for all values of ‘t’ , i.e. there will be no motion.

