

SOLUTIONS

SAMPLE
QUESTION PAPER - 5

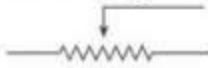
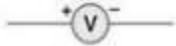

Solved _____

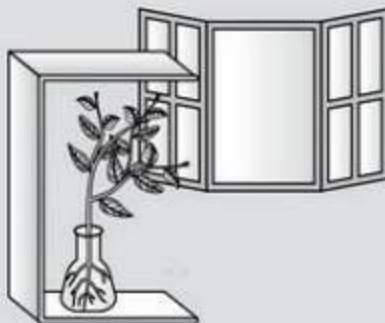
Time : 3 Hours

Maximum Marks : 90

SECTION 'A'

- Tungsten has high resistivity and a high melting point. So, most of the power consumed by this, is dissipated in the form of heat. 1
 - In a circuit, an ammeter is connected in series to measure the current flowing through it. 1
 - Solar energy and wind energy $\frac{1}{2} + \frac{1}{2}$
 - Hold the wire carrying current in your light hand, such that the thumb indicates the direction of current, then the folded fingers will indicate the presence of magnetic field (lines) surrounding the wire. 2
5. Acidic oxides — SO_2, CO_2
Basic oxides — $\text{Na}_2\text{O}, \text{MgO}$
[CBSE Marking Scheme, 2014] 1 + 1
6. $2\text{Mg} + \text{O}_2 \longrightarrow 2\text{MgO}$ [CBSE Marking Scheme, 2012] 2
- (a) X – Sodium hydrogen carbonate or baking soda. 1 + 1
Y – CO_2
 - (b) $\text{NaHCO}_3 + \text{HCl} \longrightarrow \text{NaCl} + \text{H}_2\text{O} + \text{CO}_2 \uparrow$ 1
 - (a) Hydrogen gas is collected in the test-tube B placed over the cathode. 1
(b) Volume of O_2 gas collected will be half of the volume of H_2 gas i.e., 5 ml. 1
(c) Pure water is a non-conductor of electricity. Hence, electrolysis will not take place. Few drops of dil. H_2SO_4 make the water conducting. 1
 - (i) $\text{CaCO}_3(\text{s}) \xrightarrow{\text{Heat}} \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$
(Calcium carbonate) (Calcium oxide) (Carbon dioxide) 1
 - (ii) $2\text{AgCl}(\text{s}) \xrightarrow{\text{Sunlight}} 2\text{Ag}(\text{s}) + \text{Cl}(\text{g})$
(Silver chloride) (Silver) (Chloride) 1
 - (iii) $2\text{H}_2\text{O} \xrightarrow{\text{Electric current}} 2\text{H}_2(\text{g}) + \text{O}_2(\text{g})$
(Water) (Hydrogen) (Oxygen) 1 + 1 + 1

10. (a) 'X' is calcium hydroxide/slaked lime/ Ca(OH)_2 ½
 'X' reacts with carbon dioxide to form calcium carbonate, which appears as a white precipitate. 1
Equation : $\text{Ca(OH)}_2 + \text{CO}_2 \longrightarrow \text{CaCO}_3 + \text{H}_2\text{O}$ ½
- (b) Calcium hydroxide/ Ca(OH)_2 is obtained by adding water to quick lime/ CaO .
Equation : $\text{CaO} + \text{H}_2\text{O} \longrightarrow \text{Ca(OH)}_2(aq)$ 1
11. (a) The compound 'P' is calcium phosphate.
 (b) It undergo damage when the bacteria present in the mouth work on the left over food particles and produce acid.
 To prevent tooth decay, toothpastes (basic) are used which neutralises the excess acid. 1 + 1 + 1
12. (a) The space around the magnet or current-carrying conductor within which its influence can be felt by the magnetic substance. 1
 The parameters that are necessary to describe a magnetic field are its magnitude and direction. ½ + ½
- (b) It indicates that the field is stronger at the point. 1
13. (a) Rheostat 
 (b) Voltmeter 
 (c) Electric bulb  1 + 1 + 1
14. If too many electrical appliances of high power rating are switched on at the same time, they draw large current from the circuit. This is called overloading.
 If the live wire and neutral wire come in contact either directly or via conducting wire, the situation is called short circuiting.
 To avoid risk of electrical shock, the metal body of the appliances is earthed. Earthing means to connect the metal case of the appliance to earth by a means of a metal wire called earth wire. 1 + 1 + 1
15. (i) To receive the stimulus (tennis ball on the racquet).
 (ii) Sensory neurons of a spinal nerve to convey the stimulus to spinal cord.
 (iii) Spinal cord to interpret the stimulus and give appropriate command to motor neurons.
 (iv) Motor neurons of a spinal nerve to convey motor command to effector.
 (v) Effectors or muscles to execute the effect by muscular movement (hit the tennis ball from the racquet). 3
16. (a) ➤ Fill a conical flask with water.
 ➤ Cover the neck of the flask with a wire mesh.
 ➤ Keep two or three freshly germinated bean seeds on the wire mesh.
 ➤ Take a cardboard box which is open from one side.
 ➤ Keep the flask in the box in such a manner that the open side of the box faces light coming from a window.
 ➤ After two or three days, you will notice that the shoots bend towards light and roots away from light.
 ➤ Now turn the flask so that the shoots are away from light and the roots towards light.



Plants show tropism in response to other stimuli as well. The roots of a plant always grow downwards while the shoots usually grow upwards and away from the earth. This upward and downward growth of shoots and roots, respectively in response to the Pull of earth or gravity is, called geotropism.

Then in the figure below roots are positively geotropic while shoot part is negatively geotropic.



➤ Leave it undisturbed in this condition for a few days.

(b) Folding up of the leaves of mimosa plant is an example of nastic movements or seismonasty.

[CBSE Marking Scheme, 2014, 2013] 2 + 1

- | | |
|---|---|
| 17. The process is nuclear fission. | ½ |
| Substances are uranium, plutonium, thorium. | ½ |
| Advantages : | |
| (i) For a given amount of fuel, the amount of energy released is extraordinarily large. | ½ |
| (ii) Nuclear power plants can be set up at any place. | ½ |
| Hazards : | |
| (i) Improper nuclear waste storage and disposal result in environmental contamination. | ½ |
| (ii) Further there is a risk of accidental leakage of nuclear radiation. | ½ |

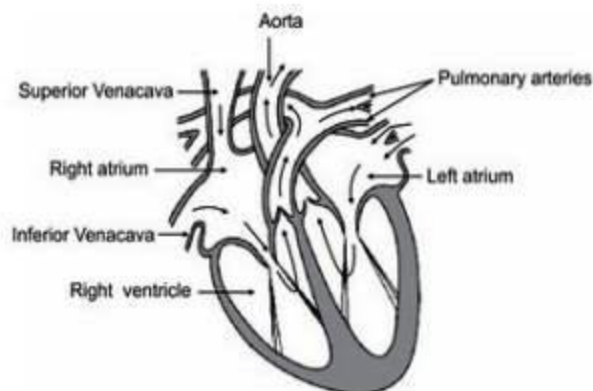
[CBSE Marking Scheme, 2012]

18. **Biomass** : The waste of living organisms like cow dung, various plant materials like the residue after harvesting of crops, vegetable waste and sewage etc form biomass.

During the decay of biomass, in the absence of oxygen, biogas is produced in the biogas plant. A slurry of cow dung and water is made in the mixing tank from where it is fed into the digester. In the digester tank, anaerobic micro-organisms decompose complex molecules of cowdung slurry and produce biogas.

[CBSE Marking Scheme, 2012] 3

19. (a)



4

- (b) (i) As ventricle have to pump the blood into various organs, the muscular walls of ventricles are thicker than the walls of atria.
 (ii) Since the blood emerges from the heart under high pressure, arteries have thick elastic walls.

1

20. (a) A — Pituitary
 B — Thyroid
 C — Adrenal
 D — Pancreas
 F — Testis.

½

½

½

½

- (b) **Pancreas** : Secrete insulin which controls amount of sugar in blood.

½

Testes : Secrete testosterone which controls sperm production/secondary sexual character.

½

[CBSE Marking Scheme, 2012] 2

21. (a) An alloy is a homogeneous mixture of two or more metals or a metal and a non-metals, mixed in the molten state. Amalgam is an alloy of a metal with mercury.
 Solder – Lead and tin.

- (b) (i) Brass – copper and zinc
 (ii) Stainless steel – iron, nickel and chromium
 (iii) Bronze – copper and tin.

Brass and bronze have lower electrical conductivity than their constituents. Stainless steel does not corrode easily as iron does.

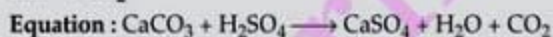
[CBSE Marking Scheme, 2014] 1 + 3 + 1

22. (a) A → CaCO₃ (Limestone)

½

Gas → CO₂

½



1

- (b) (i) **Milk of Magnesia** : It is basic in nature. Stomach produces dil. HCl. When suffering from indigestion, more acid is produced, this causes irritation. Antacid neutralises some acid and then gives relief.

1½

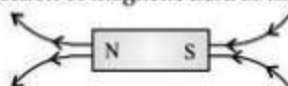
(ii) **Soil is acidic** : Farmer wants to neutralise some acid and hence adds basic substances like CaO or CaCO₃ to it.

[CBSE Marking Scheme, 2012] 1½

23. (a) **Magnetic field lines** is a path along which a free north-pole tends to move. The direction of magnetic field at a point is determined by placing a small compass needle. The north pole of compass indicates the direction of magnetic field at that point.

1

(b)



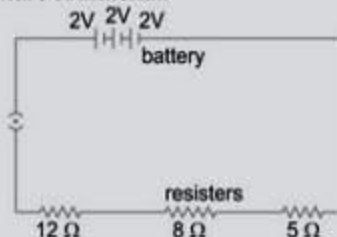
1

(c) Properties of magnetic field lines :

- Outside a magnet, the magnetic field lines are directed from N-pole of the magnet towards the pole. Inside a magnet, field lines are directed from the South pole to the North Pole. 1
- The relative strength of magnetic field lines is given by degree of closeness of the field lines. 1
- No two magnetic field lines can ever intersect each other at any point in space. 1

24. (i) Given that resistivity of manganese is lower than that of copper it remains unchanged because resistivity depends on nature of material. 1

(ii)



2

(iii)

$$R_{\text{copper}} = \rho_c \frac{l_c}{A_c}$$

$$R_m = \rho_m \frac{l_m}{A_m}$$

Now,

$$R_c = R_m \text{ (given)}$$

$$l_c = l_m \text{ (given)}$$

∴

$$\frac{\rho_m}{A_c} = \frac{l_m}{A_m}$$

or

$$\frac{\rho_c}{\rho_m} = \frac{A_c}{A_m}$$

Since,

$$\rho_m < \rho_c$$

∴

$$A_m < A_c$$

Copper wire will be thicker.

[CBSE Marking Scheme, 2014] 2

SECTION 'B'

25. (C) Only ferrous sulphate crystal is breaking. 1
26. (C) Colour of CuSO_4 is blue. 1
27. (D) Colour of FeSO_4 is pale green and ZnSO_4 is colourless. 1
28. (C) Rate of respiration is fast in germinating seeds. 1
29. (D) Experimental truth. 1
30. (B) In (i) the resistors are in parallel combination whereas in (ii) the resistors are in series combination. 1
31. (B) Least count = $\frac{\text{Range}}{\text{No. of division}} = \frac{0-3}{30} = \frac{3}{30} = 0.1\text{A}$ 1
32. (D) To carry the current in closed path. 1
33. (B) Alcohol decolourises the leaf by removing alcohol. 1
34. In test-tube I. 1 + 1
Reason : Ag is less reactive than hydrogen. Hence, it cannot displace 'H' from HCl acid.
35. Figure I and IV have series combinations only. Resistance are placed between terminal A and B only. 1 + 1
36. Fewer stomata on the upper surface prevent excessive loss of water due to transpiration as this surface is directly exposed to sunlight. 2

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