CBSE Class 10 Science Solution PDF

SET 31/ 1 / 2

Q. No	Value Point/Expected Answer	Value	Total Marks
	SECTION-A		
1.	• Ampere • Flow of 1 coulomb of charge per second / 1 ampere = $\dfrac{1\,coulomb}{1\,second}$	½ ½	1
2.	• Methane • 75%	½ ½	1
	SECTION-B		
3.	Name – sodium Symbol – Na Electronic configuration – 2, 8, 1 **OR** (a) Na, Si, Cl – The properties of these three elements are not similar to each other, so no Doberieneir's triads. (b) Be, Mg, Ca – The properties are similar to each other, so it is Dobereiner's triad. / Atomic mass of Mg = $\dfrac{Atomic\ mass\ of\ Be + Atomic\ mass\ of\ Ca}{2}$ $= \dfrac{9+40}{2} + \dfrac{49}{2} = 24.5$	½ ½ 1 1 1	2
4.	O_2 is carried by haemoglobin of red blood corpuscles / cells. CO_2 is carried by plasma of the blood.	1 1	2
5.	Structure – Fibrous, jelly like structure Role – To change the curvature of eye lens / to change the focal length of eye lens.	1 1	2
	SECTION-C		
6.	• Acid – H_2CO_3 Base - NaOH • $NaOH + H_2CO_3 \rightarrow NaHCO_3 + H_2O$	½ ½ 1	

	• Compound is basic in nature.	½	
	pH value – ranges between 7 and 10	½	3
7.	i. A_2O – Valency of group one is 1 and of oxygen is 2 ii. AX_3 – Valency of group 13 is 3 and of halogen is 1 iii. AB_2- Valency of element A of group 2 is 2 and of element B of group seventeen is 1.	½+½ ½+½ ½+½	3
8.	• White silver chloride turns grey in sunlight • $2AgCl \xrightarrow{Sunlight} 2 Ag + Cl_2$ • Decomposition reaction / Photolytic decomposition OR a) Displacement reaction $Zn + 2 AgNO_3 \longrightarrow Zn (NO_3)_2 + 2 Ag$ b) Double displacement reaction $2 KI + Pb (NO_3)_2 \longrightarrow PbI_2 + 2KNO_3$ (deduct ½ mark for non balanced equation)	1 1 1 ½ 1 ½ 1	3
9.	Transpiration – Loss of water in vapour form through the surface of leaf / stomata of leaf / aerial parts of the plant. Experiment setup : • Take a potted plant and water it. • Cover the plant / branch with a transparent plastic sheet. • Place it in bright sunlight for half an hour. • Moisture in the form of droplets is observed inside the plastic sheet.	1 ½ x 4	3
10.	Feedback mechanism – Mechanism by which the amount of any chemical increases or decreases resulting in secretion of the related hormone. Example – when sugar level rises, insulin secretion increases. when sugar level falls, insulin secretion reduces.	1 1 1	3
11.	Plant hormones – Chemical substances which help the plant to coordinate growth and development i) Auxins/ Gibberellins ii) Cytokinins iii) Abscisic Acid / ABA iv) Auxins/ Gibberellins	1 ½ x4	3

12.	• Pea Plant / Garden pea / Pisum sativum • F$_1$ – All tall; F$_2$- Tall and short • Ratio – Tall : Short 3 : 1 / 1:2:1 OR	1 ½ + ½ 1	
	<table><tr><th>Acquired Traits</th><th>Inherited Traits</th></tr><tr><td>1. These traits are not transferred from one generation to the next generation</td><td>1. These traits are transferred from one generation to the next</td></tr><tr><td>2. They do not bring about change in DNA</td><td>2. They bring about changes in DNA</td></tr><tr><td>Example: Acquiring any skill</td><td>Example: Eye colour</td></tr></table>(or any other relevant point and example)	1 1 1	3

13.	• Need for equitable distribution of resources :
	So that all and not just a handful of rich and powerful people benefit from the development of these resources / all living beings have a birthright to the available resources.
	• Forces against equitable distribution of resources :
	1) Industrialists who work for their own benefit / profit.
	2) When environmental laws / rules are not implemented properly.
	3) Mismanagement in the distribution of natural resources or any other relevant answer.
	
	        (Or any other relevant point)
	        (Any two points)
		1
		
		1+1
			3

14.	Segregation of waste; Recycling; Composting: Reducing the use of non – biodegradable material: Reuse (Any Three) OR The system where all the living organisms in an area together interact with the non – living constituents of the environment.	1x3 1	

4

		2	3
15.	Rainbow – A natural spectrum of sunlight appearing in the sky after a rain shower	1	
		2	3

SECTION - C

| 16. | • C_2H_5OH, Ethanol/Ethyl alcohol
• Good solvent; used in medicines   (Any other)
i) $2C_2H_5OH + 2 Na \longrightarrow 2C_2H_5ONa + H_2$

Sodium ethoxide

ii) $C_2H_5OH \xrightarrow[\text{443 K}]{\text{Hot Conc. } H_2SO_4} CH_2{=}CH_2 + H_2O$

Ethene

OR

• CH_4/Simplest hydrocarbon

 | ½ + ½
½ + ½
1

½

1

½

½

1 | |

5

	• Covalent bonds i) No ions or charged particles are formed ii) Due to weak covalent bonds • Carbon dioxide and water are produced/ $CH_4 + 2O_2 \longrightarrow CO_2 + 2H_2O$	½ 1 1 1	5
17. (a) (b)	i) $Ca + 2H_2O \rightarrow Ca(OH)_2 + H_2$ ii) $2HgS + 3O_2 \xrightarrow{\ Heat\ } 2HgO + 2SO_2$ iii) $3MnO_2 + 4Al \rightarrow 2Al_2O_3 + 3Mn$ Alloys are homogeneous mixture of two or more metals or a metal and a non metal Properties : Alloys are stronger / harder / have low melting point / more resistant to corrosion / some are magnetic in nature. (Any two)	1 1 1 1 ½+½	5

18.	$u = -30$ cm $f = -30$cm $v = ?$ $m = ?$
	
	$\dfrac{1}{f} = \dfrac{1}{v} - \dfrac{1}{u}$
	
	$\therefore \dfrac{1}{v} = \dfrac{1}{f} + \dfrac{1}{u}$
	
	$= \dfrac{1}{(-30cm)} + \dfrac{1}{(-30cm)}$
	
	$\dfrac{1}{v} = -\dfrac{1}{30} - \dfrac{1}{30}$
	
	$= \dfrac{-2}{30}$
	
	$\therefore v = -15cm$
	
	$m = \dfrac{v}{u}$
	
	$= \dfrac{(-15cm)}{(-30cm)} = -\dfrac{1}{2}$
	
	(ii) Nature – virtual
	      Position – 15cm away from the lens, on the same side as the object
	      Size – diminished
	      Erect / inverted – erect
		½
		
		1
		
		½
		
		½
		½
		½
		½
			5

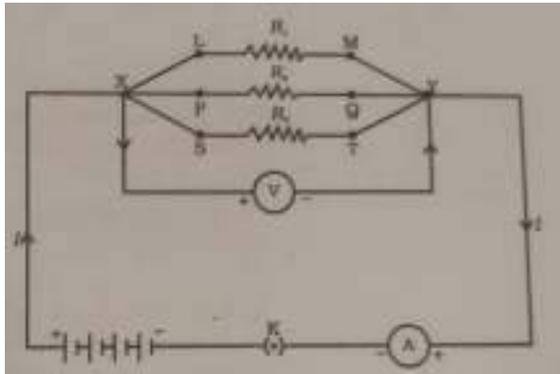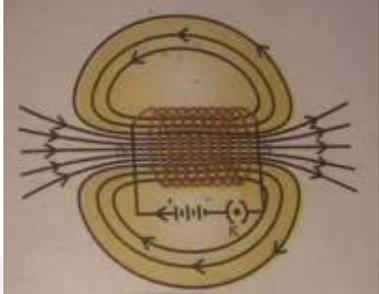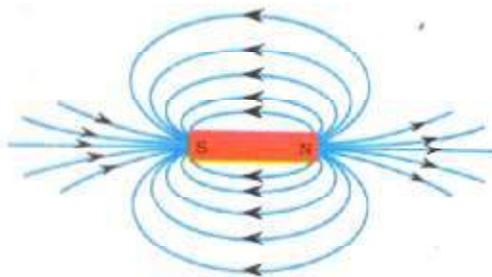|			
	(iii)	1	5
19.	a) From figure: $\qquad I = I_1+I_2+I_3$ $\qquad I_1 = \dfrac{V}{R_1}, \quad I_2 = \dfrac{V}{R_2}, \quad I_3 = \dfrac{V}{R_3}$ $\therefore \dfrac{V}{R_P} = \dfrac{V}{R_1} + \dfrac{V}{R_2} + \dfrac{V}{R_3}$ $$\frac{1}{R_P} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$ b) $R_1 = R_2 = 12\ \Omega \qquad V = 6\ V$ $\dfrac{1}{Rp} = \dfrac{1}{R1} + \dfrac{1}{R2} \ = \dfrac{1}{12} + \dfrac{1}{12}$ $\therefore \quad R_p = 6\ \Omega$ $I = \dfrac{V}{Rp} = \dfrac{6v}{6v} = 1A$ OR a) $R = R_1 + R_2$ $\qquad = 20\ \Omega + 4\ \Omega\ = 24\ \Omega$	1 1 1 1 ½ ½ 1	

	b) $I = \frac{V}{R}$ $= \frac{6V}{24\,\Omega} = 0.25$ A c) (i) For electric lamp: $\quad$ V = IR $\quad = \frac{6}{24}$ x 20 $= 5$ V (ii) For Conductor: $\quad$ V = IR $\quad = \frac{6}{24}$ x 4 $= 1$ V d) P= VI $\quad = 5$ V x $\frac{6}{24}$A $= 1.25$ W	1 1 1 1	 5
20.	• A coil of many turns of insulated copper wire wrapped closely in the shape of a cylinder • (i) ii)	1 1 1	

| | | 2 | 5 |

- Distinguishing features –

Solenoid	Bar Magnet
1)Field disappear on stopping the current	1) No effect of current on field.
2) Strength of the field can be changed by changing the current	2) Strength cannot be changed
3) Direction can be reversed by changing the direction of current through it.	3) Direction is fixed and cannot be reversed.

(Any two features)

21.	• Pollination – Transfer of pollen from anther / stamen to stigma of the flower • Type of Pollination – a) Self pollination – Transfer of pollen from anther / stamen to stigma occurs in the same flower b) Cross pollination – Pollen is transferred from anther / stamen of one flower to stigma of another flower • Agents of pollination – Wind, Water, Insects and Animals (any 2) • A tube grows out of the pollen grain and travels through the style, to reach the female germ cell in the ovary to cause fertilization OR	1 ½ + ½ ½ + ½ ½ + ½ 1 	
(a)	• Female reproductive system • Name of parts – 1: Fallopian tube/Oviduct 2: Ovary 3: Uterus 4: Cervix 5: Vagina	½ ½ x 5	
(b)	• Method to avoid pregnancy • Advantages - Proper gap between two pregnancies - Avoiding unwanted pregnancy - Keeping population under control	½ ½ x 3	5

22.	• Substance taken: KOH	½	
	• Function: It absorbs CO_2 produced by the germinating seeds	½	
	Consequence: The water level rises in the test tube dipped in the beaker / partial vacuum is created.	1	2
23.		1	
	(Any one diagram with any two labellings)	½ x 2	
	OR		
	•		
	Drawing in proper sequence	1	
	Labelling – Bud	1	2
24.	Precautions:		
	1) Lens should be held in vertical position with its faces parallel to the screen		
	2) Clear and sharpest image should be obtained by adjusting the position of lens		
	3) Three observations should be taken at least.		
	4) Base of lens, screen and measuring scale should be in straight line	½ x 4	2
	(or any other)		
25.	• Potential difference (V) is directly proportional to current (I) or V∝I	1	
	• Method: Finding slope of the graph	1	
	OR		
	• Measure the zero error	1	
	• Value of zero error should be adjusted to the observed values	1	
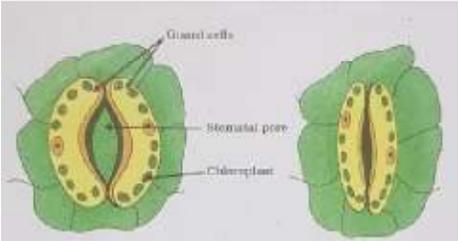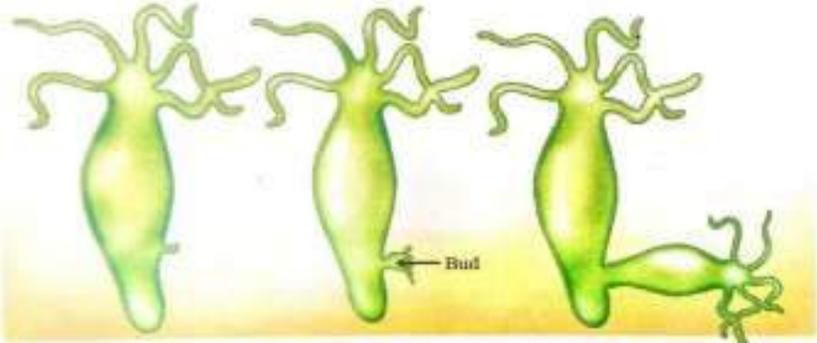
			2
26.	• In test tube A • As distilled water contains no salts	1 1	2
27.	• Test Tube A • It changes the colour from blue to red Hydrochloric acid turns blue litmus red. OR • Brisk effervescence is produced • $Na_2CO_3 + 2HCl \longrightarrow 2\,NaCl + H_2O + CO_2$	½ ½ 1 1 1	2