



PHYSICS

BOOKS - FULL MARKS PHYSICS (TAMIL ENGLISH)

FLUIDS

Exercise I Choose The Correct Answer

1. Choose the correct answer . 1. The size of an air bubble rising up in water

A. decreases

B. increases

C. remains same

D. may increase or decrease

Answer: A



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2. Clouds float in atmosphere because of their low.....

A. density

B. pressure

C. velocity

D. mass

Answer: A



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3. In a pressure cooker, the food is cooked faster because

A. increased pressure lowers the boiling point

B. increased pressure raises the boiling point

C. decreased pressure raises the boiling point

D. increased pressure lowers the melting point

Answer: A



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4. Which of the following energy change involves frictional force? i. Potential energy to sound energy ii. Chemical energy to heat energy iii.

Kinetic energy to heat energy iv. Chemical energy
to heat energy

A. only 3

B. only 4

C. 1 and 2

D. 2 and 3

Answer: A



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Exercise II Fill In The Blanks

1. The weight of the body immersed in a liquid appears to be than its actual weight.



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2. The instrument used for measuring atmospheric pressure is _____



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3. The magnitude of buoyant force acting on an object immersed in a liquid depends on of

the liquid



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4. A drinking straw works on the existence of _____ pressure.



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Exercise iii True Or False

1. The weight of fluid displaced determines the buoyant force on an object.



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2. The shape of an object helps to determine whether the object will float.



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3. The foundations of high-rise buildings are kept wide so that they may exert more pressure on

the ground.



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4. Before the main shock waves, the earthquake produces the characteristic sound waves which some animals like rhinoceros can hear. Can you guess the kind of sound waves produced here?

A. infrasonic

B. ultrasonic

C. audible

D. none of these

Answer: a



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5. Hydraulic press is used in the extraction of oil from oil seeds.



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Exercise Iv Match The Following

1.

Column - I

(a) Density

(b) 1 gwt

(c) Pascal's law

(d) Pressure exerted by a fluid

(e) Lactometer

Column -II

(i) $h\rho g$

(ii) Milk

(iii) Mass/Volume

(iv) Pressure

(v) 980 dyne



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Exercise V Answer In Brief

1. On what factors the pressure exerted by the liquid depends on?



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2. Why do hot air balloons float?



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3. Why is it easier to swim in sea water than in river water?



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4. What is meant by atmospheric pressure?



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5. State Pascal's law in fluids.



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Exercise VI Answer In Detail

1. Loudness measures the sound energy reaching the ear per second and depends on the amplitude of the sound wave. What is the unit used to measure the loudness of sound?

A. hertz

B. decibel

C. m/s

D. s

Answer: b



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2. On increasing the temperature, the speed of sound in air:

A. increase

B. decrease

C. no change

D. increase and constant

Answer: a



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3. How does an object's density determine whether the object will sink or float in water?



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4. the bats can fly in the darkness of night without colliding with the other objects by emitting special sounds while flying. Which characteristic of sound is used by the bats to navigate?

A. ultrasound

B. infra sound

C. audible

D. none

Answer: a



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5. State the laws of flotation.



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Exercise Vii Assertion And Reason

1. Assertion (A) : To float, body must displace liquid whose weight is equal to the actual weight.

Reason (R) The body will experience no net downward force in that case.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion .

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

Answer: a



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2. Assertion (A) : Pascal's law is the working principle of a hydraulic lift.

Reason (R) : Pressure is thrust per unit area.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

B. If both assertion and reason are true but reason is not the correct explanation of assertion .

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

Answer: b



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Exercise Viii Numerical Problems

1. A block of wood of weight 200 g floats on the surface of water. If the volume of block is 300cm^3 calculate the upthrust due to water.



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2. Density of mercury is 13600kgm^{-3} . Calculate the relative density.



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3. The density of water is 1gcm^{-3} . What is its density in S.I. units?



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4. Calculate the apparent weight of wood floating on water if it weighs 100g in air.



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Exercise 1x Hots

1. How high does the mercury barometer stand on a day when atmospheric pressure is 98.6kPa ?



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2. Which of the following can produce longitudinal as well as transverse waves under

different conditions?

A. bats

B. tuning forks

C. slinky

D. none

Answer: c



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3. If you put one ice cube in a glass of water and another in a glass of alcohol, what would you

observe?



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4. You must have seen the doctor checking the sounds produced in the chest or heartbeat of a patient using a medical instrument called Stethoscope. On what principle does this Stethoscope work?

A. refraction

B. reflection

C. wave motion

D. none of these

Answer: b



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In Text Problems

1. A man whose mass is 90 kg stands on his feet on a floor. The total area of contact of his two feet with the floor is 0.036m^2 (Take, $g = 10\text{ms}^{-2}$). How much is the pressure exerted by him on the floor?



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2. Calculate the pressure exerted by a column of water of height 0.85 m (density of water, $\rho_w = 1000 \text{ kg m}^{-3}$) and kerosene of same height (density of kerosene, $\rho_k = 800 \text{ kg m}^{-3}$)



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3. A mercury barometer in a physics laboratory shows a 732 mm vertical column of mercury. Calculate the atmospheric pressure in pascal.

[Given density of mercury ,

$$\rho = 1.36 \times 10^4 \text{ kgm}^{-3}, g = 9.8 \text{ ms}^{-2}]$$



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4. A hydraulic system is used to lift a 2000 kg vehicle in an auto garage. If the vehicle sits on a piston of area 0.5 m^2 , m, and a force is applied to a piston of area 0.03 m^2 , what is the minimum force that must be applied to lift the vehicle?

Given: Area covered by the vehicle on the piston

$$A_1 = 0.5 \text{ m}^2$$

Weight of the vehicle , $F_1 = 2000kg \times 9.8ms^{-2}$

Area on which force F_2 is applied , $A_2 = 0.03m^2$



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5. You have a block of a mystery material, 12 cm long, 11 cm wide and 3.5 cm thick. Its mass is 1155 grams. (a) What is its density? (b) Will it float in a tank of water, or sink?



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[Additional Questions I Answer The Following](#)

1. Two objects of different masses falling freely near the surface of moon would:

- A. different acceleration
- B. change in inertia
- C. same velocity
- D. forces of same magnitude

Answer: c



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2. Define: (a) Thrust, (b) Pressure



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3. In petrol bunks, in what unit is tyre pressure measured?



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4. Define pascal's law. Explain the application of pascal's law in our daily life.



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5. What is Artisan aquifer?



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6. What is relative density? Explain it mathematically.



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7. What is lactometer? Explain its principle and working.



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8. Why do petroleum based products float on surface of water?



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9. State Archimedes principle.



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Activity

1. Which of the following has more inertia:

- A. rubber ball
- B. onion
- C. a five-rupees coin
- D. a rock

Answer: d



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