PHYSICS

AAKASH INSTITUTE ENGLISH

MOCK TEST 14

Example

1. The guage pressure exerted below a column of water, open to the earth's atmosphere at

depth of 10 m is (density of water = 1000 kg/ m^3, g = 10 m/s^2 and 1 atm pressure = 10^5 Pa)

A. 1 atm

B. 2 atm

C. 3 atm

D. 4 atm

Answer: A

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2. Which of the following is NOT an application of Pascal's law ?

A. Hydraulic lift

B. Hydraulic brakes

C. Hydraulic machine

D. Venturimeter

Answer: D

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3. A vertical U-tube of uniform cross-section contains water jn both the arms. A 10 cm glycerine column (R.D. = 1.2) is added to one of the limbs. The level difference between the two free surfaces in the two limbs wiil be

A. 0.67 g/cm^3

B. 1.2 g/cm^3

C. 0.5 g/cm^3

D. 2.5 g/cm^3

Answer: A

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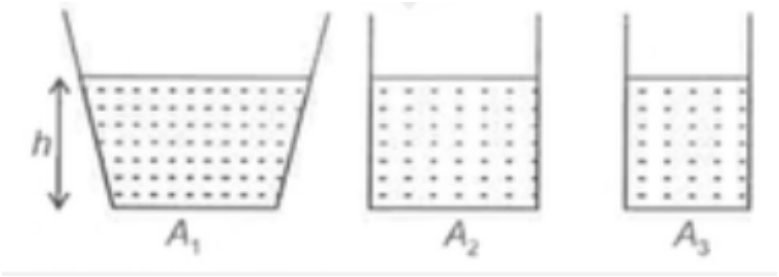
4. Three vessels containing same liquid, upto the same height h, then pressure at the bottom is ($A_1 > A_2 > A_3$)



A. Maximum in A_3

B. Same in all three cases

C. Maximum in A_2

D. Maximum in A_1

Answer: B

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5. The sides of rectangular plate of mass 20 kg is 5 m x 4 m placed on a horizontal table. The pressure exerted by the block on the table is (Take $g = 10\frac{m}{s^2}$)

A. 10 Pa

B. 100 Pa

C. 20 Pa

D. 30 Pa

Answer: A

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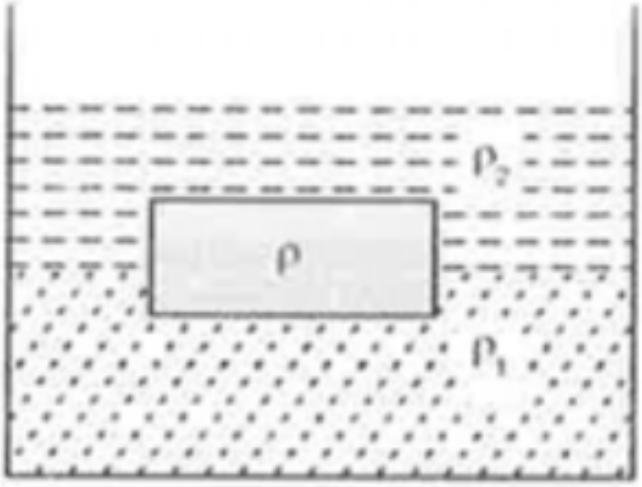
6. A cube of density p is just balanced at interface of two unmixable liquid A and B having density p_1 and p_2 respectively as shown, then the fraction of volume of cube in

the upper liquid is ($p_2 < p < p_1$)



A. $\dfrac{p_1 - p}{p_1 - p_2}$

B. $\dfrac{p_1 - p_2}{p_1 + p_2}$

C. $\dfrac{p_1 - p_2}{p_1 + p}$

D. $\dfrac{p_1 + p_2}{p}$

Answer: A

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7. According to Archimedes's principle the loss in of weight is equal to (V is the volume displaced by the body, ρ is the density of liquid in which body is immersed)

A. $V\rho g$

B. $2V\rho g$

C. $V\rho\frac{g}{2}$

D. $V\rho\frac{g}{4}$

Answer: A

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8. If two liquids of same mass but densities ρ_1 and ρ_2 respectively are mixed, then the density of the mixture is:

A. $p - 1p_2 \dfrac{m_1 + m_2}{m_1 p_2 + m_2 P1}$

B. $p - 1p_2 \dfrac{m_1 + m_2}{p_1 + p_2}$

C. $2p_1 \dfrac{p_2}{p_1 + p_2}$

D. $\dfrac{m_1 p_1 + m_2 p_2}{(m_1 + m_2)}$

Answer: A

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9. The loss of weight of body is 10 N when body is completely immersed in water, then the amount of water displaced by that body is

A. 10 m^3

B. $10^{-3}m^3$

C. 100 m^3

D. $10^{-2}m^3$

Answer: B

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10. A horizontal pipe of area of cross-section a and 3a respectively, then the ratio of velocity of flow at two different cross-section (If flow is streamline) is

A. $1:9$

B. $9:1$

C. $1:3$

D. $3:1$

Answer: D

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11. A cube of density 250 kg/m^2 floats in water, then what part of total volume of the cube outside the water?

A. 0.75

B. 0.25

C. 0.333

D. 0.677

Answer: A

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12. If water falls from a tap, then the volume rate of flow of water at depth of h, (A_0 is the area of cross-section of the mouth and $\frac{A_0}{2}$ is the corresponding area at depth h)

A. $A_0\sqrt{2gh}$

B. $A_0\sqrt{\frac{2}{3}gh}$

C. $2A_0\sqrt{gh}$

D. $A_0\sqrt{3gh}$

Answer: B

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13. Bernoulli's principle is based on the law of conservation of

A. Law of conservation of linear momentum

B. Law of conservation of angular momentum

C. Law of conservation of energy

D. Law of conservation of mass

Answer: C

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14. An open vessel containing the liquid upto a height of 15 m. A small hole is made at height of 10 m from the base of the vessel then the initial velocity of efflux is (g = 10 m/s^2)

A. 1 m/s

B. $10\sqrt{2}\frac{m}{s}$

C. 5 m/s

D. 10 m/s

Answer: D

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15. What is fluid? Show that fluid exerts pressure and prove that the force acting on a fluid in equilibrium at rest have to be perpendicular to its surface.

A. Volume of fluid displaced

B. Density of body

C. Density of fluid

D. Acceleration due to gravity

Answer: B

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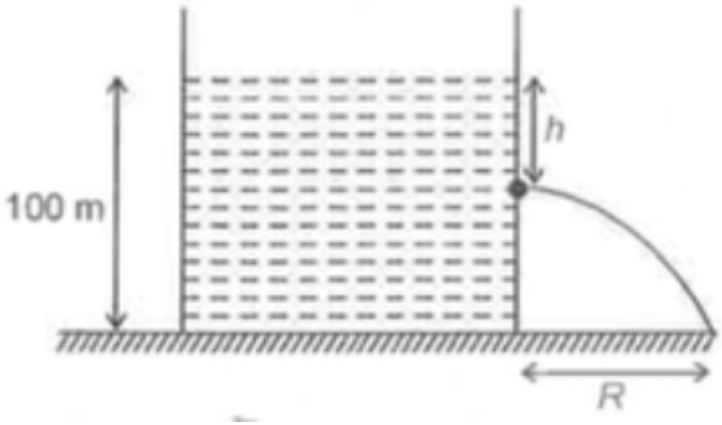
16. For maximum range R an orifice is made at the depth of h from the upper surface of incompressible liquid. If the height of liquid column in open vessel is 100 m then the value of h is



A. 10 m

B. 20 m

C. 50 m

D. 70 m

Answer: C

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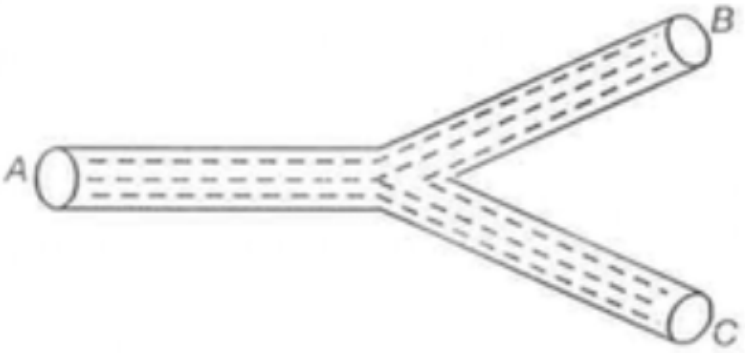
17. An incompressible liquid is flowing through a horizontal pipe as shown in figure. If V_1,V_2 and v_3 be the velocity and a,$\frac{a}{2}$ and $\frac{a}{3}$ be the

area of orifice A, B and C respectively, then



A. $v_1 = v_2 = v_3$

B. $v_1 < v_2 < v_3$

C. $v_1 > v_2 > v_3$

D. $v_1 > v_3 > v_2$

Answer: B

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18. One end of a cylinderical pipe has a radius of 2 cm. Water comes out at 10 m/s. The rate at which mass is leaving the pipe is

A. 3.14 kg/s

B. 10 kg/s

C. 12.56 kg/s

D. 9.56 kg/s

Answer: C

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19. The speed of the wind passing over the wings of a small aeroplane is 70 m/s and below the wing is 60 m/s. If the mass of the plane is 1000 kg and the area of wing is $14m^2$, then what will be ther net vertical force on the aeroplane ?

? (Density of air $= 1.2kg/m^3$ and $g = 10m/s^2$)

A. 2500 N

B. 5000 N

C. 1250 N

D. 7500 N

Answer: B

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20. Which of the following is not based on Bernoulli`s principle?

A. Laws of flotation

B. Lifting of aeroplane

C. Atomizer

D. Venturimeter

Answer: A

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