

PHYSICS

Date

I One mark questions

MCQ

1. Which ~~can~~ change can occur when you add heat energy to water?

ans c) Water can change from a liquid to a gas.

2. What is ~~sublimation~~ sublimation?

ans c) The process by which a solid changes directly into gas.

3. Evaporation is when

ans b) when a ~~liquid~~ substance changes from a liquid to a gas (or vapour) naturally.

4. What are the states of matter

ans d) The physical forms in which a substance can exist; includes solid, liquid, gas and plasma.

5. Force changes the

d) all of these.

6. Which of the following is responsible for wearing out of ~~best~~ bicycle tyres?

ans c) frictional force.

7. Force of friction depends on

d) all of these.

8. A toy car released with the same initial speed will travel the farthest on.

ans. b) Polished marble surface.

9. Friction is a

ans. b) contact force.

10. Which of the following produces least friction?

ans. b) rolling friction.

~~ans.~~ Choose the term to fill in the blanks.

11. Force has to be applied to change ~~the~~ the direction of a moving object. (moving, direction, force)

12. When an elephant drags a wooden log over the land, the forces applied ~~are~~ on the log are muscular force, gravitational force and frictional force.

13. A ball was get ~~rolling~~ on a large table. If its motion is to be changed, a force will have to be applied on it.

14. The force of friction acts ~~at~~ against the ~~obj~~ motion.

15 ~~An~~ <sup>ob</sup> ~~obj~~ One or more <sup>ob</sup> forces acting in the following examples. Name them.

a) An object falling from a tall building. Gravitational force

b) An aeroplane flying in the sky. Mechanical and gravitational force.

c) Squeezing a sugarcane juice with a squeezer. Mechanical and muscular force.

d) Winnowing food grain. Muscular and gravitational force.

16 Convert the following quantities as indicated.

a) 10 quintal = 1 metric ton.

b) 1 cm = 1/100 metre

c) 1 yard = 3 ft

d) 1 mm = 1/1000 m

e) 1 decimetre = 1/10 metre.

f) 1 decametre = 10 metre

g) 1 hectometre = 100 metre

h) 1 gram = 1/1000 kg

i) 1 mg = 1/10,00,000 kg

$$j) 1 \mu = \underline{453.592 \text{ gm}}$$

$$k) 1 \text{ hr} = \underline{3600 \text{ s}}$$

$$l) 1 \text{ year} = \underline{31,536,000 \text{ secs}}$$

$$m) 1 \text{ day} = \underline{86,400 \text{ secs}}$$

$$n) 1 \text{ decametre}^2 = \underline{1000 \text{ m}^2} \quad \underline{100 \text{ m}^2}$$

$$o) 1 \text{ hectare} = \underline{10000 \text{ m}^2}$$

$$p) 1 \text{ km}^2 = \underline{1000 \text{ m}^2}$$

$$q) 1 \text{ dm}^2 = \underline{100 \text{ cm}^2}$$

$$r) 1 \text{ cm}^2 = \underline{100 \text{ m}^2}$$

$$s) 1 \text{ mm}^2 = \underline{1/1000 \text{ m}^2}$$

$$t) 1 \text{ sq. yard} = \underline{0.836 \text{ m}^2}$$

$$u) 1 \text{ sq. ft} = \underline{0.092903}$$

$$v) 1 \text{ acre} = \underline{4046.86 \text{ m}^2}$$

• II 2 mark questions.

Q 17 What are the effects of friction?

ans. The effects of friction are:-

- i) Friction opposes motion.
- ii) Friction causes wear and tear.
- iii) Friction produces heat.
- iv) Friction always acts in the direction opposite to the direction of motion.

18. What are the factors affecting force of friction and how?

ans: The factors that affect force of friction are:-

- Making the surface smooth - when we push a toy car on a rough surface, the car will not go so far, but when we polish that surface and make it smoother, and push the car with same force, it will go far.
- Using lubricants and oils - when we use lubricants in our bikes and cycles to avoid friction because it will make its chain and machine rust proof.

19. Define static friction, sliding friction and rolling friction.

ans: \* Static friction - The friction by which an object doesn't move on its first try.

20. \* Sliding friction - The friction that by which an object moving stops.

\* Rolling friction - The friction by which an object moving on an inclined plane if comes on a plane surface stops.

20. What are the advantages of friction?

ans. The advantages of friction are:

i) Friction causes wear and tear.

ii) Friction catches fire.

21. Why does a matchstick catch fire when rubbed on the rough surface of the box?

ans. A matchstick catches fire when rubbed on the rough surface of the box due to friction. The friction between matchsticks and box produces sparks that is supported by a powder on the top of matchstick...

22. The sole of shoes get worn after some time. Explain why?

ans. The sole of shoes get worn after some time due to force of friction. This is happened because friction causes wear and tear.

23. Convert the following quantities as directed

a)  $12 \text{ inch} = 1 \text{ ft}$

b)  $1 \text{ ft} = 30.48 \text{ cm}$

c)  $20 \text{ cm} = 20/100 \text{ m}$

$1 \text{ cm} = 1/100 \text{ m}$

$= 20 \text{ cm} = 20 \times 1/100 \text{ m}$

Same as force.

- **Tension** - The force that is transmitted by a rope, string or wire when pulled by forces acting from opposite sides. It is a contact force. For example - tug of war.
- **Frictional force** - The force by which an object moving with stop is called friction force. It always acts <sup>opposite</sup> to the direction to the direction of motion. This also causes wear and tear.

25. Compare properties of solids, liquids and gases.

(any 3 points)

~~not~~

Solids

Liquids

Gases

- |  |   |   |
|--|---|---|
| <ul style="list-style-type: none"> <li>• Solids have a definite shape and volume.</li> <li>• Solids can vibrate about their mean positions.</li> <li>• Solids are highly dense.</li> </ul> | <ul style="list-style-type: none"> <li>• Liquids don't have a definite shape but have a definite volume.</li> <li>• Liquids can move freely anywhere.</li> <li>• Liquids are less dense than solids.</li> </ul> | <ul style="list-style-type: none"> <li>• Gases neither have a definite shape nor a definite volume.</li> <li>• Gases can move freely anywhere.</li> <li>• Gases are the least dense.</li> </ul> |
|--|---|---|

26. most substances can change from one state to another under different conditions of temperature and pressure. Explain with example.

26. Matter changes from one state to another by change in temperature and pressure. For eg. solids on heating changes to liquid and liquid on further heating changes to gases. So gases on ~~the~~ compressing changes to liquids.

27. Why?

a) machines are oiled from time to time.

ans. Machines are oiled from time to time to fill fine pores or depressions in the surfaces <sup>to</sup> and this reduces friction.

b) An object thrown upwards becomes slow after reaching a point.

ans.) A object thrown upwards come downwards after reaching a point due to gravity by the Earth. The gravity of Earth is responsible for this phenomenon. Everything that we throw goes down.

c) Powder is sprinkled on a carrom board.

ans. Powder sprinkled on a carrom board to reduce friction and fill the tiny depressions ~~and~~ in it. They are also known as ~~solid~~ solid lubricants. These are made fine powders.

28. Explain increasing and decreasing friction with suitable examples.

ans. Increasing <sup>friction</sup> force means to increase the friction by making the surface rough. For eg - by using sand paper to make the surface rough, <sup>sprinkling</sup> sand on the surface, etc.



- Decreasing friction means to decrease friction by polishing the surfaces and making it smooth. For eg - by using lubricants and oils, by using powders on carrom board.

29. Cartilage is present in joints of our body, which helps in their smooth movement. If cartilage wears off, how would that affect the movement of joints?  
 ans. Cartilage is present in our bones, which helps in smooth movement. If they were wear off, then we cannot move our joints smoothly. It would be very painful for us to move our bones to do work.

30. Define mass. state its (1) S.I (2) C.G.S and (3) F.P.S units. How are they related?  
 ans. Mass of a body is the quantity of matter contained in it. The S.I. unit of mass is kilogram (kg), C.G.S. unit is gram (g) and F.P.S. unit is pound (lb). They are related because they all come under mass.

31. Convert the following quantities as indicated.

a)  $200 \text{ kg} = 0.2$  metric tonne.

$1000 \text{ kg} = 1$  metric tonne

$200 \text{ kg} = \frac{200}{1000} \text{ metric tonne} = 0.2$  metric tonne

b)  $150 \text{ kg} = 1.5$  quintal.

$$100 \text{ kg} = 1 \text{ quintal}$$

$$150 \text{ kg} = \frac{150}{100} \text{ quintal} = 1.5 \text{ quintal}$$

$$c. 10 \text{ lb} = 4.5359 \text{ kg}$$

$$1 \text{ lb} = 453.59 \text{ g}$$

$$1 \text{ kg} = 1000 \text{ g} \Rightarrow 1 \text{ lb} = 453.59 \times \frac{1}{1000} \text{ kg} = 0.45359 \text{ kg}$$

~~$$10 \text{ lb} = 4.5359 \times 10 = 45.359$$~~

~~$$10 \text{ lb} = 0.45359 \text{ kg}$$~~

$$10 \text{ lb} = 0.45359 \text{ kg} \times 10 \text{ kg} = 4.5359 \text{ kg}$$

$$d. 250 \text{ g} = 0.25 \text{ kg}$$

$$100 \text{ g} = \frac{1}{10} \text{ kg}$$

$$250 \text{ g} = 250 \times \frac{1}{10} \text{ kg} = 0.25 \text{ kg}$$

$$1 \text{ kg} = 1000 \text{ g} \text{ or } \frac{1}{1000}$$

$$1 \text{ g} = \frac{1}{1000} \text{ kg}$$

$$250 \text{ g} = 250 \times \frac{1}{1000} = \frac{250}{1000} = 0.25 \text{ kg}$$

$$e) 0.01 \text{ kg} = 10 \text{ g}$$

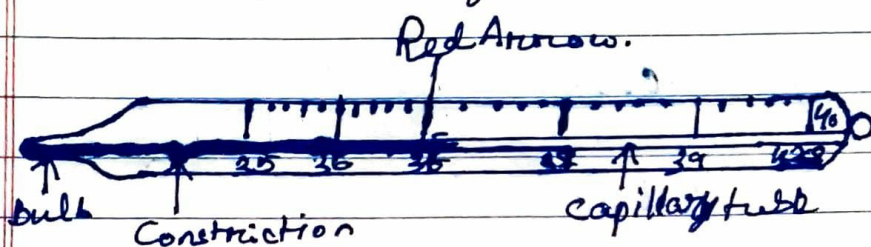
$$1 \text{ kg} = 1000 \text{ g}$$

~~$$0.01 \text{ kg} = 0.01 \times \frac{1}{1000} \text{ g}$$~~

$$0.01 \text{ kg} = 0.01 \times \frac{1}{1000} \times \frac{1000}{1} = \frac{10}{1} = 10 \text{ g}$$

32. What is a clinical thermometer? State its special feature. Draw a labeled neat diagram of a clinical thermometer showing the range of temperature marked on it. What is the normal temperature of the human body? How is it indicated in a clinical thermometer?

ans. A clinical thermometer is an instrument that measures the body temperature of a person to check whether he/she has fever or not. The special feature is that it has a constriction that <sup>prevents</sup> the mercury from falling back to the bulb. The normal temperature of a human body is  $37^{\circ}\text{C}$  or  $98.6^{\circ}\text{F}$ . A clinical thermometer has a red arrow at  $98.6^{\circ}\text{F}$  or  $37^{\circ}\text{C}$  which indicates the normal temperature of a healthy person.



33. Fill in the blanks.

- The S.I. unit of length is metre, of time is second, of mass is kilogram.
- $^{\circ}\text{C}$  is the unit of temperature.
- 1 metric tonne = 10 quintal and 1000 kg.
- The zero mark in laboratory thermometer is the melting point of ice.
- The thermometer used to measure human body is called clinical thermometer.

f) The ~~normal~~ temperature of human body is 37 °C or 98.6 °F.

Q39. When crystal of potassium permanganate is placed in a beaker, purple colour spreads through out the water. What does this observation tell us about the nature of potassium permanganate and water? Explain with an activity.

ans. Take a beaker, fill it ~~to~~ partly with water. Add 2 to 3 crystals of potassium permanganate in the beaker containing water. Keep it for some time. You will see that the water becomes purple. This observation tells us that the potassium permanganate has very tiny particles that dissolve in water.