

Flow Measurement in Pipes and Ducts - Quiz

Quiz - Flow Measurement in Pipes and Ducts, Course #503

1. Which of the following differential pressure meters causes the least pressure drop?
 - a. orifice
 - b. flow nozzle
 - c. venturi
 - d. They are all about the same.
2. A venturi coefficient will typically be in the following range:
 - a. 0.95 to 1.0
 - b. 0.92 to 0.96
 - c. 0.75 to 0.90
 - d. 0.60 to 0.65
3. In order to calculate the flow rate from the pressure reading across any of the differential pressure meters, the fluid density, cross-sectional area at the constriction, discharge coefficient, and ratio of constricted diameter to pipe diameter are needed.
 - a. true
 - b. false
4. Which of the of ISO standard pressure tap types has the upstream and downstream taps placed at different distances from the orifice plate?
 - a. corner taps
 - b. D – D/2 taps
 - c. flange taps
 - d. none of them do
5. Which of the differential pressure meters has the lowest typical accuracy?
 - a. venturi meter
 - b. flow nozzle meter
 - c. orifice meter
 - d. they are all about the same
6. The orifice coefficient for an orifice meter with ISO standard flange pressure taps, can be calculated using the ISO-5167 equation if values for the pipe diameter, orifice diameter and Reynold's number are known.
 - a. true
 - b. false
7. What is the flow rate of water at 40°F, through a venturi meter with 3" throat diameter in a 6" diameter pipe, when the pressure difference measured across the meter is 6.5 in Hg(459.7 lb/ft²) ?
 - a. 0.592 cfs
 - b. 0.886 cfs
 - c. 0.927 cfs
 - d. 1.08 cfs
8. Which of the differential pressure meters has the lowest initial cost for a given pipe size?
 - a. venturi meter
 - b. flow nozzle meter
 - c. orifice meter
 - d. they all three cost about the same
9. For any of the differential pressure flow meters, the pressure at the constricted location is greater than that in the upstream, undisturbed pipe flow.
 - a. true
 - b. false
10. What is the Reynolds number for water at 60°F, flowing at 0.75 cfs through a 6 inch diameter pipe?
 - a. 1.49×10^4
 - b. 9.50×10^4
 - c. 1.59×10^5
 - d. 3.46×10^5
11. For an orifice meter with ISO standard corner taps, the distance of the upstream pressure tap from the face of the orifice plate is:
 - a. zero
 - b. one inch
 - c. half of the pipe diameter
 - d. equal to the pipe diameter
12. Which of the differential pressure meters has the highest typical turndown ratio?
 - a. venturi meter
 - b. orifice meter
 - c. flow nozzle meter
 - d. they are all about the same
13. Which of the following is true for a transit-time type ultrasonic flow meter?
 - a. It has no sensor inside the pipe.
 - b. It requires three transducers.
 - c. The liquid must have something in it to reflect sonic waves.
 - d. All of the above are true.
14. A target flow meter measures deflection of a physical target in the flow path and correlates it to fluid flow rate.
 - a. true
 - b. false
15. Which of the following are true for an electromagnetic flow meter?
 - a. It requires no power.
 - b. Its magnetic field is caused by a coil in the flow path of the fluid.
 - c. The fluid being measured must be conductive.
 - d. Its sensor can be fouled by dirty liquids.

Flow Measurement in Pipes and Ducts - Quiz

16. Which of the following type of flow meter is most widely used for residential water metering?

- a. positive displacement
- b. turbine
- c. electromagnetic
- d. rotameter

17. Estimate the density of air at 18 psia and 65 °F.

- a. 0.002882
- b. 0.002590
- c. 0.002468
- d. 0.001862

18. Which of the following is true for a Doppler type ultrasonic flow meter?

- a. It utilizes an obstruction in the flow path of the fluid.
- b. It requires three transducers.
- c. The liquid must have something in it to reflect sonic waves.
- d. All of the above.

19. Rotameters require power and so they must be explosion proof if used for a flammable fluid.

- a. true
- b. false

20. The pressure difference measured by a pitot tube is 0.105 lb/ft^2 , in a gas of density $0.00283 \text{ slugs/ft}^3$. What is the velocity of the gas at that point?

- a. 8.0 ft/sec
- b. 8.6 ft/sec
- c. 9.85 ft/sec
- d. 10.2 ft/sec