MEBS6008 Environmental Services II

http://www.hku.hk/mech/msc-courses/MEBS6008/

Exercise 03 – Space Air Diffusion

(* For self-evaluation, no need to submit. Solution outlines will be provided later.)

1. Define the following terms used in the design of space air diffusion.

   i) Age of air
   ii) Air change effectiveness
   iii) Air diffusion performance index (ADPI)
   iv) Confined air jet
   v) Entrainment ratio

2. A rectangular room length 5 m, width 4 m and height 3 m is ventilated by a supply air flow rate of 100 l s^{-1}. Calculate the air exchange rate and the time constant of the supply air.

3. Briefly discuss the advantages and disadvantages of underfloor air distribution.

4. Briefly explain the main advantages and drawbacks of using cold air distribution with low-temperature supply air for HVAC systems.

5. Draw a simplified diagram to show the typical air flow patterns of a room installed with a displacement ventilation system. You may assume low-level supply outlet is being used. Give two characteristics of stratified displacement flow.