

Abhinav IX Roll: 27 Science

Section-A

1. Carbon dioxide is known as dry ice when in solid form because it directly gets converted to gas without going through the liquid state. And solid carbon dioxide also resembles ice in appearance. ✓

1 2. ~~Lpg~~ LPG (Liquified Petroleum Gas) is highly compressed in the cylinder. It is used for cooking. ✓

1 3. Rubberband only changes its shape when external force is applied. It returns back to initial size when force is released. ✓

0.5 4. When water evaporates, the remaining molecules absorb heat from the surroundings to make up for the lost. This causes cooling. Water in earthen pot is cool because the water is constantly evaporating. Explain properly with the example

5 c) It can be site of energy generation

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6. d)

7. A bacteria is a prokaryotic cell, which means it lacks all membrane bound organelles. The ~~nucleus~~ nucleus is also missing. This is not the case in onion peel cell.

8. Lysosomes are called scavengers because they digest the all the old and non-functioning organelles.

$$9. \frac{v^2 - u^2}{2as} = \frac{90^2 - 0}{2 \times 18 \times s} = 25 \text{ m/s}$$

$$\frac{8100 - 0}{2 \times 18 \times s} = 25$$

$$8100 = 36s$$

The initial velocity is 25 m/s

$$0 - 625 \text{ m/s} = 2 \times -0.5 \times s$$

$$-625 = -1 \times s$$

$$s = \frac{-625}{-1} = 625 \text{ m}$$

(c)

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10. (b)

11.

12. c) Metre

13. a)

14) ~~$-u^2$~~

$$v^2 - u^2 = 2as$$

$$-u^2 = 2 \times -g \times s$$

$$s = \frac{u^2}{2g}$$

(b)

15) c)

$$16) v = u + at$$

$$v = 0 + 10 \times t$$

$$v = 10t$$

$$v = 10 \times 2$$

$$= 20 \text{ m/s}$$

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

$$s = 0 + \frac{1}{2} \times 10 t^2$$

$$20 = 5t^2$$

$$4 = t^2 \Rightarrow t = 2 \text{ s}$$

\therefore The final velocity is 20 m/s and the time taken is 2 seconds.

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17. Slope = acceleration

$$\frac{y^2 - y^1}{x^2 - x^1} = \frac{50 - 0}{10 - 0} = \frac{50}{10} = 5 \text{ m/s}^2$$

18. a) $\frac{2\pi r}{2} = \text{distance} = \pi r = 5\pi \approx \frac{110}{7} \text{ m}$

b) displacement = 5 + 5 = 10m

19. a) ~~Shape~~.

Solids

definite

a) Solids have a proper shape

b) Solids have a fixed volume. It can't change.

c) Intermolecular space is less.

least

e) Solids don't diffuse.

minimum

Gases

no definite shape

Gases occupy the shape of the container

Gases take the volume of the container. It is not fixed.

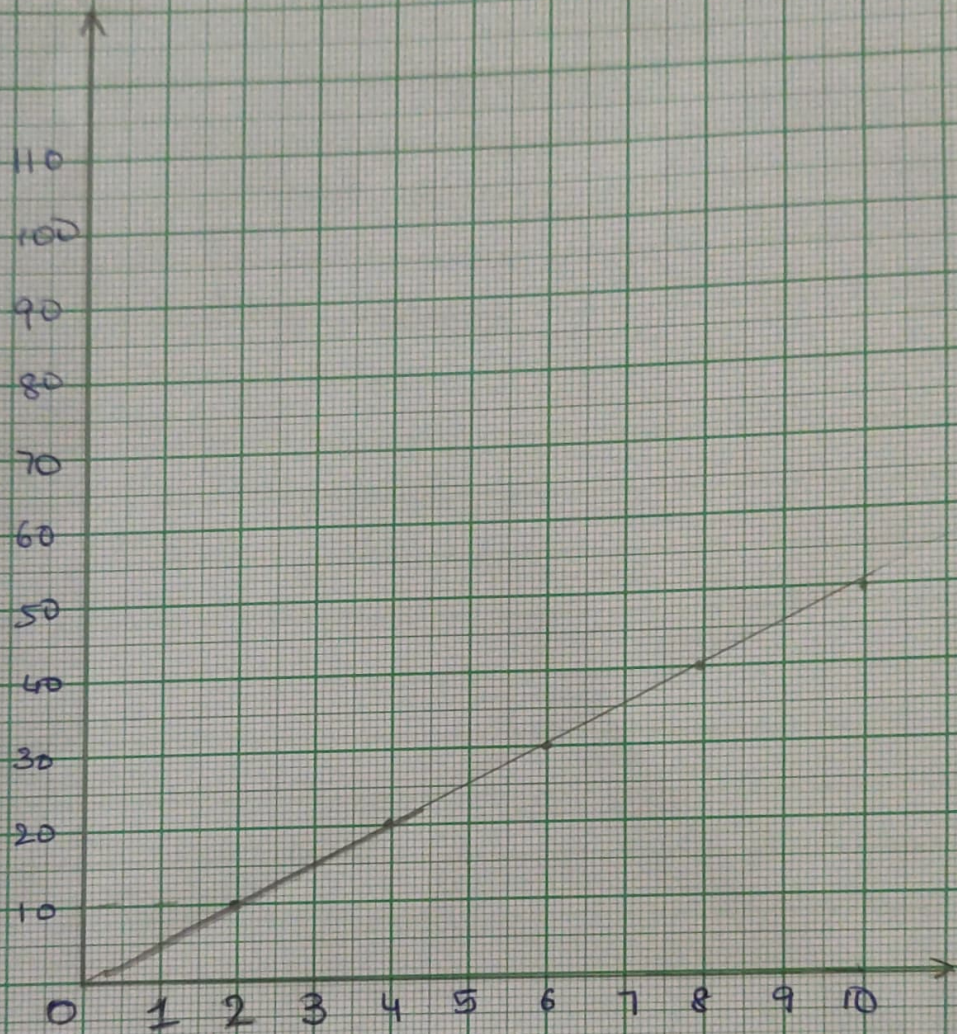
Intermolecular space is the greatest in all states of matter

not proper

Gases diffuse into liquids and other gases.

2.25

17)



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20. a) a - Golgi complex; b - mitochondria; ~~En~~
c - endoplasmic reticulum; e - Vacuole.

b) B is the powerhouse. It is called so because it produces the ATP molecules which gives energy to the cell.

d) The nucleus in animal cell is in the centre, but in the plants, it is on the edge as the vacuole is occupying the space.

e) Nucleus has a membrane and is neatly organized. It is present in eukaryotic cells.

Nucleoid is a non-membranous and the genetic material is just scattered in the middle with some other nuclear acids.

This region is the nucleoid and is present only in the prokaryotic cells.

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24.

Section-B

21. This is due to the latent heat of vaporization. At 100°C , the water uses the ^{additional} supplied energy to break the bonds between ^{overcome intermolecular force of attraction} them rather than just heating up. This is why the temperature is constant.

1.75

22. Diffusion is the movement of molecules from high concentration to low concentration.

1

When the temperature increases the rate of diffusion also increases. This is because the heat energy is absorbed and the kinetic energy increases. Because of this kinetic energy, the molecules move faster.

23. Evaporation depends on:-

- 1) Temperature - when temperature is increased, the rate of evaporation increases.
- 2) Surface area - As evaporation is a surface phenomena, the greater the surface, the faster the evaporation.

•) Humidity - Humidity affects evaporation. The more ~~humidity~~ humid, the slower the evaporation.

•) Wind ^{speed} - When the wind blows, it carries a few particles of water along with it, thus the more the wind, the more the evaporation.

2

24. a) This process is plasmolysis.

b) Aman placed the cell in the most salt concentrated beaker. ~~by doing this~~ In the beaker the salt content is high and water content is low. So, by osmosis the water from in the cell moves out. This shrinks the cell, this is called plasmolysis.

25. a) ~~Go to Gomo~~ - Leucoplasts are present to store the various minerals ~~and~~ glucose. In leaves, the chloroplast is also present. Other chromoplasts are also present.

b) In flowers ~~and fruits~~ the chromoplasts are present and in fruits the chromoplasts and leucoplasts are present.

26. This shows that the car is moving with a uniform acceleration.

The acceleration is :- $\frac{10 - 7.5}{20 - 15} = \frac{2.5}{5} = \frac{25}{50}$
 $= \frac{1}{2} \text{ m/s}^2$

The acceleration is :- $\frac{10 - 7.5}{(20 - 15) \times 60} = \frac{2.5}{300}$
 $= \frac{25}{3000} = \frac{1}{120} \text{ m/s}^2$

Section-C

27. a) Ammonium Chloride.
 b) This process is sublimation
 3 c) Dry ice, and Iodine, naphthalene.

28. a) ice, because ice ~~has~~ will absorb some heat ^{from?} and get converted to water. This extra heat is called latent heat ^{of fusion}. As it will absorb heat, it is more effective at cooling.

b) $873 - 273 = 600^\circ\text{C}$
 $300 - 273 = 27^\circ\text{C}$

29. Chromatin contains the DNA. During cell division, the chromatin forms ~~an~~ chromosomes. A chromosome has 2 identical halves called chromatid.

30.

Section - D.

31. a) Due to osmosis, the apricots absorb water in pure water and when transferred to sugar solution, they shrink.
- b) It shrinks.
- c) The contents inside the cell mix with the outside. The cell is unable to perform the activities necessary for survival.
- d)
- e) Then the proteins synthesised by the ER will be useless as the Golgi apparatus needs to activate them.

32. ii) $1\frac{1}{2} \text{ h} = 90 \text{ mins} = 5400 \text{ s}$

$50 \text{ km} = 50000 \text{ m}$

$\frac{50000}{5400} = \frac{25}{27} \text{ m/s} = \text{average speed}$

iii) $\frac{25}{30} \text{ kmph}, \frac{3}{10}, \frac{12}{20}, \frac{2}{15}, \frac{8}{15}$

iv) $\frac{5}{6} \text{ kmph}$

32)

1)

