

SOLUTIONS

SAMPLE
QUESTION PAPER - 1

Solved _____

Time : 3 Hours

Maximum Marks : 90

SECTION 'A'

1. Solar cooker, Solar panel. ½ + ½
2. The force experienced by a current carrying conductor placed in a magnetic field is the maximum when conductor is kept perpendicular to the direction of the magnetic field. 1
3. Charge (Q) = 150 coulomb
Time (t) = minute = 60 sec.
Current (I) = ?
$$I = \frac{Q}{t} = \frac{150}{60} = 2.5 \text{ Amp.}$$

[CBSE Marking Scheme, 2014] 1
4. Iron is more reactive than copper. Iron displaces copper from copper sulphate solution and forms iron sulphate, hence the colour of solution changes.
Equation : $\text{Fe} + \text{CuSO}_4(\text{aq}) \longrightarrow \text{FeSO}_4(\text{aq}) + \text{Cu}$ 1 + 1
5. $\text{Ca} + 2\text{HNO}_3 \longrightarrow \text{Ca}(\text{NO}_3)_2 + \text{H}_2$
 $\text{Mg} + 2\text{HNO}_3 \longrightarrow \text{Mg}(\text{NO}_3)_2 + \text{H}_2$ [CBSE Marking Scheme, 2013] 1 + 1
6. Factors on which the resistance of a cylindrical conductor depends are :
(i) length of the conductor ½
(ii) area of cross-section of the conductor ½
(iii) nature of the material ½
SI unit of resistivity is ohm-m. ½
7. (a) **Photochemical decomposition** : A single reactant breaks down to give simpler products. 1
White silver chloride changes to grey, as it decomposes to silver and chlorine gas in the presence of sunlight. ½
(b) $\text{AgCl}(\text{s}) \xrightarrow{\text{Sunlight}} \text{Ag}(\text{s}) + \text{Cl}_2(\text{g})$ ½
(c) Black and white photography. [CBSE Marking Scheme, 2012] 1
8. (i) $\text{Na}_2\text{CO}_3(\text{s}) + 2\text{HCl}(\text{aq}) \longrightarrow 2\text{NaCl}(\text{aq}) + \text{H}_2\text{O}(\text{l}) + \text{CO}_2(\text{g})$
(ii) $\text{CaO}(\text{s}) + \text{H}_2\text{O}(\text{l}) \longrightarrow \text{Ca}(\text{OH})_2(\text{aq}) + \text{Heat}$
(iii) $\text{Pb}(\text{NO}_3)_2(\text{aq}) + 2\text{NaCl}(\text{aq}) \longrightarrow \text{PbCl}_2(\text{s}) + 2\text{NaNO}_3(\text{aq})$ 1 + 1 + 1
[CBSE Marking Scheme, 2014]

9. (a) Any suitable exothermic reaction like
 $\text{CaO} + \text{H}_2\text{O} \longrightarrow \text{Ca(OH)}_2 + \text{Heat}$ 1
 (b) Oxidising agent Cl_2 $\frac{1}{2}$
 Reducing agent H_2S $\frac{1}{2}$
 (c) Rancidity, keeping in airtight containers. [CBSE Marking Scheme, 2012] $\frac{1}{2} + \frac{1}{2}$

10. Villi.

- (a) Villi are richly supplied with blood vessels which take the absorbed food to each and every cell of the body.
 (b) It also absorbs water.
 (c) They increase the surface area for the absorption of food. 1 + 1 + 1

[CBSE Marking Scheme, 2013]

11.

S. No.		Metals	Non-metals
1.	Reaction with oxygen	Almost all metals react with oxygen to form metal oxide. $4\text{Na} + \text{O}_2 \longrightarrow 2\text{Na}_2\text{O}$	Non-metals react with oxygen to form acidic oxides. $\text{C} + \text{O}_2 \longrightarrow \text{CO}_2$
2.	Reaction with water	Only reactive metals reacts with water to form oxides or hydroxides and liberates hydrogen gas. $2\text{K(s)} + 2\text{H}_2\text{O(l)} \longrightarrow 2\text{KOH(aq)} + \text{H}_2\text{(g)}$	Non-metals do not displace hydrogen from water too.
3.	Reaction with dilute acid	All metals react with dilute acids to produce salt and hydrogen gas. $\text{Zn} + 2\text{HCl(dil)} \longrightarrow \text{ZnCl}_2 + \text{H}_2$	Non-metals also do displace hydrogen from water too. 1 + 1 + 1

12. Given,

$$\text{Radius} = 0.01 \text{ cm} = 0.01 \times 10^{-2} \text{ m.}$$

$$\text{Resistivity } \rho = 50 \times 10^{-8} \text{ } \Omega\text{m.}$$

$$\text{Resistance } R = 10 \text{ } \Omega$$

$$R = \rho \frac{l}{A} = \rho \frac{l}{\pi r^2}$$

$$l = \frac{R\pi r^2}{\rho} = \frac{10 \times 3.14 \times 0.01 \times 10^{-2} \times 0.01 \times 10^{-2}}{50 \times 10^{-8}}$$

$$= \frac{314 \times 10^{-4}}{50 \times 10^{-8} \times 10^5}$$

$$\text{Length} = \frac{6.28 \times 10^{-4}}{10^{-3}} = 0.628 \text{ m.}$$

3

[CBSE Marking Scheme, 2014]

13. We know that work done = $W = QV$

$$\therefore P = \frac{W}{t}$$

Now,

$$P = \frac{QV}{t}$$

$$V = IR$$

1

\therefore

$$P = \frac{Q}{t} IR = I^2 R$$

$$\text{Energy} = P \times t$$

$$= I^2 R \times t$$

1

$$= \frac{V^2}{R} \times R \times t = \frac{V^2}{R} t$$

$$\text{Energy} = \frac{V^2}{R} t$$

Where, V = voltage, R = resistance, t = time.

[CBSE Marking Scheme, 2013] 1

14. An electromagnet is a solenoid coil that attains magnetism due to flow of current. It works on the principle of magnetic effect of current.

(i) To suspend magnetised bar and identify its north and south poles.

(ii) To find the polarity of electromagnet using the property-like poles repel.

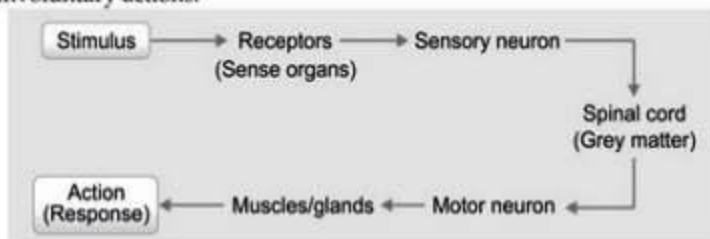
1 + 1 + 1

[CBSE Marking Scheme, 2014]

15. (a) Motor areas in brain send impulses to muscles and glands. It control the movement of voluntary muscles.

(b) Involuntary actions.

(c)



1 + ½ + 1½

16. It is the mode of nutrition in which an organism cannot make its own food and depends on other organisms for food. All the animals including man, most bacteria and some fungi have heterotrophic mode of nutrition and these organisms are called heterotrophs.

Holozoic, Saprophytic and Parasitic.

[CBSE Marking Scheme, 2014] 3

17. (a) (i) Her concern for conservation of energy and her attitude.

(ii) She knows that she should make her younger brother also aware of the need to conserve energy and reduce environment pollution.

1 + 1

(b) She explained to her brother that in the production of thermoelectricity coal is burnt, which is non-renewable energy source. Secondly, its burning causes air, water and soil pollution.

1

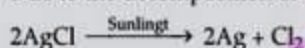
18. (i) Spurred concern about the environmental consequences of locating such a large dam in the fragile ecosystem of himalayan foothills.

(ii) It is located in the central himalayan seismic gap, a zone of earthquake.

(iii) Dam break would submerge numerous town downstream.

1 + 1 + 1

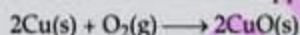
19. (i) (a) Due to the decomposition of silver chloride into silver and chlorine by sunlight



1

(b) Due to the oxidation of copper powder to copper oxide, brown colour turn into black

1



(ii) (a) A chemical reaction in which the more reactive element displaces the less reactive element from its compound is called displacement reaction.



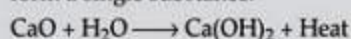
1

(b) A chemical reaction in which hydrogen is added or oxygen is removed is called reduction reaction.



1

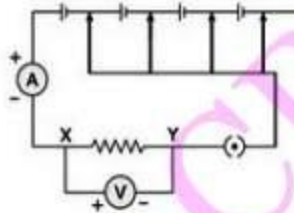
(c) Combination reaction is a reaction in which two or more than two substances combine and form a single substance.



[CBSE Marking Scheme, 2012] 1

20. (i) In series because	$R = R_1 + R_2 + R_3$	1
(ii) (a)	$I_1 = \frac{V}{R_1} = \frac{12}{5} = 2.4 \text{ A}$	½
	$I_2 = \frac{V}{R_2} = \frac{12}{10} = 1.2 \text{ A}$	½
	$I_3 = \frac{V}{R_3} = \frac{12}{30} = 0.4 \text{ A}$	½
(b) Total current	$I = I_1 + I_2 + I_3 = 2.4 \text{ A} + 1.2 \text{ A} + 0.4 \text{ A} = 4 \text{ A}$ $= 3.7 \text{ A}$	1
(c) Total effective resistance	$\frac{1}{R} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3} = \frac{1}{5} + \frac{1}{10} + \frac{1}{30}$ $= \frac{10}{30} = 3\Omega$	[CBSE Marking Scheme, 2012] 1

21. (a) While diluting an acid, it should be added slowly to water with constant stirring. If water is added to concentrated acid, the heat generated may cause the mixture to splash out and cause burns. The glass container may also break due to excessive local heating. 1
- (b) Aqueous solution of an acid has H^+ ions that carry electric current through the solution. Hence, aqueous solution of an acid conducts electricity. 1
- (c) (i) Most acidic : A ½ + ½
Most basic : C 1
- (ii) $C < B < D < A$
- (iii) In solution C : pH paper turns blue. ½ + ½
In solution D : pH paper turns green.
22. (a) **Ampere :**
When one coulomb charge flows in one second through a cross section of a conductor, the current flow is one Ampere. ½ + ½
- (b) (i) **Circuit diagram :**

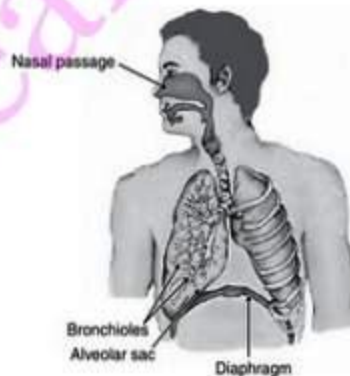


(ii) **From the graph :**

$$\text{Resistance } R = \frac{V}{I} \Rightarrow R_A = \frac{0.5}{0.05} = 10\Omega \text{ and } R_C = \frac{1.5}{0.15} = 10\Omega \quad \frac{1}{2} + \frac{1}{2}$$

Conclusion : Current flowing through a conductor is directly proportional to the potential difference across its ends. 1

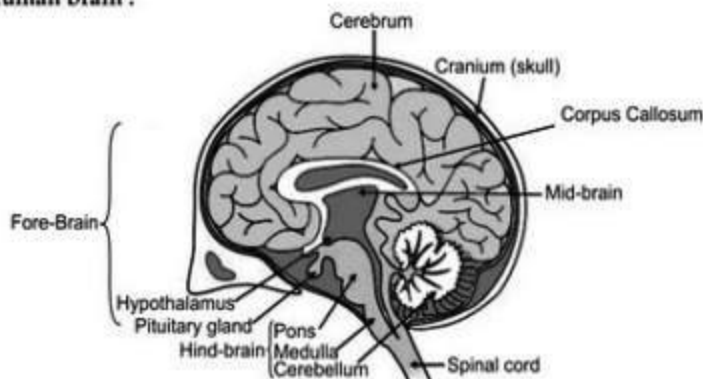
23. (a)



(1 for each)

- (i) Nasal passage
 (ii) Bronchioles
 (iii) Alveolar sac
 (iv) Diaphragm
- (b) Since the amount of dissolved oxygen in water is fairly low as compared to the amount of oxygen in the air, the rate of breathing in aquatic organisms is much faster than that in terrestrial organisms. 1

24. (a) Human brain :



- (b) Pancreas secretes insulin. Insulin helps to lower the blood glucose level. When it is secreted in less amount, the body suffers from diabetes, as more and more glucose accumulates in the body. So, to reduce the level of glucose in the blood of the diabetes patients, they are provided with insulin injections. 2

SECTION 'B'

25. (B) Red and orange colour of pH paper indicates that I and IV are acidic. 1
26. (B) Vinegar is an acid, its pH is less than 7. 1
27. (A) ohm's law states that $V = IR$. 1
28. (C) 10Ω . 1
29. (A) Structural truth. 1
30. (B) $R = \frac{V}{I} = \frac{6}{1.2} = 5\Omega$ 1
31. (B) Quick lime is a brown powder. 1
32. (C) Experimental truth. 1
33. (C) Zinc sulphate will be formed, which is colourless. 1
34. The aqueous solution of barium chloride can be prepared by dissolving 6.1 g $BaCl_2 \cdot 2H_2O$ in water and then diluting it to 100 ml.
 The aqueous solution of sodium sulphate can be prepared by dissolving 3.2 g of $Na_2SO_4 \cdot 10H_2O$ in water and then diluting it to 100 ml. 1 + 1
35. Following precautions should be taken while showing that light is essential for photosynthesis :
 > Alcohol is highly inflammable and hence, it should not be heated directly on the flame.
 > Satisfactory results can not be obtained if the plant is not completely destarched. 1 + 1
36. Resistance (R) = $\frac{V}{I} = \frac{5.8V}{290 \times 10^{-3}} = \frac{58 \times 1000}{290 \times 10}$
 $\Rightarrow R = 20\Omega$. 2



LearnCBSE.in
 Never Stop Learning

<https://plus.google.com/+ghanicbse>

facebook.com/ncertsolutionsbooks

<https://in.pinterest.com/LearnCBSE/>

<https://twitter.com/learnCBSE>