

Test 8

1. What is conserved in Bernoulli's theorem? 1
2. If the rate of flow of liquid through a horizontal pipe of length l and radius R is Q . What is rate of flow of liquid if length and radius of tube is doubled? 1
3. Water is coming out of a hole made in the wall of tank filled with fresh water. If the size of the hole is increased, will the velocity of efflux change? 1
4. The accumulation of snow on an aero plane wing may reduce the lift. Explain? 1
5. Two pipes P and Q having diameters 2×10^{-2} m and 4×10^{-2} m respectively are joined in Series with the main supply line of water. What is the velocity of water flowing in pipe P? 2
6. A horizontal pipe of diameter 20 cm has a constriction of diameter 4 cm. The velocity of water in the pipe is 2m/s and pressure is 10^7 N/m². Calculate the velocity and pressure at the constriction? 2
7. The reading of a pressure metre attached to a closed is 2.5×10^5 N/m². On opening the valve of pipe, the reading of the pressure metre reduces to 2.0×10^5 N/m². Calculate the speed of water flowing through the pipe? 2
8. A large bottle is fitted with a siphon made of capillary glass tubing. Compare the co-efficient of viscosity of water and petrol if the time taken to empty the bottle in the two cases is in the ratio 2:5. Given specific gravity of petrol = 0.8 2
9. Under a pressure head, the rate of flow of liquid through a pipe is Q . If the length of pipe is doubled and diameter of pipe is halved, what is the new rate of flow? 2
10. In a horizontal pipeline of uniform area of cross – section, the pressure falls by 5 N/m² between two points separated by a distance of 1 Km. What is the change in kinetic energy per Kg of oil flowing at these points? Given Density of oil = 800 Kg/m³? 3
11. (a) Water flows steadily along a horizontal pipe at a rate of 8×10^{-3} m³/s. If the area of cross – section of the pipe is 40×10^{-4} m², Calculate the flow velocity of water. 3
(b) Find the total pressure in the pipe if the static pressure in the horizontal pipe is 3×10^4 Pa. Density of water is 1000 Kg/m³.
(c) What is the net flow velocity if the total pressure is 3.6×10^4 Pa?