



# PHYSICS

## BOOKS - MAXIMUM PUBLICATION

### FORCES OF FLUIDS

#### Example

1. Take water in bucket. Place a tightly closed bottle on it. What do you observe?



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2. Immerse the plastic bottle to the bottom of the bucket. Don't you have to exert a force?

Why is it so?



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3. Leave the bottle free. What do you observe?



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4. When an object in water is lifted, what happens? What can be the reason?



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5. Tabulate some situations in your daily life where bouyant forces are experienced in liquids and gases.



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6. Find out the reasons for the following.

A piece of stone experience a loss of weight within water.



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7. Find out the reasons for the following.

Though an egg sinks in pure water, it floats on salt water.



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**8.** Find out the reasons for the following.

Kerosene floats on water.



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**9.** Find out the reasons for the following.

A ship floats on water.



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**10.** Find out the reasons for the following.

When a body was placed in a liquid it remained in the same position.



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**11.** Does a ship that enters a fresh water lake from the ocean sink more or rise move? Justify your answer.



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12. What are the factors affecting buoyancy?



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13. As density of a liquid increases buoyancy.....

(increases/decrease)



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14. Density of water is= \_\_\_\_\_



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**15.** How is relative density of kerosene calculated?



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**16.** Write examples for liquids of density greater and lesser than that of water.



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**17.** Which device is used to measure the relative density of a liquid?



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**18.** What will be the reading when the hydrometer is dipped in water?



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**19.** Suppose the hydrometer is dipped in a liquid of density greater than that of water. Will the liquid surface be above or below the marking of 1?



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**20.** In which case does the hydrometer sink more? In liquids of greater density or those with a lower density?



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**21.** Why do the marking on the hydrometer increase towards the bottom?



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**22.** Name two instruemnts which work on the principle of floatation?



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**23.** Which instrument is used to test the purity of milk?



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**24.** Name three devices constituted on the basis of Pascal's law



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**25.** What happened to the water level in the capillary tube?



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**26.** Does the capillary rise occur in mercury as well? What did you observe?



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**27.** What is the reason for capillary rise?



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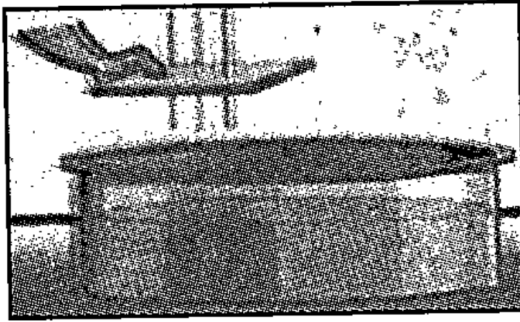
**28.** What is the reason for capillary depression?



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**29.** Arrange capillary tubes of different diameter on a piece of thermocol. Dip the capillary tubes in water. Compare the capillary rises in the tubes.

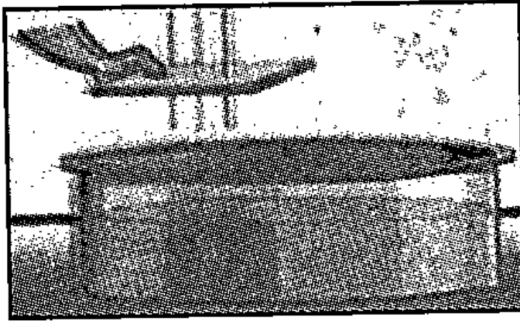
Which has greater capillary rise?



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**30.** Arrange capillary tubes of different diameter on a piece of thermocol. Dip the capillary tubes in water. Compare the capillary rises in the tubes.

Which has lower capillary rise?



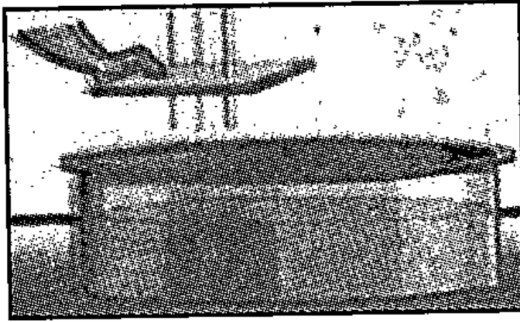
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**31.** Arrange capillary tubes of different diameter on a piece of thermocol. Dip the capillary tubes in water. Compare the capillary rises in the tubes.

How is the diameter of the tube and capillary



rise related?



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32. Why does the capillary rise decreases when the diameter is increased?



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**33.** Why does the capillary rise decreases when the diameter is increased?



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**34.** How does the oil rise up along the wick made of cotton cloth in lamps?



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**35.** Why is the land ploughed before the beginning of summer? Does it have any

relation to the capillary rise?



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**36.** What is viscosity?



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**37.** Find out liquids of viscosity greater and lower than that of water and tabulate them.



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**38.** What is the relation between viscosity and temperature?



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**39.** Why is it said that the body of a person who gets an electric shock should be massaged well?



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**40.** The weight of a piece of stone in air 120 N and its weight in water is 100 N. Calculate the buoyancy, experienced by the stone.



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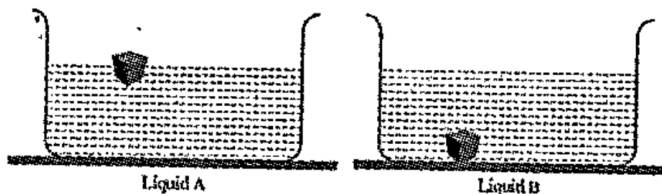
**41.** A body which floated in water sank, when put in kerosene. Why did it happen?



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42. Observe the figures of an object placed in different liquids

Compare the gravitational force and the buoyancy acting on the body when it is in liquids A and B.

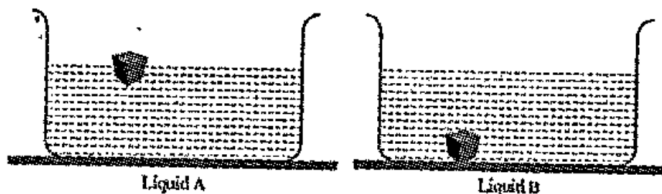


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43. Observe the figures of an object placed in different liquids

Among A and B, which is the liquid whose density is greater than that of the object?

Why?



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**44.** A body of weight 1000 N sinks in water. The weight of the liquid overflowed is 250 N.

What will be the weight of the body in water?



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**45.** A body of weight 1000 N sinks in water. The weight of the liquid overflowed is 250 N.

A body of the same weight as above floats in water. What is its weight in water? What will be the weight of the water displaced?







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**46.** The area of one end of a U-tube is  $0.01m^2$  and that of the other end the force  $1m^2$ , When a force was applied on the liquid at the first end, the force experienced at the other end is  $20000N$ . What is the force applied on the liquid at the first end?



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**47.** Write down the reason for the following

Ink can be blotted with chalk.



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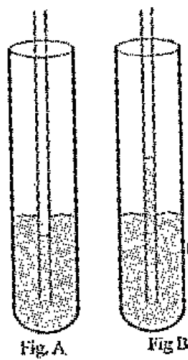
**48.** Write down the reason for the following

Sweat can be blotted with tissue paper.



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49. Which is the correct figure in case of liquid ? Why?



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50. A hydraulic lift has been constructed to lift vehicles of maximum 3000 Kg. Weight. The area of cross section of the piston's platform

on which the vehicles are lifted is 580 Sq.cm.

Calculate the maximum pressure experienced on the small piston.



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51. What is meant by fluids?



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52. What are the force experienced by an object inside a fluid?



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**53.** What is buoyancy? How is buoyancy measured?



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**54.** What are the factors affecting buoyancy?



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55. State Archimedes principle.



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56. The given below data are tabulated by Gokul while conducting an experiment to prove Archimedes principles. Fill the missing parts.

Object	Weight in air (N)	Weight in water (N)	Loss in weight Buoyancy (N)	Weight of water displaced
Iron	...(a)...	420	...(b)...	30
Stone	100	...(c)....	20	...(d)....



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**57.** Kerosene and saline water are taken in two beakers. The same stone is immersed in both liquids.

In which liquid, more weight difference is experienced?



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**58.** Kerosene and saline water are taken in two beakers. The same stone is immersed in both

liquids.

In which liquid, the stone experiences more buoyancy?



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**59.** Kerosene and saline water are taken in two beakers. The same stone is immersed in both liquids.

Write whether the buoyancy of that liquid is more or less than that of the other liquid?



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**60.** Kerosene and saline water are taken in two beakers. The same stone is immersed in both liquids.

What is the relation between the density of a liquid and buoyancy?

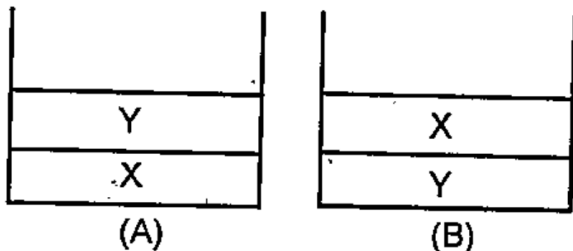


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**61.** X represents kerosene and Y represents water

Among A and B, which is the right figure?

Why?



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62. A body of weight  $10N$  sinks in water.

Weight of the water displaced is  $2N$ .

What is the weight of the object in water?



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**63.** A body of weight  $10N$  sinks in water.

Weight of the water displaced is  $2N$ .

Which principle is related to this?



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**64.** State principle of floatation



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**65.** Does a ship that enters a fresh water lake from the ocean sink more or rise move? Justify

your answer.



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**66.** An object of weight 500 N sinks in water.

Weight of water overflowed is 50 N.

What is the weight of the object in water?

A.

B.

C.

D.

**Answer: weight in water = Weight in air-weight of water over flowed =  $500N - 50N = 450 N$**



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**67.** An object of weight 500 N sinks in water.

Weight of water overflowed is 50 N.

If another object of the same weight floats on water, what is the weight in water? What is the buoyancy? What is the loss of weight in water?



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68. Density of water is= \_\_\_\_\_



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69. Relative density of water=.....



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70. Classify the following liquids into liquids having density greater than that of water and liquids having density less than that of water.

Honey,kerosene,glycerine,mercury,saline

water,petrol,diesel



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**71.** What is the relation between the diameter of capillary tube and capillary rise? Why?



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**72.** On which law, hydraulic brak works? Name other three devices that works on the basis of

this law. State the law.



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**73.** Honey : Viscous liquid Petrol : .....



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**74.** P,Q and r are three capillary tubes. If these are dipped in water.



Which has greater capillary rise?



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**75.** P,Q and r are three capillary tubes. If these are dipped in water.

Which factors influence capillary rise?



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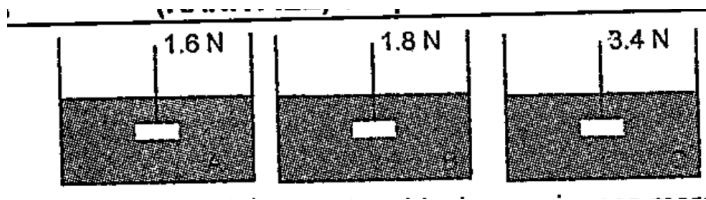
76. Why is the land ploughed before the beginning of summer? Does it have any relation to the capillary rise?



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77. An iron block of weight 2N is immersed in three different liquids A,B and C weight of the iron block experienced inside the liquids are labelled in the figure.

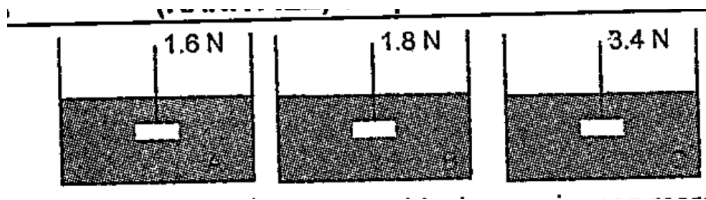
In which liquid, The iron block experiences more buoyancy?



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78. An iron block of weight 2N is immersed in three different liquids A, B and C weight of the iron block experienced inside the liquids are labelled in the figure.

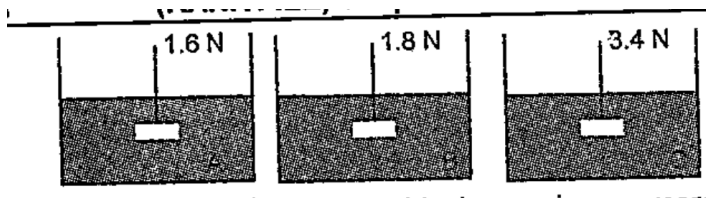
Among these three liquids, which has less density?



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79. An iron block of weight 2N is immersed in three different liquids A,B and C weight of the iron block experienced inside the liquids are labelled in the figure.

What is the relation between density of a liquid and bouyancy?



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**80.** When a hydrometer is dipped in a liquid, the reading is found to be 1.25. What is the density of the liquid?



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**81.** What is the relation between viscosity and temperature?



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**82.** When a midrib of a coconut leaf, pencil etc. are dipped in water, and taken out, water is seen sticking to them. Why?



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**83.** When a piece of chalk is used on a black board, particles of the chalk stick to the board. Why?



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**84.** Fingers are wetted at intervals when currency notes are being counted. Why?



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**85.** Which attractive force between the molecules is responsible for the surface tension?



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