

M505: CONTROL OF HAZARDOUS SUBSTANCES

OVERNIGHT REVISION QUESTIONS – DAY 2

1. What are the two generic types of ventilation systems?
2. What is the density of air at 30°C and 780 mm Hg?
3. At a point on the suction side of a fan in an exhaust system the velocity pressure is 125 Pascals and the static pressure is -75 Pascals. What is the total pressure?
4. What is the air velocity in question 3 at standard temperature and pressure?
5. An occupational hygienist measures the average velocity travelling out of an air conditioning duct at 8 ms^{-1} . The duct is circular and has a radius of 10 cm. Calculate the volume flowrate in the duct.
6. Define capture, face and transport velocity.
7. What is “Vena Contracta” when discussing airflow patterns?
8. What are the basic categories of hoods?
9. What are the general rules in relation to face velocities for partial enclosures?
10. When designing a duct system what factors need to be considered if the final design is to be efficient and practical?
11. Which type of fan would normally be used where high airflows are required?
12. What would happen if you operated a fan in its characteristic stall region?
13. Describe the operating principle of a Pitot tube.
14. Under what conditions are pitot tubes considered unreliable?
15. When conducting a pitot tube traverse of a round duct what is the minimum distance that the traverse should be made from any major flow disturbance?

16. What is a “dust lamp” and how can it be used in the control of hazardous substances?
17. Under what conditions would it be appropriate to consider dilution ventilation as a control option?
18. A solvent evaporates at 100 mgs^{-1} from a tank. The room ventilation rate is $1 \text{ m}^3\text{s}^{-1}$. Assuming that perfect mixing takes place, what is solvent concentration in the room?
19. What is displacement ventilation?
20. List the limitations of general ventilation systems.