**SCIENCE PT -II**

**ANSWER KEY**

**CLASS IX SESSION 2023-24**

1. d) increases from pole to equator
2. a)½ g
3. d) is reduced to quarter
4. (d) Solution with high amount of solute
5. (c) (iii) and (iv)
6. (c) C
7. c. Their cell walls consists of Suberin.
8. c. Kidney tubules
9. c. A is true and R is false
10. d) Assertion (A) is false but reason (R) is true.
11. d) A is false but R is true.
12. c)A is true and R is false
13. Mass of hammer=0.5kg Time Taken = 0.01s

Initial vel u= 50m/s Final vel v= o m/s

**Acceleration,**

V=u+at **(½)**

a= v-u = 0-50 = -5000 m/s2 **(½)**

t. 0.01

**Force, F=ma (½)**

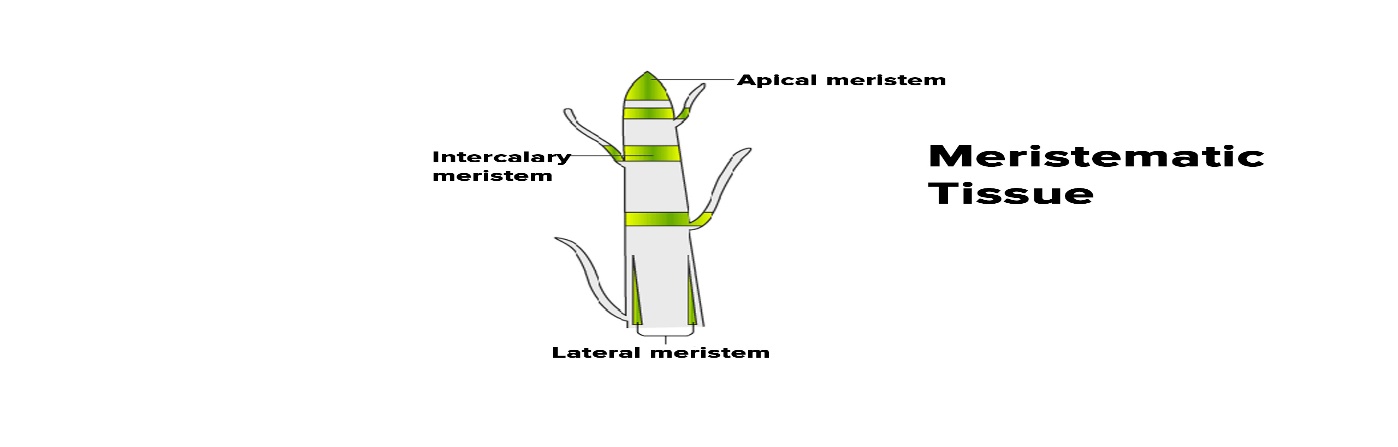
F= 0.5X-5000= -2500N **(½)**

1. a) It is constant throughout, so its value remains same all over the universe. **(1)**

b) There is a force of attraction responsible for the motion of the moon around the earth. This force of attraction is known as the **centripetal force** /**gravitational force** of the earth. If there was no such force, the moon would pursue a **uniform, straight-line motion/tangential to it’s orbit**.

**(½+1½)**

1. Meristematic tissues in plants.



1. **A –** Bone tissue helps protect the vital internal organs and provide a place for the muscles to be attached

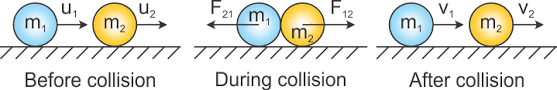
**B** – Areolar connective tissue helps provide support between internal organs and help in repair of injured parts;

**C** –Squamous epithelial tissue (skin)helps protect the internal parts from dust, chemicals and microbes

**D** –Fluid connective tissue – Blood helps in supplying oxygen, nutrients to the body and in removal of wastes from the body.



Let us consider two moving balls A and B or (1 and 2) of masses m1​ and m2​ and having initial velocities u1​ and u2​ such that u2​<u1​.

 **(½)**

Suppose the balls collide at some point and there is no external force acting on this system.

## Let their final velocities be v1​ and v2​ respectively. (½) According to Newton’s third law of motion, Force on ball 2 due to 1 = -Force on ball 1 due to 2. (½) Or, F12​=−F21​……………….(i) Total initial momentum before collision (p1​)=m1​u1​+m2​u2​. (½) Total final momentum after collision (p2​)= m1​v1​+m2​v2​. According to Newton’s second law, F21​​​= = (m1​v1- m1​u1​​)/t ...........(ii) (½) F12​​​= = (m2​v2​.​ - m2​u2​)/t .​​...........(iii) From (i),(ii) and (iii),

## (m1​v1- m1​u1​​)/t ​​=−(m2​v2​.​ - m2​u2​)/t ⇒ m1​v1- m1​u1​=− (m2​v2​.​ - m2​u2​)

## ⇒ m1​v1​+ m2​v2​.​ ​= m1​u1​+ m2​u2 (1/2) ⇒ Final momentum (p2​) = Initial momentum (p1​).

**(Diagram - ½, introduction- ½ , newton’s third law expression- ½ , expression for p1 and p2- ½ , newton’s second law expression- ½ final expression after rearranging- ½ )**

1. (a) (i) In compounds the component elements don’t retain their individual properties, i.e. the properties of the constituting elements are lost while making the compounds. In mixtures all the properties of their components are retained as it is**. (1)**

(ii) Components of Compounds cannot be separated by physical separation methods but require special chemical techniques to separate the elements. Mixtures can be separated by physical separation techniques.

(b) (i) mercury (ii) graphite **(1)**

1. i. ‘A’ belongs to epidermal tissue. **(½)**

ii. Multicellular hair like structures in stem, root hairs in root. **(1/2)**

iii. Epidermis is 2-3 layered in xerophytes **(½**

iv. Stomata help in diffusion and transpiration. **(1)**

1. **a. Xylem Phloem (1.5)**

i. conducts water & minerals translocates food materials

ii. its movement is unidirectional bidirectional

iii. it consists of 3 dead cells, one living cell it consists of 1 dead cell, 3 living cells

**b.** i. collenchyma **(1.5)**

ii. sclerenchyma

iii. parenchyma.

21. (i) A fast moving cricket ball has a large momentum. In stopping or catching this ball, its **momentum has reduced to be zero**. Now, when a cricket player moves back his hands on catching the fast ball, then the time taken to reduce the momentum of ball to zero is increased according to the formula **F=** . Due to **more time taken** to stop the ball, the rate of change of momentum of ball is decreased and hence a **small force** is exerted on the hands of player. So, the hands of player do not get hurt.

**(formula- ½, justification- 1)**

(ii) 1st graph -Balanced force or net force is zero ( **½)**

2nd graph – unbalanced forces or there is a net external force acting ( **½)**

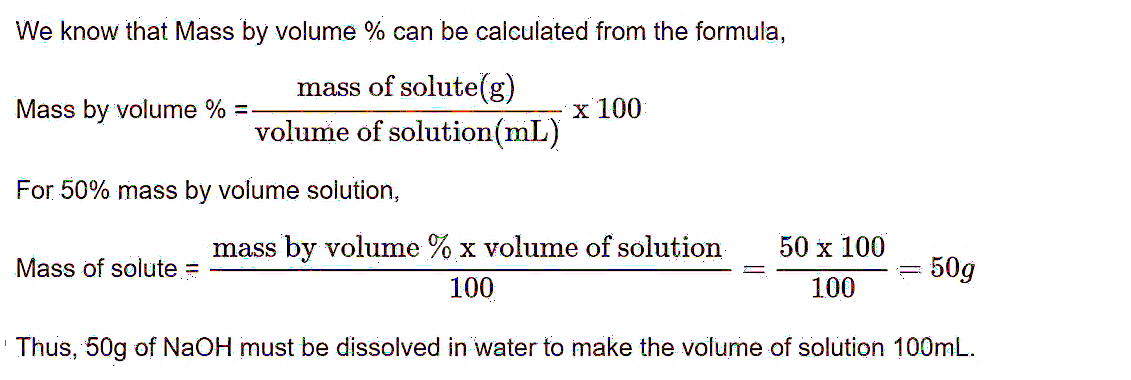
(iii) a) t=25s (**½)**

b) a=(v−u)/t t

=(0−80) / (8−0) ​= −10ms−2 **(1)**

c) F=ma=(50/1000)​×10=0.5N **(1)**

22.

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[Formula ½ m+ placing values ½ m+ calculation 1m+ correct answer with unit 1m] **(3)**

(b) (i) milk is a heterogeneous mixture which appears to be homogeneous.

(ii) milk is translucent in thin concentration.

(iii) milk shows Tyndall effect.

(iv) suspended particles of milk cannot be separated by filtration but can be separated only by centrifugation. (Any two valid points) **(1+1)**

**OR**

|  |  |  |
| --- | --- | --- |
| **SOLUTIONS** | **STABILITY** | **FILTRATION 1+1** |
| **SUSPENSIONS** | **Suspensions are unstable as the particles in suspension settle down in the container, when left undisturbed.** | **The particles of suspension can be separated through filtration (can be filtered) as the particles are big and heavy and are obtained on the filter paper as residue.** |
| **COLLOIDS** | **Colloids are stable as particles in colloids do not settle down in the container, when left undisturbed.** | **The particles of suspension cannot be separated through filtration (cannot be filtered) as the particles are too tiny and pass through filter paper** |

23. (i) (a) soda water, carbonated drinks, air dissolved in water (any one) **(½)**

(b) saline water, lemonade, ORS, glucose solution (any one) **(½)**

(ii) An Alloys is a homogeneous mixtures of two or more elements. The elements could be two metals, or a metal and a non-metal). An alloy is an example of a solid – solid solution. steel is an alloy of iron and carbon.

(Any one example without composition) **(½ + ½)**

(iii) The scattering of light by the suspended solute particles to make the path of light visible is called Tyndall effect. Examples: When a beam of light enters a smoke-filled dark room through a small hole, then its path becomes visible to us. The tiny dust particles present in the air of room scatter the beam of light all around the room.

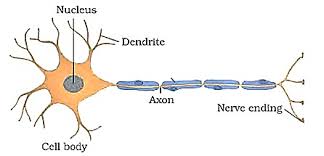
(Any two relevant examples) **(1+1)**

24. 1. Muscles are classified based on their location, structure and function **(1)**

2. Smooth muscles are found in the inner lining of the organs, blood vessels, diaphragm, iris of the eye, etc. (any two) **(1)**

3. Dendrites receive the nerve impulses or messages; Cyton passes on the messages to the Axon; Axon carries away the impulses from the cyton; Nerve endings help the impulses to move to the next neuron through the neurotransmitters.(any two)

**(1/2 x2 =1)**

 **(1)**