Science

Grade 10

Work, Energy and Power

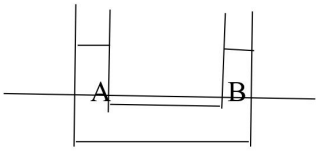
Answer all the questions by referring the lesson "Hydrostatic Pressure and Its Application "

(Grade 10 Part 11 Pages 63 – 85)

01. What is the non-dependent factor of the pressure at a point in a given liquid?
    (a) Gravitational acceleration
    (b) Depth of a point in a liquid
    (c) Density of the liquid
    (d) The nature of the container containing the liquid

02. The unit of measurement of pressure is?
    (a) J
    (b) Nm-2
    (c) Nm
    (d) Ms-2

03. The figure shows a case where a U tube is filled with water. Select the answer correctly indicates pressure in A and B point.
    (a) $P_A > P_B$
    (b) $P_B > P_A$
    (c) $P_A = P_B$
    (d) Not enough data has given



04. What is the instrument used to measure density
    (a) Pressure gauge
    (b) Hydrometer
    (c) Anometer
    (d) Barometer

05. The object shows 15N weight in the air. 3N is the visual weight when it is fully merged in water. What is the up thrust of water on the object?
    (a) 15N
    (b) 18N
    (c) 12N
    (d) 3N

06. The following is how the same object exists in different solutions. Select the object which is the lowest up thrust is applied.

(a) (b) (c) (d)

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Put a (X) or if the sentence is incorrect and a (✓) if the sentence is correct

07. Pressure is a vector quantity ( )
08. As the depth of a fluid increases the pressure increases ( )
09. When an object floats in a fluid, the weight of the fluid displaced by that object is equal to the volume of the object ( )
10. The pressure created by a fluid affects all directions. ( )
11. When an object is completely immersed in a fluid, the up thrust is less than the weight of the object. ( )
12. Atmospheric pressure increases as rises the height from the sea level ( )
13. Atmospheric pressure is used to remove water from a tank by syphon system ( )
14. The hydrometer is made based on Archimedes' law ( )

Write short answers

15. Write an equation to represent the relationship between pressure, force and area.
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16. 300N weigh, is placed on a table. If the area of the box contact with the table is 4^{m2}, find the pressure at on the surface of the box which contact with the table.
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17. Mention two instances in which pressure transmission is used.
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18. What are the factors influencing the pressure of a liquid?
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19. Write the law of Archimedes

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20. An object is 50N in the air and 20N visible weight in fully merged in water. What is the up thrust of the object?

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21. The weight of an object is 3N, when the object is 2.5N. Will the object submerged? fully merged? or merged?

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22. The depth of a reservoir is 2m. Calculate the pressure at the bottom of the water. (g=10ms-2, density=1000kgm-3)

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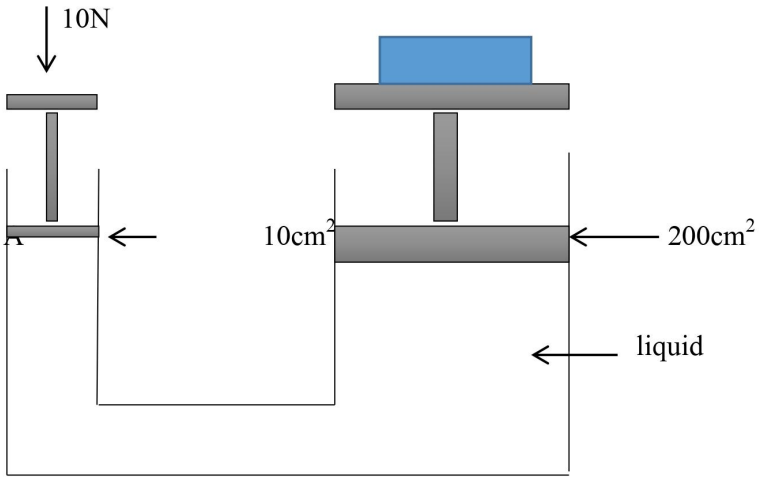
Fill in the blanks by using the words from the brackets.
(Pressure, equal in weight, shape, vertical height, less than, compressed, compression, transmission)

- The (23) ---------- at the same level in a fluid is the same.
- Fluid pressure does not depend on the (24) ---------- of the fluid and depend on the (25) ---------- of the fluid.
- Upward thrust when an object is completely immersed in a fluid. If the object weight (26) ---------- that the object will sink in the fluid. If the object is (27) ---------- the object is completely submerged in the fluid.

- The liquids are not (28) ---------- when applied forces. Therefore the pressure exerted on are part of a fluid can be (29) ---------- to another part of the fluid.
- (30) ---------- is used in hydraulic jack used to lift vehicles.

31.



The diagram shows the energy transmission in a liquid. The area of A and B pistons respectively10 cm^2 and 200 cm^2 .

1. Calculate the pressure on the fluid when that piston exerts a force of 10 N.
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2. What is the force exerted on the piston B?
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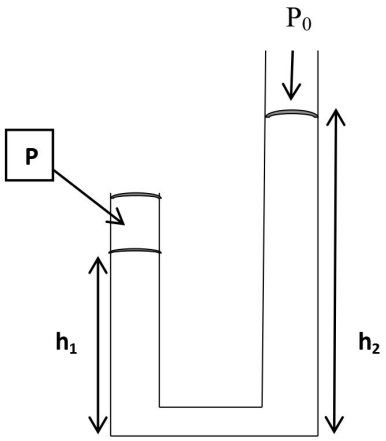

As shown in the figure, a gas is trapped by mercury in a closed glass tube at one end. The atmospheric pressure is p_0 and the density of mercury is ρ. Write a statement to find the pressure of the air in the tube.

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