Sample Paper
Science – 2

class :- IX th

1 Ans Nutrients that are required in small quantities for plants are called micronutrients.
Ex :- Iron, boron, etc.

2 Ans Two non-renewable resources are :-
(i) coal
(ii) Petroleum.

3 Ans The role of fungi in nitrogen cycle is it decompose the organic material.

4 Ans (a) It is necessary for our seat belts while travelling in vehicle because when the vehicle is in motion the lower part of body contact in vehicle, when vehicle stop suddenly but our upper body try to remain in motion due to inertia of motion.

(b) Ans A karate player break a slab of ice of with a single blow because to reduce the time to change in momentum to increase the force.

5 Ans Four difference b/w mass and weight :-

	Mass	Weight
(i)	The measure of the gravity on body	Mass is the quantity that a body contain into it.
(ii)	It is measured by pan balance	It is measured by the spring balance.
(iii)	It is a scaler quantity	It is a vector quantity.
(iv)	Its SI unit is Kg.	Its SI unit is N

6 (a) Ans

	Parenchyma	collenchyma.
(i)	Parenchyma is made up of thin wall, having inter cellular space.	collenchyma is made up of thick wall elongated living cells and no intercellular space.
(ii)	It helps in storing of food.	It provides flexibility to stem and leaves.

(b) Ans Smooth muscles found in our intestine.

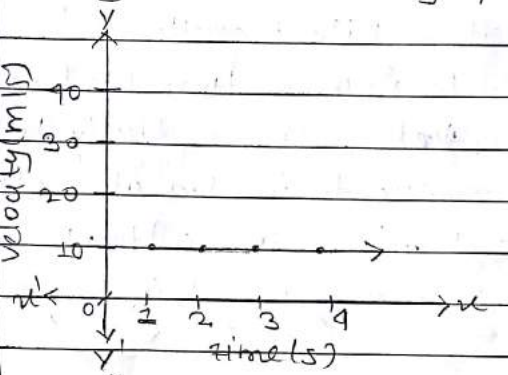
7(a) Ans: Diffusion of solvent through the semi-permeable membrane is called osmosis.
When raisin is kept in hypotonic solution for some time, raisin again the water and swell up.

8(a) Ans: Two advantages of fertilizers over manures:—
(i) It is easily soluble in water.
(ii) It helps in growth of plants.

(b) Ans: Legume crop does not require nitrogenous fertilizers because it has Rizobium bacteria present in root nadules.

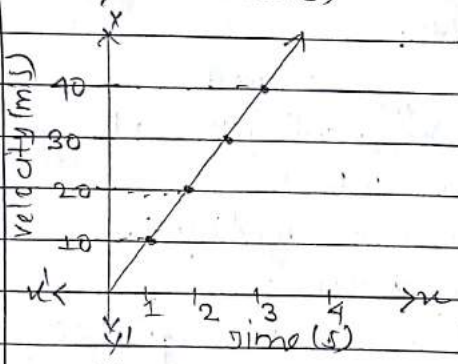
9 → Velocity - time relation graphically:—

(i)



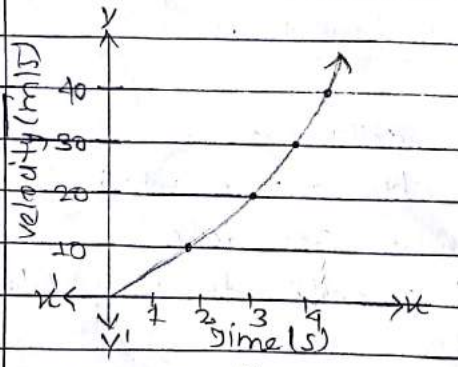
constant velocity is ⊥ to time-axis.
acc^n = 0

(ii)



increasing velocity uniform acc^n is straight line.

(iii)



Non-uniform motion.

Or $u = 20\ Km/h$, time = 5 s

$= \frac{20}{18} \times 5 = \frac{50}{9}\ m/s$

$v = 35\ Km/h$

$= 35 \times \frac{5}{18} = \frac{175}{18}\ m/s$

$a = \frac{v-u}{t} = \frac{\frac{175}{18} - \frac{50}{9}}{5} = \frac{175-100}{18} = \frac{75}{\frac{18}{5}} = \frac{75}{18} \times \frac{1}{5} = 0.83 m/s^2$

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

$= \frac{50}{9} \times 5 + \frac{1}{2} \times 0.83 \times 5 \times 5$

$= \frac{250}{9} + \frac{83}{8} = \frac{2000+747}{72} = \frac{2747}{72} = 38.15 \text{ m}$

10) Let two obj. having mass m_1 and m_2 are moving with velocity u_1 and u_2. If $u_1 > u_2$ then they collide after time 't' sec. after collision velocity will be v_1 and v_2.

Initial momentum of first body $= m_1u_1$

" " " 2nd " $= m_2u_2$

Final " " 1st " $= m_1v_1$

" " " 2nd " $= m_2v_2$

change in momentum in 1st body $= m_1v_1 - m_1u_1$

" " " " 2nd " $= m_2v_2 - m_2u_2$

Force applied by the first body (F_1)

$= \frac{m_1v_1 - m_1u_1}{t}$ (by newton 2nd law of motion)

So, $F_1 = -F_2$ (Newton's 3rd law)

$\frac{m_1v_1 - m_1u_1}{t} = -\left(\frac{m_2v_2 - m_2u_2}{t}\right)$

$m_1v_1 - m_1u_1 = -m_2u_2 - m_2v_2$

$m_1v_1 + m_2v_2 = m_1u_1 + m_2u_2$

∴ Total momentum after collision = Total momentum before collision.

Mass (m_1) of bullet $= 50g = 0.05kg$

(m_2) Rifle of mass $= 4kg$; $u_2 = 35 m/s$ (u_2 of bullet).

$m_1u_1 = m_2u_2$

$50u_1 = 4 \times 35$

$u_1 = \frac{4 \times 35}{50} = \frac{14}{5} = 2.8$

recoil.

initial velocity of the rifle $= 2.8 m/s$

11(a) Ans Thermometer reading remains constant for a while during melting of a solid because it breaks the intermolecular force of attraction.

(b) Ans It is so because saucer has a large surface area due to the large surface area evaporation of hot tea from the saucer is faster.

(c) Ans Gases are compressible but not liquids because in liquids its particles are close together and very short space. so, it can't compress.

12(a) Ans on heating calcium carbonate, it gets converted into calcium oxide and carbon dioxide. It is a chemical change.

(b) Ans To separate a mixture of potassium chloride and ammonium chloride by sublimation.

(c) Ans when a saturated solution of potassium chloride prepared at 60°C is allowed to cool to room temp. we observe that crystals of potassium chloride at the top of bottom.

13 Ans Methane (CH_4) $= 12 + 1 \times 4 = 16$ g.

$O_2 = 16 \times 2 = 32$ g

16 g of CH_4 = N molecules

4 g of $CH_4 = \frac{N}{16} \times 4 = \frac{N}{4}$

32 g of O_2 = N molecules

4 g of $O_2 = \frac{N}{32} \times 4 = \frac{N}{8}$

∴ So, No. of molecules is more in CH_4 $\left(\frac{N}{4} > \frac{N}{8}\right)$

14 Ans When any object is immersed in water fully or partialy then the buoyancy force act on abody is equal to weight of water displaced by it.

Two applications :-

* It is used in designing of boats.
* It is used in lactometer, to determine purity of sample.

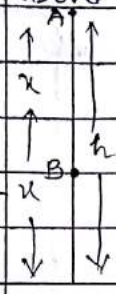
15(a) Ans The value is shown by his father is that his father is very concass their environment.

(c) Ans Ozone layer is very importance in our atmosphere because it harmful prevent the ultra violet rays

(b) Ans We and our family help in protecting the ozone layer by not enough amount of cfcs gas produced by a AC.

16(A)ii) Expression for conservation of energy.

Let an object of mass 'm' kg is lifted from ground to height 'h' m above the ground at point 'A'.



At point 'A'

$u = 0$

$PE = mgh$

$KE = \frac{1}{2}mv^2$

but $v = 0$ $= \frac{1}{2} \times m \times 0^2 = 0$.

Total energy at A $= PE + KE$

$= mgh + 0 = mgh$.

At point 'B'

$PE = mg(h-x)$ (hight above the ground $(h-x)$)

$= mgh - mgx$

$v^2 = u^2 + 2gh$

$= 0 + 2gx$ ($u = 0$ m/s (rest), $h = x$)

$v^2 = 2gx$

$KE = \frac{1}{2}mv^2$

$= \frac{1}{2} \times m \times 2gx = mgx$

Total energy at 'B' $= PE + KE$

$= mgh - mgx + mgx = mgh$.

At point 'C' ∴ Let obj. fall from A to C

$PE = mgh$

$= mg \times 0 = 0$ J

$KE = \frac{1}{2}mv^2$

$= v^2 = u^2 + 2gh$

$v^2 = 0^2 + 2gh$

$v^2 = 2gh$

$= \frac{1}{2} \times m \times 2gh = mgh$

Total energy at 'C' $= PE + KE$

$= 0 + mgh = mgh$.

17 Ans The repitation of sound by their obstacle is called Echo.
Two conditions for echo to be heard:-
* Multiple reflection of sound.
* original sound reflected one must be at least 0.1s.
Bats use ultrasound to catch their prey because bats can hear the high frequency sound and they able to escape capture their prey.

$\text{Speed} = \frac{D}{T}$

$D = S \times T$

$= 1531 \times \frac{1202}{1000}$ $= 780.8\ m$.

18(a) Ans

Acute Disease	chronic disease.
(i) It is a shorter period of time	It is a longer period of time.
(ii) Acute disease not more harm in our body.	chronic disease is much harm in our body.
(iii) Ex:- Malaria, flu, etc.	Ex:- AIDS, TB, etc.

(b)(i) Ans Jaundice
(ii) Ans The person should completly avoid consumption of oily, species and protein rich diet.
* carbohydrates rich diet should be taken atleast for 6 months.
(iii) Ans This disease spread by food and water contamination.
It is a viral disease

19 Ans (i) Echinodermata. (ii) Pices
(iii) Arthopoda (iv) celentrata.
(b) Ans (i) Plathehlyminthes (ii) Annelida.
(c) Ans Bats are not placed in birds because it have mammary gland.
So, it is placed in mamalis.

20(a) Ans A forms an oxide A_2O_3
valency of element A is 3.
(b) Ans Sodium carbonate Na_2CO_3 $= 23\times2 + 12 + 16\times3$
$= 46 + 12 + 48$
Formula mass $= 106\ u$.

2 1/2 (a) Ans: Electron was discovered by J.J. Thomson.

(b) Ans: * Electrons revolve around nucleus in special orbit called energy level.

* Electrons do not radiate energy during its revolution around the nucleus.

* Energy level represented from nucleus - as K, L, M, N or 1, 2, 3, 4 ~

(c) Ans: Atomic No. = 11.

Mass No. = 23.

Arrangement of electrons is shells :- 2, 8, 1

Nuclear composition :-

$e = 11$; $P = 11$; $N = 12$.

OR (a) Ans: % of one isotopes is x

% of 2nd " is (100 - x)

Average atomic mass = 16.2u.

$$\frac{16x}{100} + \frac{18 \times (100-x)}{100} = 16.2u$$

$$\frac{16x}{100} + \frac{1800 - 18x}{100} = 16.2u$$

$$\frac{16x + 1800 - 18x}{100} = 16.2$$

$$16x + 1800 - 18x = 1620$$

$$-2x = -1620 + 1800$$

$$+x = +180 = 90\%$$

$\therefore$ % of 16 x is 90%.

% of 18 x is (100 - 90) = 10%.

(b) Ans:

	P	N	e
X	8	8	8
Y	8	9	8

Mass No. of $x = 8 + 8 = 16$

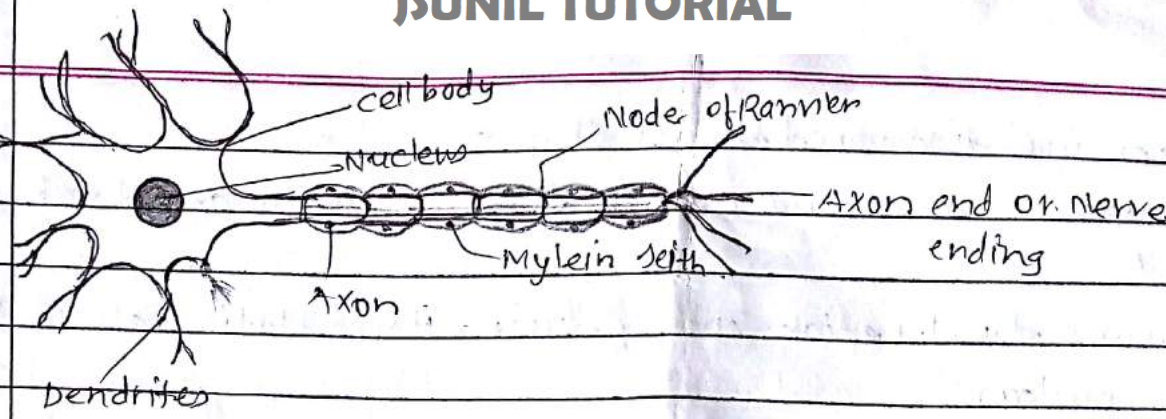
" " of $y = 8 + 9 = 17$.

So, x and y have same atomic No. but different mass no.

they pair of isotopes.

Atomic No. = 8 = oxygen element.

so, x and y represent is oxygen.

22. 

23. Ans

	Monocot plant.	Dicot plant
(i)	Seeds have single cotyledon	seeds have double cotyledon
(ii)	Fibrous root system	Tap root system.

24. Volume = 63ml - 54ml
= 9 ml³

mass of sphere = 81g

$$D = \frac{M}{V} = \frac{81}{9} = 9\ g/cm^3$$

25. laws of reflection of light is follows laws of sound.
The angle b/w the incident sound waves and reflected sound as 540. angle of reflection is also 540 because angle of relflection is equal to angle of incident.

26 Ans colourless and odourless.
zinc metal reacts with dil. H_2SO_4.

$$Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$$

It is a displacement reaction.

27 Ans (a) Tyndall effect.

(b) Ans Same results were not observed with salt solution because. Salt solution is true solution and its particles are too small.