



**SECOND TERM SAMPLE PRACTICE PAPER- 2024**

**PHYSICS**

**Time : 1 ½ hour**

**STD-9**

**Score : 40**

**Answer any FOUR, from questions 1 to 5. One score each**

1. The value of  $g$  is highest on Earth.....  
(at the equator, at the centre, in space, in the polar region)
2. When can we say that work is done by a force?  
(When the object does not move despite the use of force,  
When the object moves in a direction opposite to that of applied force.  
When the force is applied when the object is displaced in the same direction,  
None of these.)
3. A 10 N weight is hung on a spring balance and the weight is lowered into the water.  
Now the reading showing the balance would be.....  
(10 N, 12 N, 6 N, 16 N)
4. Forces acting on a body cannot do any work if the forces experienced by the object are .....
5. When a body describes uniform circular motion the ----- of the body is always changing.

**Answer any FOUR, from questions 6 to 10. Two score each**

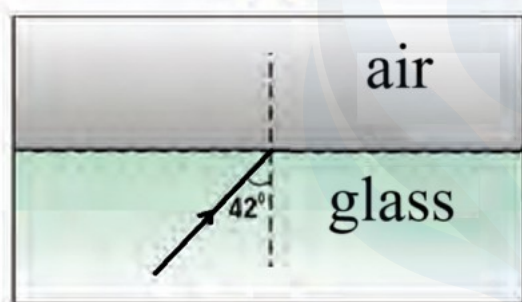
6. Refractive index of some mediums are tabulated.

Medium	Refractive index
Crown glass	1.52
Glycerine	1.47
Sunflower oil	1.47
Water	1.33
Flint glass	1.62

- a) In which medium does light travel faster?  
b) Will a ray of the light entering obliquely from sunflower oil to glycerine undergo a deviation? Justify your answer.
7. Write down two examples each for inertia of motion and inertia of rest.
8. A force of 400 N is applied in one direction on an object. Another force of 350 N force is applied on the same object in the same direction.
- a) What is the effect force experienced by the object?  
b) Is it a balanced force or an unbalanced force that is experienced by the object?
9. When a coconut from a coconut tree falls into the loose soil of a field, a pit is formed in the soil.
- a) Which characteristic of the coconut in motion is the reason behind this?  
b) What are the factors on which this feature depend on?
10. Write down the reason why a ship weighing tons of iron floats in seawater even though a very light iron rod sinks in the water?

**Answer any FOUR, from questions 11 to 15. Three score each**

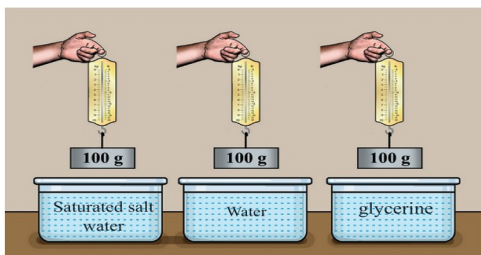
11. Observe the figure



42°?

- b) Illustrate the path of light, if the angle of incidence is 43°.  
c) Define the phenomenon of light that you have depicted
12. An object is allowed to fall from the top of a tower of height 100 m. At the same time, another object was thrown vertically up with a velocity 25 m/s in order to collide with the object falling down. ( $g=10 \text{ m/s}^2$ )

- a) Calculate the time taken by them to collide.  
 b) Find out the height from the ground at which they collide.
13. A stone falling from the top of a tall building touches the floor in 4 s ( $g = 10 \text{ m/s}^2$ )  
 a) Calculate the height of the building.
14. Calculate the quantity of work to be done against the Earth's gravity to raise an object of mass 5 kg to a height of 3 m. ( $g = 10 \text{ m/s}^2$ )
15. Observe the picture and the table and answer the questions



Liquid	Density $\text{kg/m}^3$ (approximately)
Water	1000
Saturated salt water	1025
Kerosene	810
Glycerine	1260
Coconut oil	920

When the slotted weights are lowered into the liquids,

- a) In which liquid is its weight felt more?  
 b) In which liquid is its weight felt least?  
 c) Write down the reason for experiencing different weights in different liquids?

**Answer any FOUR, from questions 16 to 20. Four score each**

16. Observe the following situations and answer the questions



climbs a lorry with a load



a child pushes a rock



A man pushing a trolley



A man is standing with a load on his head

- a) Which are the occasions in which work is done? Justify your answer.  
 b) Which are the occasions in which work has not been done? Justify the answer.  
 c) What are the factors that influence the work?  
 d) How is the quantity of work done calculated?
- 17.a) What do you mean by the term relative density of a substance?

b) Which instrument measures the relative density of liquids?

c) On what principle does this device work?

d) Which of the following is the relative density?

(0.810, 1000 kg/m<sup>3</sup>, 920 kg/m<sup>3</sup>, 13.6 g/cm<sup>3</sup>)

18) a) A hockey ball with a mass of 200 g, hits a hockey stick at a speed of 20 m/s and goes back along the same path at the same speed. What is the change in the momentum of the ball?

b) What is the force experienced on the hockey stick if it took 0.2 s for the change in the momentum?

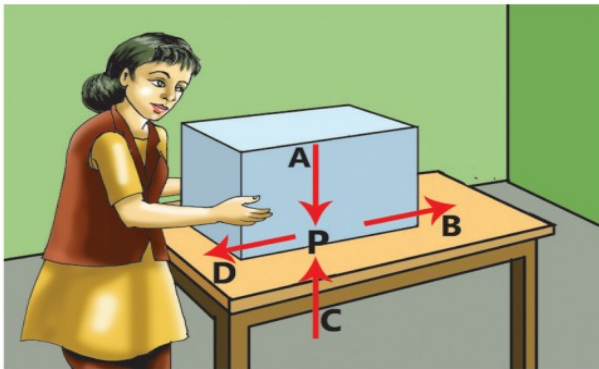
19) a) What is the difference between mass and weight?

b) What are the instruments used to measure each of these?

c) When an object is brought to the Moon, will its mass and weight be different?

why?

20) Complete the table by observing the picture. Then write down the situations in which the work done is negative.

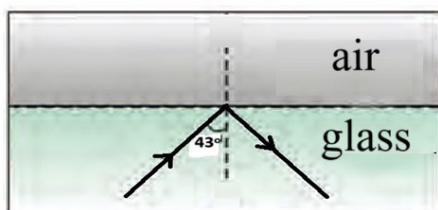


Force experienced on the table	Direction of force
Force applied by the child	P → D
Force of gravitation	
Force of friction	
Force applied by the table on the box	

## STD IX - PHYSICS

### ANSWER KEY

1. At the polar region
2. When there is a displacement for an object in the direction of applied force.
- 3.0 3.6 N
4. Balanced
5. direction
- 6.a) water
  - b) Does not happen. The refractive index of both the liquids are the same.
7. Inertia of rest:
  1. Passengers tend to fall backwards when a bus suddenly starts forward.
  2. When the branch of a mango tree is shaken, mangoes get detachedInertia of motion:
  1. A person jumping from a running vehicle runs forward for some distance.
  2. A person runs a long distance before making a long jump.
8. a) 750 N
  - b) unbalanced force
9. a) momentum
  - b) mass, velocity
10. The ship is constructed with a hollow interior. Hence the ship experiences a greater buoyant force
11. a)  $90^\circ$ 
  - b)



c) When a ray of light travels from an optically denser medium to a rarer medium and if the angle of incidence is greater than the critical angle, then the ray is completely reflected back into the optically denser medium without undergoing refraction. This phenomenon is total internal reflection.

12.a) If the bodies collides after t seconds, the distance travelled by the freely falling body is,

$$u = 0$$

$$S = ut + \frac{1}{2} g t^2$$

$$S = \frac{1}{2} g t^2$$

the distance travelled in this time by the body thrown upwards = 100 - S

$$100 - S = ut - \frac{1}{2} g t^2 \quad \text{----->(1)}$$

$$100 - S = 25 t - \frac{1}{2} g t^2 \quad \text{----->(2)}$$

$$(1) + (2) \text{-----> } 100 = 25t$$

$$\text{time, } t = 100 / 25 = 4 \text{ s}$$

$$\text{b) Height from the ground, } 100 - S = 25 \times 4 - \frac{1}{2} \times 10 \times 4 \times 4 = 20 \text{ m}$$

13.

$$t = 4 \text{ s, } g = 10 \text{ m/s}^2$$

$$s = ut + \frac{1}{2} at^2$$

$$s = \frac{1}{2} g t^2$$

$$s = \frac{1}{2} \times 10 \times 4 \times 4 = 80 \text{ m}$$

$$v = u + at$$

$$v = gt$$

$$10 \times 4 = 40 \text{ m/s}$$

14.  $E_p = mgh = 5 \times 10 \times 3 = 150 \text{ J}$

15. a) water

b) glycerine

c) the difference in the density of the liquids.

16.

a) A and C undergo displacement in the direction of the applied force.

b) B and D do not undergo displacement in the direction of the applied force.

c) Force and displacement.



d) Force x displacement ( $W=F \times S$ )

17. a) The ratio of the density of a substance to the density of water is the relative density.

b) Hydrometer

c) Principle of floatation

d)0.810

18.

$$mu = 0.2\text{kg} \times 20\text{m/s} = 4 \text{ kgm/s}$$

$$mv = 0.2\text{kg} \times 20\text{m/s} = - 4 \text{ kgm/s}$$

$$\text{Change in momentum} = mv - mu = 4 - (-4) = 8 \text{ kgm/s}$$

$$F = m(v-u)/t = 8 / 0.2 = 40 \text{ N}$$

19.a) Mass: The quantity of matter contained in an object.

Weight: The gravitational force exerted on an object by the planet on which the object is

b) Mass is measured using: A common balance.

Weight is measured using: A spring balance.

c) Mass remains the same on the moon, but weight decreases.

20.

**P → D**

**A → P**

**P → B**

**C → P**

Negative work = P → B