

STUDENT'S NAME

CLASS

SUBJECT

ROLL NO.

DATE

SINDHI HIGH SCHOOL, HEBBAL

HALF YEARLY EXAMINATION - 2023-2024

Subject: SCIENCE

Class: 8

Date:

No. of sides:

Max Marks:

Reading Time:

Writing Time:

ANSWER KEY

SECTION - A

1. c) Because the helium atoms are of lower mass than the average air molecules, the helium gas is less dense than air. The balloon thus weighs less than the air displaced by its volume.
2. c) It has a definite volume but not a definite shape.
3. d) Evaporation, diffusion, expansion of gases.
4. a) X - gas, Y - liquid, Z - solid.
5. d) W and Z
6. b) Silicon and hydrogen
7. a) Fog
8. d) displacement = distance = $\frac{3\pi r}{2}$
9. c) 2N
10. d) A, B
11. a) weight of water displaced by the solid
12. a) 1665

- 13) b) Movement of substance takes place from a region of high concentration to a region of low concentration through a semi-permeable membrane.
- 14) c) Detoxifying many poisons and drugs.
- 15) d) Secondary meristem.
- 16) d) Adipose
- 17) c) A is true but R is false
- 18) b) Both A and R are true, and R is not the correct explanation of A
- 19) c) A is true but R is false.
- 20) b) Both A and R are true, and R is not the correct explanation of A

Section B

21. Chlorine is a non-metal as it is a gas which does not conduct electricity / non malleable / non ductile (any one)
- Silver is a metal which as it has lustre / conducts electricity (any one)
 - Sodium is a metal which conducts electricity (any one)
 - Carbon is a non metal which is non-malleable / non ductile (any one)

22. - When a living plant cell loses water by exosmosis, the cell shrinks or contracts the contents the cell away from the cell wall. This phenomenon is known as Plasmolysis. - This occurs when the cell is placed in Hypertonic solution.

- When living plant cell gains water by endosmosis, the cell swells, builds pressure on the cell wall.
- This occurs when the cell is placed in Hypotonic solution.

23. - The epidermis is thicker and multi-layered in desert plants.
- It protects the plants from infection by microbes, mechanical injury and loss of water due to presence of a waxy layer in the aerial parts of the plant called cuticle.
- The epidermal cells have stomata in the leaves help in transpiration and in exchange of gases.
- The epidermal cells of the roots bear thin hair like structures called root hairs which increase the total absorptive area for absorption of water and mineral salts.

24. We know that $F = \frac{GMm}{R^2}$ as a weight of a body is the force with which a body is attracted towards the earth.

$\therefore W = mg = \frac{GMm}{R^2}$, M = mass of earth, m = mass of body, R = radius of earth, G = gravitational constant.

According to question, if the radius of the earth (R) becomes twice of its original Radius (R),

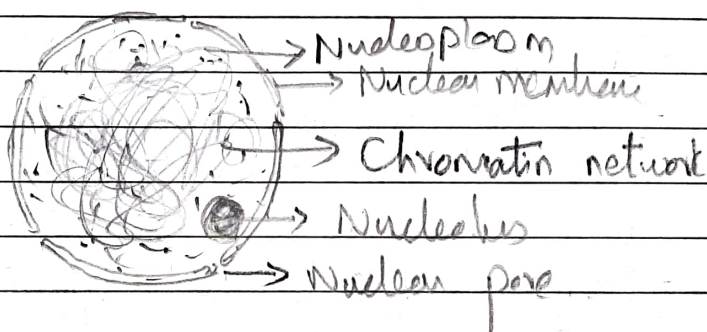
Then, New weight, $W' = \frac{GMm}{(2R)^2} = \frac{GMm}{4R^2} = \frac{W}{4}$

i.e., the weight will be reduced to one-fourth of the original weight of body.

25. (i) $P \propto 1/A$, The area of contact increases due to the continuous chain thereby reducing the pressure of the tank on the ground.

(ii) $P = 2 \times 10^{-4} \text{ Pa}$

26. Nucleus



27.

SECTION C

a) Sanitizer absorbs heat from our palm for evaporation.

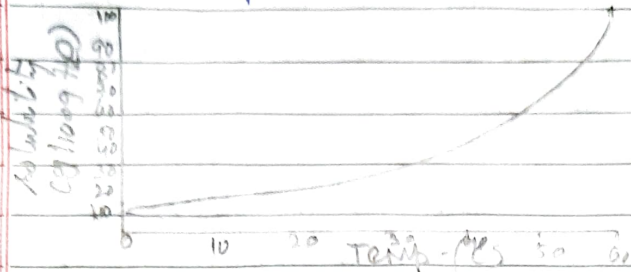
b) Steam has more heat energy than water due to its latent heat of vaporization and additionally latent heat of condensation.

c) The rate of diffusion of hot food is more / Kinetic energy increases with temperature.

28. a) The amount of the solute present in the saturated solution at this temperature is called its solubility.

b) Temperature in x-axis, solubility in y-axis.

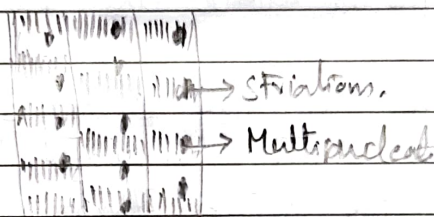
directly proportional.



c) mass % = $\frac{\text{mass of solute}}{\text{mass of solution}} \times 100$

$\frac{32}{132} \times 100 = 24.24\%$

29. Skeletal Muscle:-



- Striated Muscles are different from Cardiac muscles and Smooth muscle by:-

- i) They are voluntary.
- ii) They are multinucleate.
- iii) They are unbranched.

30. a) Mitosis

b) Meiosis.

- i) - Equational division
 - Parent cell & daughter cells are identical
 - Ploidy is same ($n \rightarrow n$)

- Reductional division
 - Parent cell & daughter cells are not identical
 - Ploidy is different ($2n \rightarrow n$)

(ii) Vegetative Parts

- only gametogenic (sex-organs) differ as their chromosome number (any two)

iii) Every generation the species keep increasing/doubling.

every generation the species differ as their chromosome number

31. i) Buoyant force: The buoyant force is the upward force exerted by a fluid on an object submerged in it. It is equal to the weight of the fluid displaced by the object.

ii) The weight of the object is the force due to gravity acting on the object. If the weight of the object is greater than the buoyant force, the object will experience a net downward force and will sink.

If the buoyant force is greater than the weight of the object, the object will experience a net upward force and will float.

iii) An everyday example of this principle is a boat floating on water. The boat is designed to be less dense than the water it displaces, so the buoyant force acting on it is greater than its weight. As a result, the boat floats on the water's surface. Conversely, if you have a heavy object, such as a stone, and you place it in water, the weight of the stone is greater than the buoyant force, causing it to sink to the bottom of the water.

82. i) Speed of B = Slope of PQ = $\frac{150 - 100}{2 - 0} = 25 \text{ m/s}$

ii) Speed of A = Slope of OQ = $\frac{150}{2} = 75 \text{ m/s}$

Difference between speeds = $75 - 25 = 50 \text{ m/s}$

iii) The speed of both the trains is uniform as s-t graph is a straight line.

- 33 a) The sheet of paper has larger surface area and experiences greater air resistance during free fall so it falls slowly $\frac{1}{2} + \frac{1}{2}$
 (10) $g_{\text{poles}} > g_{\text{equator}}$ because $r_p < r_e$ as $g \propto \frac{1}{r^2}$ 1
 b) It means that a freely falling body accelerates at the rate of 9.8 ms^{-2} towards the centre of the earth, during its course of fall towards earth 1

SECTION D

34 a) (i) Rahul

Total weight of the solution = $10 + 100 = 110 \text{ gm}$

$$\text{Mass \%} = \frac{10 \times 100}{110} = 9.09\%$$

ii) Priya

Total weight of solution = 100 g

$$\text{Mass \%} = \frac{10 \times 100}{100} = 10\%$$

b) Solvent is water, solution is sodium chloride, suspension is sand grains, colloid is clay particles which cannot be filtered

c) i) A solution of Potassium chloride prepared at 60°C crystallises when allowed to cool at room temperature.

ii) The path of light is not visible. (or) it does not show Tyndall effect.

35 (i) A- Stratified squamous epithelium - It helps prevent wear & tear.

B- Bone cells - Provide a place for muscles to get anchored, protect and support the vital organs of the body.

(Note: Identification - $\frac{1}{2}$, function - $\frac{1}{2}$)

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ii) Connective tissue are made of different types of cells, the cells are loosely spaced and are embedded in an intercellular matrix, it connects the different parts of the body, etc. 2+1/2

Nervous tissue are made up of nerve cells called neurons. They help in transmission of (information) impulses across the body, - helps in control and coordination. 1/2+1/2
(any two relevant points)

iii) Cuboidal epithelium - provides mechanical support, in absorption, secretion & excretion. 1/2



Section E

37) i) $t = ^\circ\text{C} + 273$ (4)

$= 100 + 273 = 373\text{K}$ 1/2

ii) The amount of heat required to change 1g of a solid completely into its liquid state at its melting point. 1/2

iii) a) at 0°C , Physical state of water both liquid and solid 1/2

b) at 100°C , Physical state of water is both liquid & gas (vapor). 1/2

iv) The inter molecular spaces between the particles are largest in a gas, because of which they move randomly with very high speeds. Hence a gas diffuses faster than a liquid. 1/2

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i) Leucoplast.

- They are colourless, help in storage.

ii) Plastids share common features with Mitochondria and Nucleus

- They all have their own DNA & Ribosomes to prepare their own protein.

iii) d) Plastids are present only in animal cell.

39) 1. Newton's first law of motion, often referred to as the law of inertia, states that an object in motion tends to stay in motion unless acted upon by an external force. In the context of the car coming to a stop, even after the brakes are applied, the car tends to continue moving forward due to its inertia.

2. When the driver applies the brakes, the tires exert a backward force on the road (action). According to Newton's third law, the road exerts an equal and opposite forward force on the tires (reaction). This frictional force between the tires and the road is what allows the car to decelerate and eventually come to a stop.

3. When the brakes are applied, they generate a backward force (opposite to the car's direction of motion). This force causes the car to decelerate. The greater the force applied by the brakes, the greater the deceleration. Conversely, a heavier car (greater mass) requires more force to decelerate at the same rate.

36. i) Given mass, $m = 50g = 0.05 \text{ kg}$.

Acceleration during intervals 0 to 3s $= a_1 = \frac{v-u}{t} = \frac{12-0}{3} = 4 \text{ m/s}^2$

According to Newton's second law of motion: $F_1 = ma = 0.05 \times 4 = 0.2 \text{ N}$

ii) Acceleration during intervals 6 to 10s $= a_2 = \frac{v-u}{t} = \frac{0-12}{10-6} = \frac{-20}{4} = -5 \text{ m/s}^2$

According to Newton's second law of motion: $F_2 = ma = 0.05 \times -5 = -0.25 \text{ N}$

iii) Time interval in which no force acts on the object = 3's to 6's i.e. A to B.

This is because in this interval, the velocity of object is constant i.e. 12 m/s . Hence, Acceleration = 0 m/s^2

Therefore, $F = 0 \text{ N}$.

Physics

Chemistry

Biology

A

~~Sharma~~

N.A.

B

~~Sharma~~

~~DR~~

N.A.

C

~~DR~~

D

~~DR~~