Skill Development Exercises for Chapter 9

9-1 In a smoke control system:
a) A smoke damper inhibits the passage of air that may or may not contain smoke
b) Moderate leakage of smoke-free air through the damper does not adversely affect the control of smoke movement
c) Design the system so that only smoke-free air is on the high-pressure side of a smoke damper, unless the smoke control damper is on the return air
d) All of the above e) None of the above

Answer: d

9-2. Particles less than _____ in diameter are referred to as the fine mode.
a) 0.75 µm b) 7.5 µm c) 75 µm d) None of the above

Answer: d

Fine particles are those below 2.5 µm

9-3. From an industrial hygiene perspective, particles with an aerodynamic particle size of _____ or greater are considered the nonrespirable fraction of dust.
a) 5 µm b) 10 µm c) 15 µm d) None of the above

Answer: a

9-4. _____ measures the ability of the filter to remove particulate matter from an airstream.
a) Efficiency b) Air flow resistance c) Dust-holding capacity
d) All of the above e) None of the above

Answer: a

9-5. Different types of filters are distinguished by:
a) Efficiency b) Air flow resistance c) Dust-holding capacity
d) All of the above e) None of the above

Answer: d

9-6. Filters collect particles by:
a) Straining b) Inertial deposition c) Electrostatic effects
d) All of the above e) None of the above

Answer: d

9-7. In panel filters, the accumulating dust load causes pressure drop to:

a) Decrease to the filtration load rating, then increase

b) Increase to the filtration load rating, then decrease

c) No effect, remains constant

d) None of the above

Answer: d

The pressure drop continues to increase.

9-8. Electronic filters, which if maintained properly by regular cleaning, have relatively constant pressure drop and efficiency.

a) True b) False

Answer: a, True

9-9. Important requirements of a satisfactory and efficiently operating air filter installation include:

a) Ample capacity for the amount of air and dust load it is expected to handle

b) Suited to the operating conditions

c) Economical for the specific application

d) All of the above e) None of the above

Answer: d

9-10. Duct heaters may be:

a) Steam b) Water c) Electric d) All of the above

Answer: d

9-11. The performance of particulate filters is categorized in *Standard 52.2* into 20 MERV ratings, with MERV 1 being a coarse screen and MERV 20 being the high rating filter for demanding cleanroom situations. To control a buildup of dirt on wet cooling coils, *Standard 62* requires what MERV rating filter be installed before cooling coils that can run wet?

a) MERV 2 b) MERV 6 c) MERV 10 d) MERV 14

Answer: b

9-12. The parallel blade damper deflects the air in one direction as the air passes through. This usually makes the performance of a parallel blade damper more sensitive to location than an opposed blade damper in the same location.

a) True b) False

Answer: a, True