SOLUTIONS

SAMPLE QUESTION PAPER - 2

Solved

Time : 3 Hours **Maximum Marks : 90**

SECTION 'A'

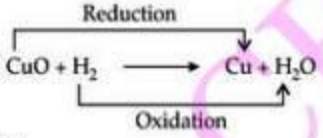
1. The strength of the magnetic field increases. **[CBSE Marking Scheme, 2012] 1**

2. (i) Environment friendly.
(ii) Efficient source of renewable energy. ½+½

3. Direction of motion of the conductor and direction of field.
[CBSE Marking Scheme, 2012] 1

4. The two different current ratings provided in domestic circuits are 5 A and 15 A. This is because different electrical appliances have different power ratings. Hence, they draw different currents when connected to the mains supply. Some appliances need smaller currents, while some other need heavy currents. **2**

5. Balanced equation :



(i) Substance oxidised = H_2
(ii) Substance reduced = CuO. **1 + ½ + ½**

6. (i) $2AgBr(s) \xrightarrow{\text{Sunlight}} 2Ag(s) + Br_2(g)$
(ii) $2Na(s) + 2H_2O(l) \longrightarrow 2NaOH(aq) + H_2(g)$ **[CBSE Marking Scheme, 2012] 1**

7. (a) $Na^{\bullet} + \cdot\ddot{\underset{\cdot\cdot}{Cl}}: \longrightarrow [Na^+]\left[:\ddot{\underset{\cdot\cdot}{Cl}}:^-\right]$ **1**

(b) Cation is Na^+ / sodium. **1**
Anion is Cl^- / chloride. **1**

8. On mixing the clear solution of two ionic compounds, a substance which is insoluble in water is formed. This insoluble substance is known as a precipitate and the reaction in which precipitate is formed is called as precipitation reaction.

Example : When sodium sulphate solution is mixed with barium chloride solution, a white precipitate of a substance ($BaSO_4$) is formed

$Na_2SO_4(aq) + BaCl_2(aq) \longrightarrow BaSO_4(\downarrow) + 2NaCl(aq)$

[CBSE Marking Scheme, 2013] 1+1+1

9. $C_6H_{12}O_6 + 6O_2 \longrightarrow 6CO_2 + 6H_2O$ + Energy **1**

It is exothermic reaction because a large amount of heat is released. **1**

Example : Decomposition of vegetable matter into compost. **[CBSE Marking Scheme, 2012] 1**

10. Silver chloride (AgCl) and Silver bromide (AgBr) **½ + ½**

$2AgCl \xrightarrow{\text{Sunlight}} 2Ag + Cl_2$ **½**

$2AgBr \xrightarrow{\text{Sunlight}} 2Ag + Br_2$ **½**

Those reactions in which energy is absorbed (in form of heat, light or electricity) to break down the reactants is called decomposition reaction. **[CBSE Marking Scheme, 2012] 1**

11. $N_2 + H_2 \longrightarrow NH_3$ (Unbalanced equation).

(i) Examine the number of atoms of different elements present in the unbalanced equation.

(ii) In the above reaction both the sides N_2 and H_2 both are unbalanced.

(iii) To balance hydrogen, H_2 is multiplied by 3 on both the sides. It makes 6H-atoms on the left hand side.

(iv) Now to balance hydrogen atoms on the right hand side NH_3 should be multiplied by 2. It make 6H-atoms on this side.

(v) Now to balance nitrogen atoms, they are counted separately for both the sides and we will find that, nitrogen atoms are 2 on both left hand side and Right hand side.

(vi) Balanced chemical equation will be :

$N_2 + 3H_2 \longrightarrow 2NH_3$ **½ + ½ + ½ + ½ + ½ + ½**

12.

$$R_4 = R_1 + R_2 = 3\Omega + 3\Omega = 6\Omega$$

$$\frac{1}{R_5} = \frac{1}{R_4} + \frac{1}{R_3} = \frac{1}{6} + \frac{1}{3} = \frac{1+2}{6} = \frac{3}{6} = \frac{1}{2}.$$

$$R_5 = 2\Omega$$

$$\text{Current } I = \frac{V}{R_5} = \frac{3V}{2\Omega} = 1.5 \text{ Amp}$$

[CBSE Marking Scheme, 2014]

13. (i) No, because, a charged particle at rest does not interact with magnetic field.

(ii) No, because, the force is zero if current and field are in the same direction.

(iii) Yes, because, the force is maximum when current and magnetic field are maximum. **1 + 1 + 1**

[CBSE Marking Scheme, 2014] 3

14. Electrical resistance of a conductor may be considered as a measure of the opposition offered by it for the flow of electric charge through it. **1**

SI unit of resistance is ohm. **½**

(a) Conductors — 10^{-6} to 10^{-8} Ohm m **½**

(b) Alloys — 10^{-6} Ohm m **½**

(c) Insulators — 10^{12} to 10^{17} Ohm m. **[CBSE Marking Scheme, 2012] ½**

15. (i) Collects information from the surroundings.

(ii) Controls and co-ordinates the movement of muscles.

(iii) Helps to recognise smell, taste, vision, hearing etc. with the help of sense organs. **1 + 1 +1**

16. A terrestrial organsim can obtain oxygen directly from the air and have slow breathing rate but aquatic organisms have to obtain oxygen for respiration which is dissolved in water. Since, the amount of oxygen dissolved in water is fairly low as compared to the amount of oxygen in air. **3**

17.

Renewable resources	Non renewable resources
Those which can be used again & again & replenished by the nature.	Those which can not be used again & can not be replenished
Ex : Air, Water, Etc.	**Ex :** Coal, Petrol, Etc.

[CBSE Marking Scheme, 2014, 2013] 1 + 1 + 1

18. The underground water comes in comes in contact with 'hot spots' present in the earth's crust and steam is generated. This energy possessed by the hot water below the earth is called Geothermal energy. **1**

It can be used to produce electricity. **½**

S.No.	Thermal Power Plant	Geothermal Power Plant
1.	Uses coal as fuel.	Uses underground hot water.
2.	Causes pollution.	Does not cause pollution
3.	The fuel used is very expensive.	The fuel is free of cost.

[CBSE Marking Scheme, 2012] ½ × 3 = 1½

19. (a) Tungsten has a high melting point (3380°C). It does not melt at high temperatures. It retains as much of heat generated, so that it becomes very hot and emits light.

(b) Conductors of electric heating devices are made up of alloys because alloys do not oxidise readily at high temperatures, unlike metals. Also alloys have a greater resistivity as compared to their constituent pure metals.

(c) Because if one component fails, the circuit is broken and none of the other components will work. Also components need currents of widely different values to operate properly. But in a series circuit, the current is constant throughout the electric device.

(d) Resistance is inversely proportional to the area of cross-section of the wire. Thus, if the wire is thick, then resistance is less. If the wire is thin, then resistance is large.

(e) The commercial unit of electrical energy is kilo-watt hour.

$$1 \text{ kilowatt hour} = 1 \text{ Kw} \times 1\text{h}$$
$$= 10^3 \text{ W} \times 3600\text{s} = 3.6 \times 10^6 \text{ Ws}.$$

or $$1 \text{ kwh} = 3.6 \times 10^6 \text{ J}$$ **1 + 1 + 1 + 1 + 1**

20. (i) (a) When a bar magnet is pushed into the coil of insulated copper wire connected to a galvanometer, an induced current is set-up in the coil due to change of magnetic field through it. As a result, galvanometer gives a deflection (say towards left). **1½**

(b) When the bar magnet is withdrawn from inside the coil, again an induced current is set up in the coil due to change of magnetic field through it. As a result galvanometer gives a deflection in the reverse direction. (say towards right). **1½**

(c) If the bar magnet is held stationary inside the coil, then there is no induced current in the coil, because there is no change in magnetic field through it. As a result, galvanometer does not show any deflection. **1**

(ii) By changing current in another coil placed near it. **[CBSE Marking Scheme, 2012] 1**

21. (a) Distilled water does not conduct electricity because it does not contain any ionic compound like acids, bases or salts dissolved in it.

(b) When we overeat, excess of acid is produced in the stomach which causes burning sensation.

(c) Copper vessels tarnish due to formation of basic copper carbonate which gets neutralized when rubbed with lemon and the copper vessel regains its shine.

(d) Washing soda is sodium carbonate decahydrate which when exposed to air loses 10 molecules of water and changes to white powder.

(e) Sodium chloride is a salt of strong acid HCl and strong base NaOH, so it is neutral.
Sodium carbonate is a salt of weak acid H_2CO_3 and strong base NaOH, so it is basic. **5**

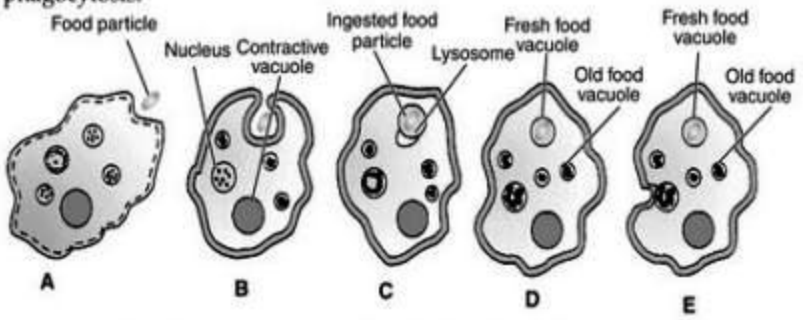
[CBSE Marking Scheme, 2014]

22. (a) When fats and oils are oxidised, the food becomes rancid *i.e.*, their smell and taste changes. The type of chemical reaction is oxidation.
Definition : Rancidity is the process of slow oxidation of oil and fat present in the food materials resulting in the production of foul odour and taste in them.

(b) Methods to Prevent Rancidity :
(i) Refrigeration of cooked food at low temperatures.
(ii) Packing of food materials in air tight containess.
(iii) By adding antioxidants *e.g.*, BHA (Butylated hydroxyanisole) **1 + 1 + 3**

23. Ingestion : Some protists can ingest food particle from any point on the surface (*e.g.*, Amoeba), while others have fixed points for the same (*e.g.*, Paramecium). Protozans like Amoeba capture

food with the help of temporary finger-like extensions called pseudopodia, protozoans such as paramecium have small hair-like processes called cilia while to capture food. Beating of cilia creates current in the water that pushes food particle through cytostome or cell mouth. The process of ingestion of solid food particle by a cell or unicellular organism is callled phagocytosis. 2



1½

As soon as Amoeba comes in contact with a food particle or prey, it throws pseudopodia all around the food particle or prey . The tips of encircling pseudopodia fuse and the prey comes to lie in a vesicle or phagosome. This method of intake of food is called 'circumvallation'. Amoeba can also ingest food by other methods such as import circumfluences and invagination. 1½

24. (a) ➢ Salivary amylase enzyme is present in in saliva. 1
➢ It is important because it breaks down starch to give sugar. 1

(b) Emulsification is the process in which there is a break-down of large fat globules to smaller globules. 1

(c) Glucose is the substance that is oxidized in the body during respiration. 1

(d) Lungs are divided into very small sac-like structures to increase the surface area for exchange of gases. 1

SECTION 'B'

25. **(A)** Quick lime is basic in nature. 1

26. **(C)** For reaction, aqueous solution of ferrous sulphate is required. 1

27. **(B)** No reading in voltmeter, but a finite reading in ammeter. 1

28. **(B)** Structural truth. 1

29. **(D)** Structural truth. 1

30. **(D)** Same in all cases because V and R are same. 1

31. **(A)** Photosynthesis is an autotrophic nutrition. The plants prepare their food by their own in the plresence of sunlight and chlorophyll. 1

32. **(C)** Structural truth. 1

33. **(A)** Experimental truth. 1

34. Students A and C are correct. (Answer is not in line with question)

Reason : Negative terminal of each cell should connect to the positive terminal of the next cell or positive terminal of each cell should connect to the negative terminal of the next cell. 1 + 1

35. 1. Destarch leaf of the plotted plant.
2. Using strips of black paper, cover a portion of the leaf.
3. Expose the plant to sunlight for four hours.
4. Pluck the experimental leaf.
5. Remove the black paper strips from the leaf.
6. Test the experimental leaf for presence of starch. 2

36. The most reactive element : C

The least reactive element : B. 1 + 1

■■