

2019

32. There is a greater chance for a man swimming in the water with gas bubbles at the base of a water fall to drown. What is the reason for this?
- (1) increase in the upthrust exerted by water (2) decrease in the upthrust exerted by water
 (3) dissolving of a greater amount of gas in water (4) decrease in the temperature of water

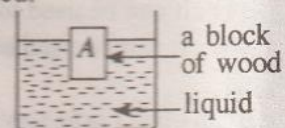
2019

37. Which following factor affects the pressure exerted by water on the bottom of a vessel filled with water to a certain height?
- (1) volume of water (2) shape of the vessel
 (3) area of the bottom of the vessel (4) vertical height of the water column

2018

12. When a block of wood A is placed in a liquid, it floats with a part immersed. Which of the following is the true statement in relation to this?

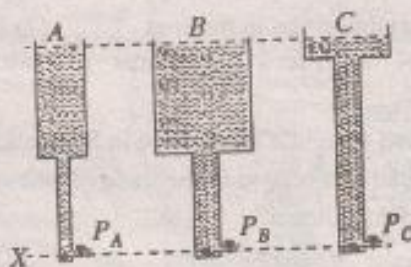
- (1) The upthrust exerted by the liquid on A is equal to the total weight of A .
 (2) The weight of the liquid displaced by A is equal to the weight of the part of A immersed in the liquid.
 (3) The volume of the liquid displaced by A is equal to the total volume of A .
 (4) The density of A is equal to the density of the liquid.



2018

32. As shown in the figure, water is filled to the same height from level X in three tanks, A , B and C which are different in breadth. Which of the following is correct about the pressures P_A , P_B and P_C of the three tanks at level X ?

- (1) $P_A > P_B > P_C$
 (2) $P_C > P_B > P_A$
 (3) $P_B > P_A = P_C$
 (4) $P_A = P_B = P_C$



2017

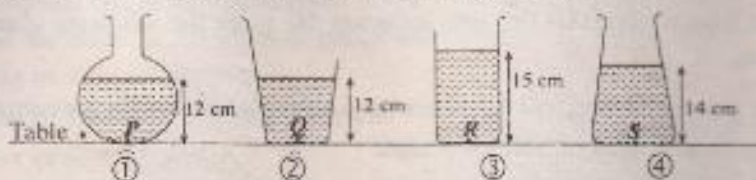
27. A situation where a swan of mass 1.3 kg is at still water in a pond is given in the figure. What is the upthrust acting on the swan by water? (Take the value of gravitational acceleration as 10 m s^{-2})

- (1) 1.3 N (2) 8.7 N
 (3) 10.0 N (4) 13.0 N



2015

31. Consider the following containers ①, ②, ③ and ④. The four containers are filled with pure water up to the heights of 12 cm, 12 cm, 15 cm and 14 cm respectively.



P , Q , R and S are points located at the bottom of the containers. Of the points, which point experiences the maximum pressure due to water?

- (1) P (2) Q (3) R (4) S

2014 Part B

9. (A) A group of explorers reached the peak of mount Pidurutalagala which is 2524 m high from the sea level.

- (i) (a) On that day the atmospheric pressure was 760 Hg mm at the sea level and they were able to measure the atmospheric pressure at the peak using the aneroid barometer. Figures 1 and 2 are relevant to aneroid barometer. What could be the figure which indicates the value of the atmospheric pressure at the peak?



Figure 1



Figure 2

2013

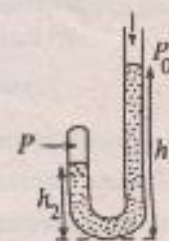
31. A tank is filled with water to a height of 2 m from the bottom. What is the pressure exerted on the bottom of the tank by the water column? (Density of water is 1000 kg m^{-3} and acceleration due to gravity is 10 ms^{-2} .)

- (1) 200 N m^{-2} (2) 500 N m^{-2} (3) 2000 N m^{-2} (4) 20000 N m^{-2}

2012

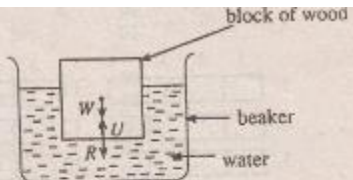
36. As illustrated in the diagram a column of air is trapped by mercury inside a glass tube sealed at one end. If the atmospheric pressure is P_0 , which of the following expression gives the pressure P of the gas inside the tube. (Density of mercury is ρ)

- (1) $P_0 - \rho g h_2$ (2) $\rho g h_1$
(3) $\rho g (h_1 - h_2)$ (4) $P_0 + \rho g (h_1 - h_2)$



2011 Part B 9

(B) When put into a beaker of water, a block of wood floats. The weight of the block of wood is W . The force exerted by it on water is R and the upthrust is U . (Acceleration due to gravity, $g = 10 \text{ ms}^{-2}$)



(i) Of the forces W , U and R indicated in the diagram, name the pair of forces which conforms to Newton's third law.

(ii) Equalling of which pair of forces makes the object float on water?

(iii) Name the laboratory equipment made to measure the volume of the displaced water in an occasion like this.

(iv) Using such an equipment, it was found that the mass of water displaced by the block of wood was 0.5 kg. Find the value of force U .

(v) Name the law which you used to decide the value you gave for (iv) above.

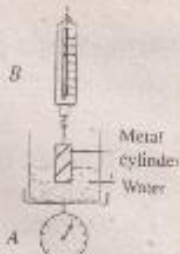
(vi) What is the weight of the block of wood?

(vii) What change in the submerged depth of the block of wood will occur, if the water in the beaker is replaced by a concentrated salt solution?

2010

27. The mass of the beaker of water placed on the balance A is 540 g. When a metal cylinder is hung on the spring balance B the reading is 200 g in air. When the metal cylinder is immersed partially in the beaker of water, as shown in the diagram the reading of the spring balance B is 160 g. What is the reading of the balance A at that instance?

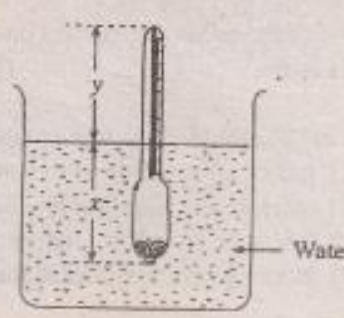
(1) 500 g (2) 540 g
(3) 580 g (4) 700 g



2009

34. An instance where a hydrometer is immersed in a vessel of water is shown in the diagram. The length of the part of the hydrometer that is dipped inside the water is x and the length of the part that is above the water is y . If kerosene oil is used instead of water the value of y ,

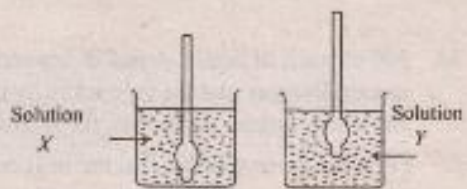
(1) will not change. (2) will be less than x .
(3) will decrease. (4) will increase.



2008

28. The diagram shows, how two identical hydrometers, remain immersed in the two solutions X and Y. Following are some changes suggested to make the hydrometers immerse and float equally in the two solutions.

- (A) to add water to the solution X.
- (B) to add powdered salt to the solution X.
- (C) to add powdered salt to the solution Y.
- (D) to add alcohol to the solution Y.



Out of these the correct procedures are

(1) A and C

(2) A and D

(3) B and C

(4) B and D