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**Q : 1) Which of the following relations are correct?**

- 1. Absolute pressure = Atmospheric pressure + Gauge pressure**
- 2. Absolute pressure = Atmospheric pressure – Vacuum pressure**
- 3. Absolute pressure = Atmospheric pressure + Vacuum pressure**
- 4. Absolute pressure = Atmospheric pressure – Gauge pressure**

**A : 1 and 4 only**

**B : 1 and 2 only**

**C : 2 and 3 only**

**D : 3 and 4 only**



**Q : 2) Multi U-tube manometers with different fluids are used to measure.**

**A : Very low pressure**

**B : Low pressure**

**C : High pressure**

**D : Medium pressure**

**Q : 3) The liquid used in manometers should have**

**A : Low density**

**B : High density**

**C : Low surface tension**

**D : High surface tension**

**Q : 4) Which of the following is an incorrect statement in regard to selection of mercury to be used in barometers over other liquids?**

**A : Mercury has a very high vapor pressure**

**B : Mercury's freezing point is much lower**

**C : Mercury does not evaporate easily**

**D : Mercury being a metal shines brightly, hence easier easier to read**



**Q : 5) Bourdon gauge measures**

**A : Absolute pressure**

**B : Gauge pressure**

**C : Local atmospheric pressure**

**D : Standard atmospheric pressure**

**Q : 6) The difference in pressure, head, measured a mercury water differential manometer for 20 cm difference of mercury will be**

**A : 2.72 m**

**B : 2.52 m**

**C : 2.0 m**

**D : 0.2 m**

**Q : 7) When the barometer reads 740.0 mm of mercury, a pressure of 10 KPa suction at that location is equivalent to**

**A : 10.2 m of water (abs)**

**B : 9.87 m of water (abs)**

**C : 88.72 KPa (abs)**

**D : 0.043 KPa (abs)**



**Q : 8) At sea level, the value of atmospheric pressure is close to**

**A : 1.033 m of water column**

**B : 10.33 m of water column**

**C : 103.3 m of water column**

**D : 101.3 m of water column**

**Q : 9) Mercury is used in barometers because:**

**A : It is perfect liquid**

**B : Its volume changes uniformly with temperature**

**C : It is a liquid metal**

**D : It given less height of column for high pressure**

**Q : 10) For a hydrostatic pressure measurement in fluids at rest-**

**A : The shear stress depends upon the coefficient of viscosity**

**B : The shear stress is maximum on a plane inclined  $45^\circ$  to horizontal**

**C : The shear stress is zero**

**D : The shear stress is zero only on horizontal plane**



**Q : 11) Navier-stokes equation in fluid mechanics is derived from the**

**A : Newton's first law of motion**

**B : Newton's second law of motion**

**C : Newton's third law of motion**

**D : Newton's law of viscosity**

**Q : 12) A flow in which fluid moves rapidly inwards towards a point where it disappears at a constant rate, is called as:**

**A : Sink flow**

**B : Compressible flow**

**C : Incompressible flow**

**D : Steady flow**

**E: Non laminar flow**

**Q : 13) A pitot tube is used to measure the**

**A : Velocity of flow at the required point in a pipe**

**B : Pressure difference between two points in a pipe**

**C : Total pressure of liquid flowing in a pipe**

**D : Discharge through a pipe**



**Q : 14) At vena contracta, the area of the water jet is minimum and the velocity of emerging water is**

**A : Minimum**

**B : Average**

**C : Maximum**

**D : Zero**

**Q : 15)**

List I	List II
A. Venturi meter	1. Flow rate
B. Current meter	2. Flow velocity
C. Piezometer	3. Flow pressure

**Codes:**

**A : 2, 3, 1**

**B : 3, 2, 1**

**C : 2, 1, 3**

**D : 1, 2, 3**

**Q : 16) Venturi meter (V), flow nozzle (N) and orifice meter (O) arranged in increasing order of coefficient of discharge are**

**A : V, N, O**

**B : N, O, V**

**C : O, N, V**

**D : O, N, V**

**Q : 17) In the category of flow meters, head loss is at the least for**

**A : Orifice meter**

**B : Nozzle flow meter**

**C : Venturi meter**

**D : Manometer**



**Q : 18) In a short cylindrical external mouthpiece, the vena-contracta occurs at a distance from the outlet of orifice equal to:**

**A : Diameter of the orifice**

**B : One-fourth the diameter of the orifice**

**C : One-third the diameter of the orifice**

**D : Two times the diameter of the orifice**

**Q : 19) The height of water level in a tank above the centre of a circular hole 2.5 cm in diameter is 50m. The velocity of water flowing through the hole is (neglect friction between jet and wall)**

**A : 20.53 m/sec**

**B : 25.85 m/sec**

**C : 31.32 m/sec**

**D : 40.40 m/sec**

**Q : 20) Cavitation is observed at locations in pipe flow where:**

**A : Pressure falls below atmospheric pressure**

**B : Pressure rises beyond the pipes strength**

**C : Shear stress exceeds the shear strength of pipe material**

**D : Pressure falls below the vapour pressure of liquid.**

**Q : 21) Compare the cost of pumping the same fluid at the same flow rate through a 150 mm pipe and through 200 mm pipe both having the same roughness factor = 0.03 (negligible minor loss).**

**A : 4.2 times**

**B : 2.1 times**

**C : 8.4 times**

**D : 10 times**

**Q : 22) Which of the following bends will cause maximum head loss?**

**A : 30° bend**

**B : 60° bend**

**C : 90° bend**

**D : U bend**



**Q : 23) If the velocity of flow as well as the diameter of the flowing pipe are respectively doubled, the head loss there after be?**

**A : Halved**

**B : Doubled**

**C : Increased 4 times**

**D : No change**

**Q : 24) The reading of differential manometer of a venturi meter, placed at 45° to the horizontal is 11 cm. If the venturi meter is turned to horizontal position, the manometer reading will be**

**A : Zero**

**B :  $11/\sqrt{2}$  cm**

**C : 11 cm**

**D :  $11/\sqrt{2}$  cm**

**Q : 25) The hydraulic gradient line represent the variation of**

**A : Datum head in the direction of flow**

**B : Velocity head in the direction of flow**

**C : Piezometric head in the direction of flow**

**D : Total energy in the direction of flow**

**Q : 26) In laminar flow, the shear distribution for a fluid flowing in between the parallel plates, both at rest, is**

**A : Constant over the cross section**

**B : Parabolic distribution across the section**

**C : Zero at the mid plane and varies linearly with distance from mid plane**

**D : Zero at plates and increases linearly to midpoint**

**Q : 27) In steady laminar flow of a liquid through a circular pipe of internal diameter  $D$ , carrying a constant discharge the hydraulic gradient is inversely proportional to**

**A :  $D$**

**B :  $D^{-2}$**

**C :  $D^{-4}$**

**D :  $D^{-6}$**



**Q : 28) The major loss of hydraulic energy in pipe flow occurs in long pipe due to-**

**A : Sudden enlargement**

**B : Friction**

**C : Sudden contraction**

**D : Gradual enlargement or contraction**

**Q : 29) The Blasius equation for friction factor 'f' in a turbulent flow through pipes relates 'f' to the Reynold's number ' $R_e$ ' as,  $f =$**

**A :  $\frac{64}{Re}$**

**B :  $\frac{0.316}{Re^{\frac{1}{4}}}$**

**C :  $\frac{1.328}{Re^{\frac{1}{2}}}$**

**D :  $\frac{0.316}{Re^{\frac{1}{5}}}$**

**Q : 30) The value of friction factor for smooth pipes for Reynolds number equal to  $10^6$  is approximately**

**A : 0.0001**

**B : 0.001**

**C : 0.01**

**D : 0.1**

**Q : 31) The minor loss due to sudden contraction is due to:**

**A : Cavitation**

**B : Flow contraction**

**C : Boundary friction**

**D : Expansion of flow after sudden contraction**

**Q : 32) Two pipes of same length and diameter 'd' and '2d' are connected in series. The diameter of equivalent pipe of same length is:**

**A :  $> 2d$**

**B : Between  $1.5d$  and  $2d$**

**C : Between  $d$  and  $1.5d$**

**D :  $< d$**

**Q : 33) Loss of head due to sudden enlargement is:**

**A :**  $\frac{(v_1 - v_2)^2}{2g}$

**B :**  $\frac{v_2^1 - v_2^2}{2g}$

**C :**  $\left(\frac{v_1 - v_2}{2g}\right)^2$

**D :**  $\frac{(v_1 - v_2)^2}{g}$



**Q : 34) The pressure rise due to water hammer depends upon-**

**A : Velocity of flow water in pipe**

**B : Length of pipe**

**C : Time taken to close the valve**

**D : All the above**

**Q : 35) For laminar flow, kinetic energy correction factor is:**

**A : 1**

**B : 1.33**

**C : 2**

**D : 2.7**

**Q : 36) When a fluid is flowing through a pipe, the velocity of the liquid is-**

**A : Maximum at the center and minimum near the walls**

**B : Minimum at the center and maximum near the walls**

**C : Zero at the center and maximum near the walls**

**D : Maximum at the center and zero near the walls**

**Q : 37) The term  $z$  in total energy expression**

$$\frac{p}{\rho g} + \frac{V^2}{2g} + z$$

**A : Potential energy**

**B : Pressure energy**

**C : Potential energy per unit weight**

**D : None of the above**

**Q : 38) The sluice valves used for dewatering the pipe line are called**

**A : Scour valve**

**B : Safety valve**

**C : Sectionalizing valve**

**D : Discharge control valve**

**Q : 40) Euler's equation of motion can be integrated when it is assumed that:**

**A : Continuity equation is satisfied**

**B : The fluid is incompressible**

**C : A velocity potential exists and density is constant**

**D : The flow is rotational and incompressible**



**Q : 41) A nozzle is generally made of:**

**A : Cylindrical shape**

**B : Convergent shape**

**C : Divergent shape**

**D : Convergent – divergent shape**

**Q : 42) Euler's equation in the differential form for the motion of liquids is given by:**

**A :  $\rho dp + g.dz + v.dv = 0$**

**B :  $\frac{dp}{\rho} + g.dz + v.dv = 0$**

**C :  $\frac{dp}{\rho} - g.dz + v.dv = 0$**

**D :  $\rho dp - g.dz + v.dv = 0$**

**Q : 43) For laminar flow between parallel plates separated by a discharge of  $2h$ , head loss varies:**

**A : Directly as  $h$**

**B : Inversely as  $h$**

**C : Directly as  $h^2$**

**D : Inversely as  $h^2$**

**Q : 44) Which of the following pair is incorrectly matched:**

**A : Piezometric head : Sum of datum head and pressure head**

**B : Dynamic head : Sum of datum head and velocity head**

**C : Stagnation head : Sum of pressure head and velocity head**

**D : Total head : Sum of piezometric head and dynamic head**

**Q : 45) The hydrologic routing method are based on**

**A : Continuity equation only**

**B : Energy equation only**

**C : Momentum equation only**

**D : Continuity and momentum equations**

**Q : 46) Which of the following is a dimensionless number?**

**A : Manning's coefficient**

**B : Pipe friction factor**

**C : Chezy's coefficient**

**D : Hazen-William coefficient**

**Q : 47) If the coefficient of discharge is 0.6, then the discharge over a right angled notch is:**

**A :  $0.417 H^{5/2}$**

**B :  $1.417 H^{5/2}$**

**C :  $4.171 H^{5/2}$**

**D :  $7.141 H^{5/2}$**

**E:  $3.417 H^{5/2}$**



**Q : 48) The ratio of the percentage error in the discharge and percentage error in the measurement of head over a triangular notch is:**

**A :  $2/5$**

**B :  $2/3$**

**C :  $5/2$**

**D :  $3/2$**

**E :  $3/5$**

**Q : 49) The discharge over a triangular notch is:**

**A : Inversely proportional to  $H^{3/2}$**

**B : Directly proportional to  $H^{3/2}$**

**C : Inversely proportional to  $H^{5/2}$**

**D : Directly proportional to  $H^{5/2}$**

**Q : 50) Two long pipes in parallel are used to carry water between two reservoirs. The diameter of one pipe is twice that of the other. Both pipes have the same value of friction factor. Neglect minor losses. What is the ratio of flow rates through the two pipes?**

**A : 2.8**

**B : 5.6**

**C : 8**

**D : 11.3**

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