

1. One Mark Questions

MULTIPLE CHOICE QUESTIONS

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

- (a) The water can change from a liquid to a solid
- (b) The water can change from a gas to a liquid
- (c) The water can change from a liquid to a gas
- (d) The water can change from a solid to a liquid

2. What is sublimation?

- (a) a substance used in a chemical reaction.
- (b) the process by which particles leave a liquid and become a gas.
- (c) the process by which a solid changes directly into a gas.
- (d) a substance made by a chemical reaction.

3. Evaporation is when

- (a) a substance changes from a liquid into a solid material.
- (b) a substance changes from a liquid to a gas (or vapor) naturally.
- (c) a substance changes from a gas (or vapour) naturally.

4. What are states of matter?

(a) The temperature at which liquid boils and becomes a gas

(b) A law that states that for a fixed amount of gas at a constant temperature, the volume of the gas increases as its pressure decreases and the volume of gas decreases as its pressure increases.

(c) A term used to describe a physical or chemical change in which energy is given out.

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

5. Force changes the

(a) Motion of the body

(b) Speed of the body

(c) Shape of the body

(d) all of these

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

(a) Muscular force

(c) Frictional force

(b) Magnetic force

(d) Electrostatic force

7. Force of friction depends on
- (a) roughness of surface
 - (b) smoothness of surface
 - (c) inclination of surface
 - (d) all of these

8. A toy car released with the same initial speed will travel farthest on
- (a) muddy surface
 - (b) polished marble surface
 - (c) cemented surface
 - (d) brick surface

9. Friction is a
- (a) Non-contact force
 - (b) Contact force
 - (c) Magnetic force
 - (d) Electrostatic

10. Which of the following produces least friction
- (a) Sliding friction
 - (b) Rolling friction
 - (c) Composite friction
 - (d) Static friction

Choose the term to fill in the blank

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

12- When an elephant drags a wooden log over the land, the force that are applied on the log are muscular force, gravitational force and frictional force.
(muscular force, mechanical force, gravitational force, frictional force)

13- A ball was set rolling on a large table. If its motion is to be changed, a force will have to be applied on it.
(force, motion, gravitation)

14- The force of friction always acts against the motion. (along, against)

15. One or more forces are acting in the following examples. Name them.

(a) An object falling from a tall building - Gravitational force

(b) An aeroplane flying in sky - Mechanical and Gravitational force

1b. Convert the following quantities as indicated

a) 10 quintal = 1 metric ton.

b) 1 cm = 0.01 metre

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

$$1 \text{ cm} = \frac{1}{100} \text{ m} \text{ or } 0.01 \text{ m}$$

c) 1 mm = 0.001 metre

$$1 \text{ m} = 1000 \text{ mm}$$

$$1 \text{ mm} = \frac{1}{1000} \text{ m} \text{ or } 0.001 \text{ m}$$

d) 1 yard = 3 ft.

e) 1 decimeter = 0.1 metres

$$1 \text{ m} = 10 \text{ dm}$$

$$1 \text{ dm} = \frac{1}{10} \text{ m} \text{ or } 0.1$$

f) 1 decameter = 10 metre

g) 1 hectometre = 100 metre

h) 1 gram = 0.001 kg

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

$$1 \text{ gm} = \frac{1}{1000} \text{ kg} \text{ or } 0.001 \text{ kg}$$

i) 1 mg = 0.000001 kg

$$1 \text{ kg} = 1000000 \text{ mg}$$

$$1 \text{ mg} = \frac{1}{1000000} \text{ kg} \text{ or } 0.000001$$

(j) $1 \text{ lb} = \underline{453.59237} \text{ g}$

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

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

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

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

(o) $1 \text{ hectare} = \underline{10,000} \text{ m}^2$

(p) $1 \text{ km}^2 = \underline{1,000,000} \text{ m}^2$

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

(r) $1 \text{ cm}^2 = \underline{0.0001} \text{ m}^2$

(s) $1 \text{ mm}^2 = \underline{1 \times 10^{-6}} \text{ m}^2$

(t) $1 \text{ square yard} = \underline{0.836} \text{ m}^2$

(u) $1 \text{ square ft} = \underline{0.0929} \text{ m}^2$

(v) $1 \text{ acre} = \underline{4046.856} \text{ m}^2$

2 Mark QUESTION

17. What are the effects of friction? (2 marks)

Ans - The effects of friction are:

- Friction opposes motion
- Friction produces heat
- Friction causes wear and tear

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

Ans - Factors affecting the force of friction are:

- The smoothness of the surface: The force of friction between rough and smooth surface is, in rough surface the friction is high and in the smooth surface the friction is less.
- The weight of the moving body on the surface: Greater the weight of the moving body on the surface, more will be the friction.

19. Define static, sliding and rolling friction.

Ans - • Sliding friction: When the body begins to slide on a surface, the force exerted by the

surface on the object is called sliding friction

- Static friction: The maximum opposing force between the object and the surface in contact with it, so long as the object remains stationary even on applying the external force, is called the static friction
- Rolling friction: When an object rolls over a surface, the force which opposes the rolling motion is called the rolling friction.

20. What are the disadvantages of friction.

- Ans -
- Friction causes wear and tear in the moving parts
 - Friction produces heat.

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

Ans - On rubbing the matchstick on the rough surface, the friction converts this work into heat.

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

Ans - It is so due to the effect of friction.
When we walk on a surface, then the friction arises in which the surface of shoes becomes rough. It is also because of wear and tear.

23. Convert the following quantities as indicated:

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

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

(c) $20 \text{ cm} = 0.2 \text{ m}$

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

$1 \text{ cm} = \frac{1}{100} \text{ m}$ or 0.01 m

$20 \text{ cm} = \frac{20}{100} \text{ m}$ or 0.2 m

(d) $4.2 \text{ m} = 420 \text{ cm}$

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

$4 \text{ m} = 400 \text{ cm}$

$4.2 \text{ m} = 400 + 20 =$

$= 420 \text{ cm}$

(e) $0.2 \text{ km} = 200 \text{ m}$
 $1 \text{ km} = 1000 \text{ m}$
 $= \frac{1000}{10} \times \frac{2}{10} = 200 \text{ m}$

(f) $0.2 \text{ cm} = 2 \text{ mm}$
 $1 \text{ cm} = 10 \text{ mm}$
 $= 0.2 = \frac{2}{10}$

$= \frac{2}{10} = 2 \text{ mm}$

(g) $1 \text{ yard} = 0.91 \text{ m}$

3 MARK QUESTIONS

25. Define-

Applied force

Ans- The force which is applied on a object is known as applied force.

• Tension force

Ans- The force that can be transmitted through a wire, rope or a string when it is pulled from the opposite ends is known as Tension force.

- Frictional force: The force which slows down the motion of a moving body in contact with the surface of another body.

25. Compare properties of solids, liquids and gases. (any 3 points)

Solids	Liquids	Gases
• A solid has a low thermal expansion	• A liquid has high thermal expansion.	• A gas has very high thermal expansion.
• A solid is highly rigid	• Liquids are less rigid.	• Gases are not rigid.
• It has no viscosity	• It has more viscosity.	It has least viscosity.

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

Ans -

Effect of change of temperature

In normal conditions of temperature, water occurs in liquid state. On increasing the temperature, it changes into water vapour.

(gaseous state). When cooled, it changes back to water (liquid state). When temperature is decreased, it turns into ice (solid state). Hence, matter can be converted from one state to another under different conditions of temperature.

Effect of change of pressure

On decreasing pressure, liquid changes into gas and on increasing pressure, a gas changes into its liquid state. When Petroleum gas is filled into cylinders under high pressure, the gas changes into liquid state (LPG). When LPG is released out of the cylinder, the pressure gets reduced and the liquid changes into its gaseous state.

27. Why?

(a) Machines are oiled from time to time.

Ans- Machines are oiled from time to time because to reduce friction. Machines are made up of metals and can be rust and damage it.

(b) An object thrown upwards comes down after reaching a point.

Ans - An object thrown upwards comes down after reaching a point due to the Gravitational force of Earth. The Earth pulls object itself to it.

(c) Powder is sprinkled on a carrom board

Ans - It is so to reduce the friction and makes it easier to slide on the board.

29. Explain increasing and decreasing friction with suitable examples.

Ans - 3 examples of increasing friction

• By making surface rough -

Ex - Sand is sprinkled on the surfaces to make rough.

• By using dry surfaces -

Ex - We can't skate properly on road but in ice,

• By increasing the weight:

Ex - While pushing a heavy box

30. Cartilage is present in joints of our body, which helps in their smooth movement. If cartilage wears off, how would this affect the movement of joints?

Ans- If cartilage wears off, then the friction increases in our body. This will affect us as we can't walk properly.

31. Define mass. State its (1) S.I (2) C.G.S (3) F.P.S units. How are they related?

Ans- The mass of a body is the quantity of matter contained in it.

- Its SI Unit is Kilogram (kg)
- In CGS, the unit is gram (g)
- In FPS, the unit is pound (lb)

Q2. Convert the following quantities as indicated:

(a) $200 \text{ kg} = \underline{0.002}$ metric tonne

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

$$200 \text{ kg} = \frac{200}{1000} = 0.002$$

b) $150 \text{ kg} = \underline{\hspace{2cm}}$ quintal

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

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

$$(c) \quad 1016 = \underline{4.5359} \text{ kg}$$

$$\frac{453.59 \times 100}{1000} \text{ kg} = 0.45359 \text{ kg}$$

$$1016 = 0.45359 \times 10 \text{ kg} = 4.5359 \text{ kg}$$

$$(d) \quad 250 \text{ g} = \underline{\quad} \text{ kg}$$

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

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

$$2500 \text{ g} = \frac{1}{1000} \times 2500 = 2.5 \text{ kg}$$

$$(e) \quad 0.01 \text{ kg} = \underline{\quad} \text{ g}$$

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

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

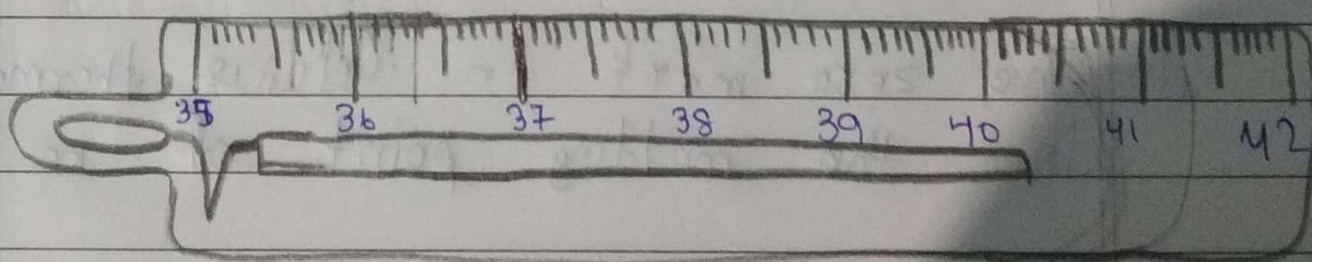
$$(f) \quad 5 \text{ mg} = \underline{\quad} \text{ kg}$$

$$= \frac{5}{1000} \text{ g} \text{ or } 5 \times 10^{-3} \text{ g} = \frac{5}{1000 \times 1000} \text{ kg}$$

$$\text{or } 5 \times 10^{-6} \text{ kg}$$

33. What is a clinical thermometer? State its special feature. Draw a labelled 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- Doctors use a special thermometer called the clinical thermometer for measuring the temperature of the patient's body. This thermometer has the markings from 35°C to 42°C . It has a slight bend or kink in the stem just above the bulb. This kink is called the constriction. This constriction prevents the mercury from falling back all by itself. The temperature of a healthy person is 37°C . This temperature is marked by a red arrow.



Normal temperature of a human body is 37°C
or 98.6°F .

To measure the temperature of a patient's body, its bulb is kept either below the tongue or under the arm's pit of the patient for about a minute. Then the thermometer is taken out and its reading is noted.

When the temperature of patient's body is above 37°C , he is said to suffer with fever.

34. Fill in the blanks

(a) The S.I. unit of length is m, of time is s and of mass is kg.

(b) $^{\circ}\text{C}$ is the unit of temperature.

(c) 1 metric tonne = 10 quintal

(d) The zero mark in Celsius thermometer is the melting point of ice.

(e) The thermometer used to measure the

human body is called the clinical
thermometer.

(f) The normal temperature of Human body is
37°C or 98.6°F

35. Ans - Take a beaker. In that, put some potassium permanganate in it. You can see that the purple colour is spreading. This shows that the powder occupies space of that water present in the beak. This also shows that the powder is diffusing very fastly and moving in constant random motion.