IITK Consulting Group

Summer Camp – Consulting Module

Group Assignment-1

Prompt 3-

Estimate the number of tennis balls that can fit into our Main Auditorium

Assumptions-

1. The tennis ball here is a standard tennis ball with diameter=0.065m.
2. The main auditorium is empty i.e., not taking into account the stage and other accessories .
3. The capacity of main auditorium to accommodate is 1000.
4. The structure of the main auditorium is similar to that of a cuboid.
5. Height of the main auditorium is 8m.
6. The average space in terms of area to accommodate 200 seats is = 270m^2
7. Considering maximum packing efficiency by cpp arrangement which is 75%

Calculations-

1. Volume of the tennis ball= 1/6 $\pi(diameter)^3$ = 1/6 $\pi(0.065)^3$ = 1.4 x $10^{-4}m^3$
2. The average space in terms of area to accommodate 1000 seats is = (270 x 5)m^2

   =1350m^2
3. Volume of the main auditorium = (The average space in terms of area to accommodate 1000 seats) x height

   = (1350 x 8)m^3= 10800m^3
4. No. tennis balls that can fit into main auditorium= Volume of the main auditorium/Volume of 1 tennis ball x 75%
5. =[10800/(1.4 x 10^{-4})] x 75%
   - =5785 x 10^4