22. Why heavy animals like an elephant have a larger area of the foot?
Ans: *Elephants have large feet to spread their weight and not sink.*
23. Why animals like deer who run fast have a small area of the foot?
Ans. *Because small feet reduces friction and helps them to run fast.*
24. How does altitude effect atmospheric pressure.
Ans: *Atmospheric pressure decreases with increase in altitude and vice versa.*
25. Why it is painful to walk bare footed on pebbles?
Ans. *Pebbles hurt because they press sharply into the skin causing pain*
26. Springs are made of steel instead of iron. Why?
Ans. *Because steel is durable and has a higher elastic limit than iron.*
27. How does the long neck is not a problem to a giraffe while raising its neck suddenly?
Ans: *Because it has special blood vessel system to regulate blood flow.*
28. The end of glass tube used in a simple barometer is not properly scaled, some leak is present. What will be its effect?
Ans: *Barometer will give incorrect readings due to air entering the tube through the leak.*
29. Comment on the statement, "Density is a property of a material not the property of an object made of that material.
Ans: *That's true. Density depends on the material, not the object's size or shape.*
30. How does atmospheric pressure change with weather?
Ans: *Low pressure shows stormy or rainy weather, while high pressure shows fair and clear weather.*
31. How hydraulic press powerful?
Ans: *Because it increases small input force into a larger output force using fluid pressure.*
32. How the load of a large structure is estimated by an engineer?
Ans: *By calculating weight of materials and external forces like wind and gravity.*

Note:
--**Atmospheric pressure** *is measured by Barometer*
--**Pressure** *of* **gases or liquids** *is measured by Manometer*
--**Pressure of Earth's centre** *is:* 2×10^{11} *Pa*
--**Average atmospheric pressure** *at* **sea level** *is* 1.013×10^{5} *Pa*

CHAPTER#7 THERMAL PROPERTIES OF MATTER

1. Write some important features of kinetic particle theory of matter.
Ans: *i. Matter is made of particles called molecules. ii. Molecule attract each other. iii. Molecules remains in continuous motion.*
2. Is kinetic molecular theory of matter applicable to the plasma state of matter? Describe briefly.
Ans: *Yes, kinetic molecular theory applies to plasma, describing ionized particles' motion.*
3. Compare the spacing of molecules in the solid, liquid and gaseous state.

Solid	Liquid	Gas
i. Molecules are closely packed.	*i. Molecules are close but farther than solids*	*i. Molecules are Very far apart*
ii. Molecules are fixed in place	*ii. Molecules can slide past each other*	*ii. Molecules move freely and randomly*

4. Why solids have a fixed volume and shape according to particle theory of matter?
Ans: *Solids have fixed shape and volume due to tightly packed particles in order.*
5. What are the reasons that gases have neither a fixed volume nor a fixed shape?
Ans: *Gases have free particles that move randomly, spreading out freely everywhere.*
6. Can two objects at the same temperature have different amounts of heat? Why?
Ans: *Yes, because heat depends on object's mass and specific heat capacity, not just its temperature.*
7. Why do solids expand less than liquids or gases when heating?
Ans: *Solids expands less due to strong molecular bonds and tight packing.*
8. What is the effect of raising the temperatures of a liquid?
Ans: *On raising temperature, liquid heats up, expands, and particles move faster very quickly*
9. Define plasma.
Ans: *Plasma is a gas in which most of the atoms are ionized containing ions and electrons.*
10. Distinguish (or differentiate) between the heat (or thermal energy) and internal energy.
Ans: **Heat:** *Heat is energy transferred due to temperature difference from one object to another.*
Internal Energy: *Internal energy the total energy stored within a system.*

11. Is kinetic molecular theory of matter applicable to the plasma state of matter?

Ans: *Yes, this theory can be applied to the plasma state, but with some modifications and extensions.*

12. What is meant by temperature of a body?

OR Define temperature. Write its SI unit. Also write scales of temperature.

Ans: *It is the degree of hotness or coldness of a body.* **SI Unit:** *Kelvin*

Temperature scales:

1. Celsius scale 2. Fahrenheit scale 3.Kelvin scale

13. Define heat as "energy in transit".

Ans: *Heat is energy transferred from one body warmer to cooler object.*

14. Define thermometer.

Ans: *It is a device used to measure temperature of a body.*

15. Comment on the statement. "A thermometer measures its own temperature."

Ans: *True, thermometer measures temperature of its own sensing part.*

16. What is meant by thermometric property of a substance?

Ans: *It is a physical property that change with temperature, used to measure it.*

17. Why mercury is preferred as thermometric substance?

OR Why mercury commonly used in thermometer?

OR Why mercury is preferred usually to alcohol as a thermometric liquid?

OR Write any four thermometric properties.

Ans: *Because: i. It is visible ii. It expands uniformly. iii. It has high boiling point. iv. It has low freezing point.*

18. Why is water not suitable for use in thermometers?

Ans: *Water isn't suitable due to irregular expansion and high freezing point.*

19. Describe the main scale for the measurements of temperature.

Ans:

i.Celcius Scale: *Water freezes at 0^oC and boils at 100^oC.*

ii.Fahrenheit Scale: *Water freezes at 32^oF and boils at 212^oF.*

iii.Kelvin Scale: *Water freezes at 273.15K and boils at 373.15 K..*

20. Write conversion of temperature from one scale to other scale

Ans:

Celsius to Kelvin: $T_k = 273 + T_c$

Kelvin to Celsius: $T_c = T_k - 273$

Celsius to Fahrenheit: $T_f = \frac{9}{5} T_c + 32$

Fahrenheit to Celsius: $T_c = \frac{5}{9} (T_f - 32)$

21. Why are there no negative number on the Kelvin scale?

Ans: *Kelvin scale starts at absolute zero, so negative numbers aren't possible.*

22. Convert 30^oC to Fahrenheit scale.

Ans: $T_c = 30^oC$ $T_f =$ $T_f = 1.8\ T_c + 32 = 1.8 \times 30 + 32 = 86^oF$

$T_k = ?$ $T_k = 273 + T_c = 273 + 30 = 303K$

23. Define sensitivity and linearity of thermometer?

An:

Sensitivity: *The ability of a thermometer to detect small temperature change indicated by a noticeable response in its thermometric property.*

Linearity: *It means that equal changes in temperature produce equal change in thermometric property being measured.*

24. What makes the scale reading of a thermometer accurate?

Ans: *Clear scale marking, high quality materials and consistent thermometric properties makes scale readings more accurate.*

25. What does determines the direction of heat flow?

Ans: *It is determined by the temperature difference between two objects or system.*

26. When you touch a cold surface, does cold travel from the surface to your hand or does energy travel from your hand, to cold surface?

Ans. *When you touch a cold surface, heart flows from your hand to the cold surface*

27. Can you feel your fever by touching your own forehead? Explain.

Ans. *Yes, you can feel fever by touching your forehead, as it may feel warmer than usual due to increased body temperature.*