



- 1. Acts in the plane of the interface normal to any line in the surface
- 2. Is also known as capillarity
- 3. Is a function of the curvature of the interface
- 4. Decreases with fall in temperature
- Answer (a)

- 2.In a static fluid _____
- 1. Resistance to shear stress is small
- 2. Fluid pressure is small
- 3. Linear deformation is small
- **4.**Only normal stress can exist
- Answer (d)







- 1. It is linear with maximum value at the centre
- 2. It is parabolic with maximum value at the centre
- 3. It is parabolic with zero value at the centre
- 4. It is linear with zero value at the centre
- Answer (b)
- 4. Which of the following statements is correct about the shear stress distribution in circular pipes with laminar flow?
- 1. It is linear with maximum value at the centre
- 2. It is parabolic with maximum value at the centre
- 3.It is parabolic with zero value at the centre
- 4.It is linear with zero value at the centre

Answer (b)





- 5. Which of the following are examples of free vortex motion?
- i. Motion of air in cyclone
- ii. Motion of liquid at the bottom of wash basin
- iii. Motion of liquid inside impeller of pump
- iv. Motion of eddies in rivers and canals
- 1. i., ii., and iv.
- 2. i., ii., and iii.
- 3.i., iii., and iv.
- 4.All of the above

Answer (a)

- 6)If a uniform body weighs 50N in air and 30 N in water, its specific gravity equals ...
- a) 1.5
- b) 1.67
- c) 2.5
- d) 3

Answer: B

Explanation : $50 \text{ N} = \text{m x } 9.81 \text{ m/s}^2 \text{ m} = 5.1 \text{ kg}$





- 7)when you drink a liquid with your straw, you reduce the pressure in your mouth and let the atmosphere moves the liquid, can you use a straw to sip ip liquid on the moon
- a) No a straw will not work as there is no atmosphere
- b) Yes, a straw will work as a result of pressure difference
- c) No, a straw will not work because of low gravity
- d) Yes , a straw will work as a result of pressure difference between mouth and surrounding atmosphere

Answer: A

- 8)Lead has a greater density than iron, and both metals are denser than water. Is the buoyant force on a lead object..... to the buoyant force on an iron object of the same volume?
- a) Less than
- b) Greater than
- c) Equal
- d) Double

Answer: C





- 9)A cup of water having an ice cube floating in it is placed on the pan of a balance. What happens when ice completely melts?
- a) Weight of cup is unchanged and level of water in the cub falls.
- b) Weight of cup increases and the level of water in the cub rises up
- c) Weight of cup is unchanged and the level of water in the cub rises up.
- d) Weight of cup is unchanged and level of water in the cub remains the same.

Answer: D

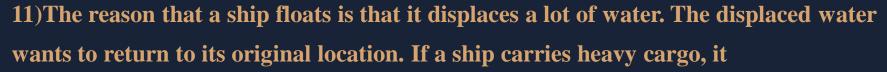
10)If you put a beach ball of volume of 14130 cm into the water anddon't push down on it. The weight of the beach ball in air is 1.5 N. Measuring the volume of the beach ball that is under water, we find it is 153 cm³. (Knowing that I cm of water has a mass of 1 g), what is the buoyant force of the water on the ball? (g= 9.8 N/Kg).

- a) 1500N
- b) 1.5 N
- c) 138.5 N
- d) 1380 N

Answer: B







- a) Dips deeper into the water and the buoyancy force decreases.
- b) Floats totally because of the increasing of buoyancy more than weight
- c) Dips deeper into the water which creates a stronger buoyancy directly with weight
- d) Still steady in its position because of the constancy of the buoyancy and its weight

Answer: C

12)A pipe of diameter 200 mm carries water in turbulent flow. The velocity of water at the centre of the pipe and 50 mm from the centre of the pipe are 3 m/s and 2 m/s, respectively. What is the shear stress at the wall of the pipe?

- a) 785 N/m²
- b) 334 N/m²
- c) 528 N/m²
- d) 614 N/m²
- Answer (b)



15) The reason that a ship floats is that it displaces a lot of water. The displaced water wants to return to its original location. If a ship carries heavy cargo, it



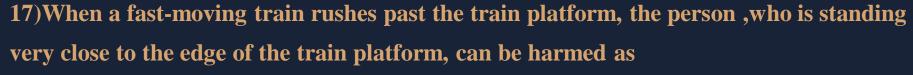
- a) Dips deeper into the water and the buoyancy force decreases .
- b) Floats totally because of the increasing of buoyancy more than weight
- c) Digs deeper into the water which creates a stronger buoyancydirectly with weight.
- d) Still steady in its position because of the constancy of thebuoyancy and its weight.

Answer: C

- 16) The apparent weight of an object changes in an elevator while accelerating upward. A fruit seller sells his fruits using a beam balance in an elevator. Will he gain more if the elevator is accelerating up?
- A) Yes because weight of fruits increases.
- B) No because weight of fruits decreases.
- C) Yes because the loads weight on the other balance increases.
- D) No because weights on both sides of the balance will gain equally.

Answer: D





- A) The behind area pressure becomes greater than that of the front area.
- B) The behind area pressure becomes smaller than that of the front area.
- C) The left area pressure becomes greater than that of the right area.
- D) The left area pressure becomes smaller than that of the right area.

Answer: A



- a) Speed equation
- b) Gravitational law
- C) Bernoulli's equation
- **D**) Equation of continuil)

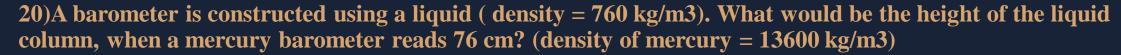
Answer:C





- 19) Which one of the following is the charneteristic of a fully developed laminar flow?
- a) The pressure drop in the Now direction is zero
- b) The velocity profile changes uniformly in the flow direction
- c) The velocity profile does not change in the flow direction
- d) The velocity profile changes uniformly in opposite direction to the flow direction

Answer: C



- 1. 1.36 m
- 2. 13.6 m
- 3. 136 m
- 4. 0.76 m

Answer: B





21) The approximate depth of an ocean is 2700 m. The compressibility of water is 45.4 x 10-11 Pa-1 and density of water is 103kg/m 3. What fractional compression of water will be obtained at the bottom of the ocean?



- 1. 0.8 x 10-2
- 2. 1.0 X 10-2
- 3. 1.2 x 10-2
- 4. 1.4 x 10-2

Answer: C

22) Two copper vessels A and B have the same base area but are of different shapes. A takes twice the volume of water as that B requires to fill upto a particular common height. Then the correct statement among the following is:

1.pressure on the base area of vessels A and B is same.

2.pressure on the base area of vessels A and B is not same.

3.both vessels A and B weigh the same.

4.vessel B weighs twice that of A.

Answer: A



23)A tank with a square base of an area of 1.0 m2 is divided by a vertical partition in the middle. The bottom of the partition has a small-hinged door of area 20 cm2. The tank is filled with water in one compartment, and an acid (of relative density 1.7) in the other, both to a height of 4.0 m. What is the force necessary to keep the door close?



- (1) 54.88 N
- (2) 56.0 N
- (3) 60.0 N
- (4) 45.5 N

Answer: A

24)A U-tube contains water and methylated spirit separated by mercury. The mercury columns in the two arms are in level with 10.0 cm of water in one arm and 12.5 cm ofspirit in the other. What is the specific gravity of the spirit?

- **(1) 0.8**
- **(2) 0.3**
- **(3) 0.5**
- **(4) 0.7**

Answer: A



25)If pressure at half the depth of a lake is equal to 2/3rd the pressure at the bottom of the lake, then the depth of the lake is:



- 1. 10m
- 2. 20m
- 3. 60m
- 4.30m

Answer: B

26)The height of a mercury barometer is 75 cm at sea level and 50 cm at the top of a hill. The ratio of density of mercury to that of air is 104. The height of the hill is:

- 1. 250 m
- 2. 2.5 km
- 3. 1.25 km
- 4. 750 m

Answer: B



27) A hemispherical bowl just floats without sinking in a liquid of density $1.2\times103~kg/m3$

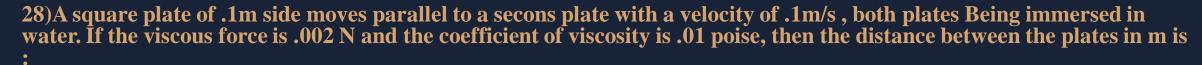
If the outer diameter and the density of the material of the bowl are 1 m

and 2×104 kg/m³

respectively, then the inner diameter of the bowl will be:

- 1. 0.94 m
- 2. 0.97 m
- 3. 0.98 m
- 4. 0.99 m

Answer: C



- a. .1
- **b.** .05
- c. .005
- d. .0005

ANS: c





29) A spiner fires a rifle bullet into a gasoline tank making a hole 53.0 m below the surface of gasoline. The tank was sealed at 3.10 atm . The stored gasoline has a density of 660 Kgm-3 The velocity with which gasoline begins to shoot out of the hole is :



a. 27.8

b. 41

c. 9.6

d. 19.7

ANS: B

30) With an increase in temperature, the viscosity of liquid and gas, respectively will:

a. increase, increase

b. increase, decrease

c. decrease, increase

d. decrease, decrease

ANS: C



31)A pipe of diameter 200 mm carries water in turbulent flow. The velocity of water at the centre of the pipe and 50 mm from the centre of the pipe are 3 m/s and 2 m/s, respectively. What is the shear stress at the wall of the pipe?



- a. 785 N/m²
- b. 334 N/m²
- c. 528 N/m²
- d. 614 N/m²

Answer (b)

- 32) The shear stress at a point in oil is 0.230 N/m2 and velocity gradient at this point is 0.20 s-1 If the density of oil is 1240 kg/m3, kinematic viscosity of oil would be
- **a.** 0.93 stokes
- **b.** 92.7 cm2/s
- c. 9.3 stokes
- **d.** 0.093 stokes

Answer (c)



33) A liquid compressed in a cylinder has a volume of 0.04 m2 at 50 N/cm2 and a volume of 0.039 m3 at 150 N/cm2 The bulk modulus of elasticity of liquid is



- a. 400 N/cm²
- b. 4000 N/cm²
- c. 40000 N/m²
- d. 40 N/cm²

Answer (b)

- 34)A hydrometer is used to determine
- a. Relative humidity
- **b.** Surface tension of liquids
- c. Specific gravity of liquids
- d. Viscosity of liquids

Answer (c)



35)A horizontal pipeline carries water in a streamline flow. At a point along the pipe where cross-sectional area is 10 cm2, the velocity of water is 1 m/s and pressure is 2000 Pa. The pressure of water at another point where cross-sectional area is 5 cm2, is: (Density of water=1000 kg/m3)



- 1. 250 Pa
- 2. 500 Pa
- 3. 1000 Pa
- 4. 2000 Pa

Answer: B

- 36) Several cans of different sizes and shapes are all filled with the same liquid tothe same depth. Then:
- A. the weight of the liquid is the same for all cans
- B. the force of the liquid on the bottom of each can is the same
- C. the least pressure is at the bottom of the can with the largest bottom area
- D. the greatest pressure is at the bottom of the can with the largest bottom area
- E. the pressure on the bottom of each can is the same

ANS: E





Thanks

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