

1. A bulb cannot be used in place of a resistor to verify ohms law. Justify this statement with reason.
2. What is meant by tropic movements?
3. Name the component of a solar cooker that produces a green house effect inside it.
4. Give reason why white coloured silver chloride turns grey when kept in sunlight ?
5. Describe briefly the method to obtain mercury from cinnabar. Write the chemical equation for the reactions involved in the process.
6. List in tabular form two major differences between an electric motor and a generator.
7. A compass needle is placed near a current-carrying wire. State your observation for the following cases, and give reason for the same in each case-
 - (a) Magnitude of electric current in the wire is increased.
 - (b) The compass needle is displaced away from the wire.
8. (i) State the purpose of developing pH. (ii) Mention the pH range for acids. (iii) What is the pH of acid rain and how it affects the aquatic life ?
9. Mention the rules for writing a chemical equation illustrating with the help of example.
10. "Sodium hydrogen carbonate is a basic salt". Justify the statement. How is it converted into washing soda? Explain.

11. Write chemical equations for the reaction of aluminum with the following: (a) H_2O (Steam) (b) O_2 (c) HCl
12. Two identical resistors are first connected in series and then in parallel. Find the ratio of equivalent resistance in two cases.
13. An electric heater consumes energy at the rate of :

- (a) 650 W when heating is maximum (b) 420 W when the heating is minimum.

If the voltage applied is 220 V, find the current and the resistance in each case.

14. What is short circuiting? State one factor/condition that can lead to it. Name a device in the household that acts as a safety measure for it. State the principle of its working.
15. Write one feature which is common to each of the following and write their functions .
 - (a) Chlorophyll and Haemoglobin,
 - (b) Arteries and veins
16. (a) How brain and spinal cord are protected in human beings? (b) Name the master gland present in the brain.
17. Explain the process by which inhalation occurs during breathing in human beings ?
18. List three distinguishing features between fossil fuels and solar energy.

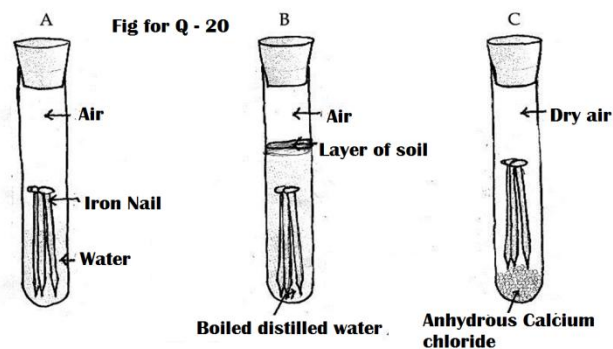
19. On returning home, Neha, a IXth std. student noticed that her 6 year old brother Naresh, was watching T.V in the afternoon with all the lights and fans „on”. She noticed that the windows were closed and curtains were drawn, which made the room dark, so , Naresh had put on the lights. She calmly opened the windows, drew the curtains aside, which illuminated and aerated the room. Then she made Naresh put „off” the lights and made him understand the reason behind her action. (Assume that they are getting electric supply from Thermal Power Plant)

- (a) List two values exhibited by Neha. (b) Explain how she tried to give same values to her broth

20. Three test tubes A, B, and C are taken with the contents shown in the following figures.

- (i) State the points of observations in each test tube after few days.

- (ii) Suggest the suitable reasons for each observation. (iii) Report the conclusion after this activity is performed.



21. (i) Write balanced chemical equations only for the following chemical properties of acids:

(a) When an acid reacts with a metal (b) when an acid reacts with metal bicarbonate

(c) When an acid reacts with a base

(ii) Three solutions A, B and C have pH values 5, 8 and 10 respectively. Amongst the three which solution has maximum hydrogen ion concentration? Classify the nature of the three solutions as acidic or basic.

22.(a) Describe an activity with a neat diagram to show the magnetic field lines around a bar magnet.

(b) When iron filings are sprinkled uniformly around a bar magnet, it is observed that a large number of iron filings cling near its edges while less number are found in its middle portion. Explain this pattern made by iron filings.

23. ((a) Draw the pattern of magnetic field lines in and around a long current carrying solenoid.

(b) Indicate (i) polarity of each end (ii) direction of magnetic field inside the solenoid?

(c) State one important feature of the magnetic field obtained inside the solenoid.

(d) Write one use of solenoid. (e) List two important properties of magnetic lines of force.

24. What are stomata ? What function do they perform ? With the help of diagram explain opening and closing of stomata.

25. When a sample of lemon juice is tested with a pH paper, it is found to be acidic in nature. It's pH should be.

(a) more than 7 (b) equal to 7 (c) less than 7 (d) between 7 and 9

26.A burning candle will not extinguish if it is brought near the mouth of a test tube containing an acid and :

(i) Sodium chloride (ii) sodium carbonate (iii) sodium bicarbonate (iv) sodium hydroxide

27. A base is a substance which shows the following set of properties:

(a) sour to taste, produces hydrogen gas when reacted with a metal and changes colour of red litmus to blue.

(b) bitter to taste, produces hydrogen gas when reacted with a metal and changes colour of blue litmus to red.

(c) sour to taste, produces hydrogen gas when reacted with a metal and changes colour of blue litmus to red.

(d) bitter to taste, produces hydrogen gas when reacted with a metal and changes colour of red litmus to blue

28. Heating of ferrous sulphate crystals is a decomposition reaction because it resembles the reaction form:

(a) $A + X \rightarrow AX$ (b) $A + XY \rightarrow AX + AY$ (c) $AX \rightarrow A + X$ (d) $A + X + Y \rightarrow A + XY$

29. A student while heating some ferrous sulphate crystals in a dry boiling tube will observe:

(a) water droplets near the mouth of boiling tube (b) colour change of the crystals

(c) smell of burning sulphur (d) all of the above

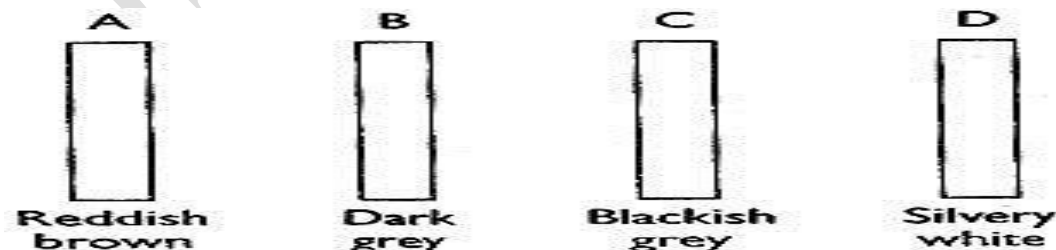
30. Disha took two iron nails and put them in aluminum sulphate solution. After sometimes she observed that:

(a) the solution becomes warm (b) grey-metal is deposited on the iron nail

(c) the colourless solution changes to light green

(d) solution remains colourless and no deposition is observed on the iron nail.

31. Four properly cleaned strips labeled A, B, C and D along with their corresponding colors are shown below. Out of these the strip of Al could be :



(a) A (b) B

(c) C

(d) D

32. An ammeter has a range of (0–3) amperes and there are 20 divisions on its scale between 0 and 1 ampere mark. The least count of the ammeter is :

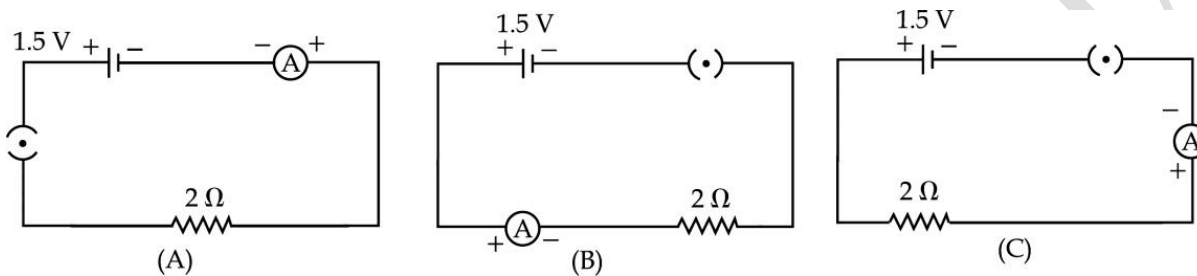
- (a) 0.3 ampere (b) 0.15 ampere (c) 0.1 ampere (d) 0.05 ampere

33. An experiment to study the dependence of current (I) on the potential difference (v) across a resistor, a student completed the circuit correctly and kept all the physical conditions constant, The student observed that:-

- (a) The potential difference (V) across the ends of the resistor and the current (I) flowing through the resistor are equal
 (b) The potential difference (V) across the ends of the resistor is directly proportional to the current (I) flowing through the resistor
 (c) The ratio of the potential difference (V) to the current (I) flowing through the conductor is not constant.
 (d) None of the above

34. A cell, a resistor, an ammeter and a key are arranged in the circuit diagram as shown below

The current recorded in the ammeter will be maximum in the circuit:



- (a) A (b) B (c) C (d) same in all the cases

35. In the following circuit diagram two resistors of 3Ω and 5Ω and a battery of 6V all are connected in series. The potential difference across 3 resistor will be :

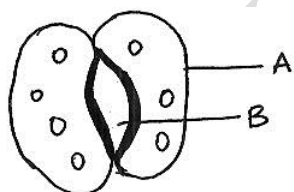
- (a) 2.3V (b) 2.25V (c) 3V (d) 2.8V

36. A resistance R of uniform thickness is cut into 4 equal parts and parts are arranged in parallel, the resistance of combination will be

- (a) R (b) R/2 (c) R/4 (d) R/16

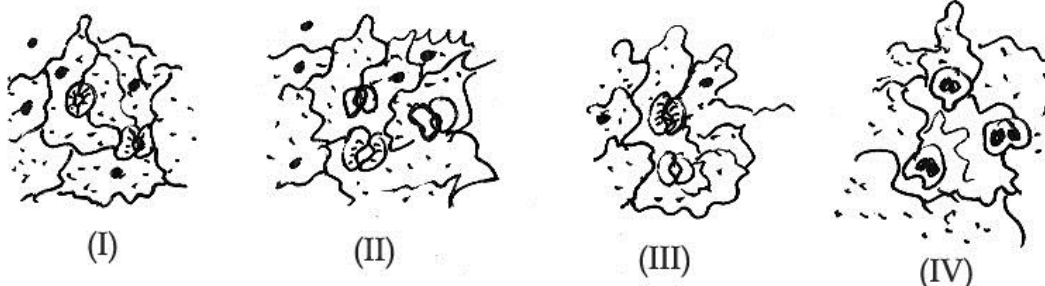
37. The parts A and B shown in the given diagram are:

- a) A is epidermal cell, B is stomatal pore (b) A is guard cell, B is stomatal pore
 c) A is epidermal cell, B is guard cell (d) A is guard cell, B is epidermal cell



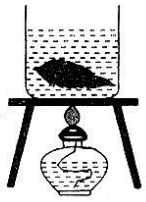
38. Four students focused an epidermal peel of leaf under high power of microscope and made the following sketches. Which one out of the following is a correct sketch?

- (a) I (b) II (c) III (d) IV



39. Arrange the steps shown below in correct order to prove light is essential for photosynthesis :

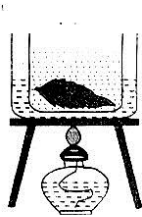
The correct sequence should be :-



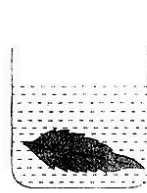
(i) Leaf in boiling water



(ii) Leaf in iodine solution



(iii) Leaf in Ethanol heated in water bath



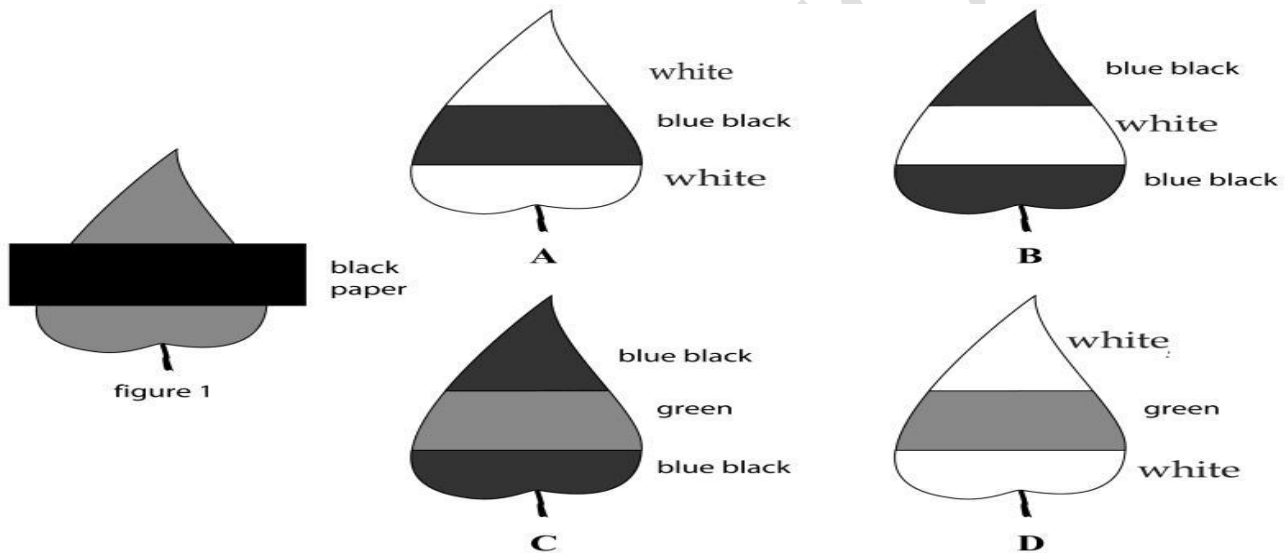
(iv) Leaf in water at room temperature

- (a) i, iii, iv & ii (b) iii, iv, ii & i (c) i, iv, iii & ii (d) i, iii, ii & iv

40. A leaf from a de-starched plant is covered with black paper strip as shown in fig.1. On doing the starch test the results will be as shown in the diagram:

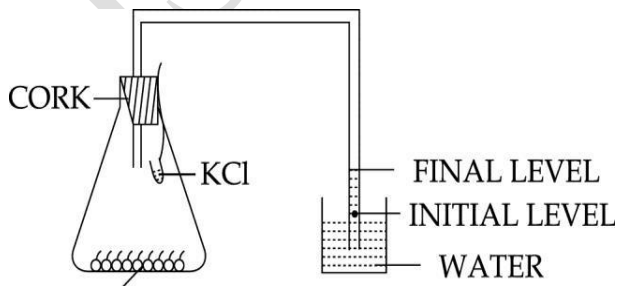
- (a) Cork must be replaced by cotton plug (b) Seeds should be dry seeds
(c) Beaker must contain lime water (d) Test tube should have KOH

41A student while setting up the experiment to show that CO₂ is evolved during respiration, committed some errors shown in the figure.



42. The changes that should be made in the set up to get the desired results is :

- (a) KOH should be taken in the small test tube inside the flask and germinating seeds in beaker.
(b) KOH solution should be taken in the small test tube inside the flask and water should be taken in the beaker.
(c) Water should be taken in the beaker and KOH solution in the flask.
(d) Water should be taken in the flask and KOH solution in the small test tube.



GERMINATING SEEDS

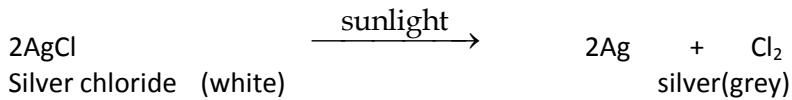
Section-B

- 25 (c) 26(d) 27(d) 28(c) 29(d) 30 (d) 31 (d) 32 (d) 38 (b) II 39(a) 40(b) 41(d) 42(b)

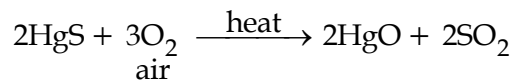
SUMMATIVE ASSESSMENT – I, TDSK218
SCIENCE Sample paper - 2 Answer and Hint Class – X

SECTION-A

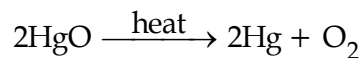
- 1 A bulb gives light due to heating of its filament. Increase in temperature of filament increase its resistance also.
- 2 Plant growth movements in response to stimuli from a particular direction are called tropic movements.
- 3 Glass plate/sheet that covers the box
- 4 Because in the presence of sunlight, silver chloride salt decomposes to form silver metal as follows :



- 5 When cinnabar (HgS) is heated in the absence of air, it is first converted into mercuric oxide.



Mercuric oxide is then reduced to mercury on further heating.



- 6 Electric motor
Motor converts electrical Energy into mechanical energy
Works on the principle of Fleming's right hand rule
- Generator
Converts mechanical energy to electrical
Works on the principle of Fleming's left hand rule

- 7 (a) Deflection of compass needle increases :
Magnetic field strength is directly proportional to the amount of current
(b) Deflection of compass needle decreases :
Magnetic field strength is inversely proportional to distance from wire.

- 8 (i) With its help hydrogen ion concentration of a solution can be measured.

(ii) 0 – 6.9 pH value (iii) less than 5.6

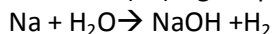
Acid rain mixes in river water due to which the water becomes acidic and pH of river water falls down.

- 9 Rules:-

The symbols and formulae of reactants are written on L.H.S with + sign between them.

The symbol and formulae of the product are written on R.H.S with (+) sign between are written on R.H.S with (+) sign between them.

An arrow (\rightarrow) sign is put between the reactant and the product. Pointing from reactants towards product.



- 10 It is a salt produced by the neutralization reaction between a strong base (NaOH) and a weak acid (H_2CO_3), hence it is a basic salt.

It is heated strongly to produce sodium carbonate. $2\text{NaHCO}_3 \xrightarrow{\Delta} \text{Na}_2\text{CO}_3 + \text{H}_2\text{O} + \text{CO}_2$

Sodium carbonate is recrystallized to produce washing soda. $\text{Na}_2\text{CO}_3 + 10\text{H}_2\text{O} \rightarrow \text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$

- 11 (a) $2\text{Al} + 3\text{H}_2\text{O} \rightarrow \text{Al}_2\text{O}_3 + 3\text{H}_2$ (b) $2\text{Al} + 3\text{O}_2 \rightarrow 2\text{Al}_2\text{O}_3$ (c) $2\text{Al} + 6\text{HCl} \rightarrow 2\text{AlCl}_3 + 3\text{H}_2$

- 12 4 : 1

- 13 (a) $I = P/V = 650/220 = 2.95\text{A}$ and $R = V/A = 220/2.95 = 74.47\text{V}$

(a) $I = P/V = 420/220 = 1.90\text{A}$ and $R = V/A = 220/1.90 = 115.23\text{V}$

- 14 Situation in which live and neutral wire come in direct contact, abruptly increasing the current in the circuit is called short-circuiting.

Factor – Insulation of wire is damaged / fault in appliance /overloading
safety device – Electric fuse (or MCB)

Electric fuse is an application of Joule's heating. If there is a current larger than the specified value the temperature of fuse wire increases and it melts to break the electric circuit and stop the flow of unduly high electric current.

- 15 (a) Both are pigments (explain their functions) (b) Both are blood vessels (explain their functions)

- 16 (a) Brain is present inside a bony box, filled with fluid which provides shock absorption. Vertebral column or backbone protects the spinal cord.

(b) Pituitary gland

- 17 (1) Muscles between ribs contract, pulls ribs out
 (2) Diaphragm contracts
 (3) Expansion of chest cavity, air rushes in the lungs

In the process of inhalation our diaphragm goes downwards and our ribs come upward so as a result our chest cavity becomes larger. Because of this, air is sucked into the lungs

Fossil Fuels	Solar Energy
1 These are non renewable and exhaustible source of energy.	1 This is renewable and inexhaustible source of energy
2 Combustion of fossil fuels causes pollution and degradation of environment.	2. Harnessing of solar energy causes no pollution or degradation of environment
-3 Fossil fuels are costly but energy can be easily obtained by burning fuels.	3 Solar energy is freely available. But devices used to harness it are costly and their efficiency is also less.

- 19 (a) (i) Her concern for conservation of energy and her attitude.
 (ii) She knows that she should make her younger's too aware of the need to conserve energy and reduce environment pollution.
 (b) She explains to her brother that in the production of thermoelectricity coal is burnt which is non-renewable source. Secondly, its burning causes air, water and soil pollution

- 20 (i) Observation :
 Nails present in test tube A are rusted
 Nails present in test tube B and C do not rust
 (ii) Reason :
 • In test tube A, water and air both are present which cause rusting
 • In test tube B, boiled water is present which is free from air.
 Moreover layer of oil prevents entry of air so only water is present in this test tube.
 • In test tube C, only dry air is present as anhydrous CaCl_2 absorbs the moisture content of air / A drying agent anhydrous CaCl_2 makes air dry.

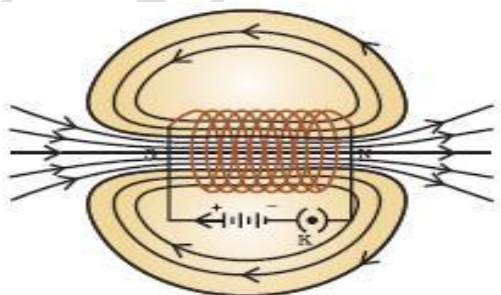
(iii) Conclusion :

Water / moisture and air / O_2 both are necessary for Iron / metal to undergo rusting / corrosion

- 21 (a) $\text{Zn} + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2$ (b) $\text{HCl} + \text{NaHCO}_3 \rightarrow \text{NaCl} + \text{H}_2\text{O} + \text{CO}_2$ (c) $\text{HCl} + \text{NaOH} \rightarrow \text{NaCl} + \text{H}_2\text{O}$
 A has maximum $[\text{H}^+]$ concentration. A is acidic B and C are basic in nature

- 22 (a) Place a bar magnet on a white paper fixed on a plastic or wooden table.
 Make the boundary of the magnet.
 Place the compass near the north pole (N) of the magnet.
 The south pole (s) of the needle points towards N pole of the magnet.
 Now move the needle to a new point such that it occupies the position previously occupied by its north pole.
 Repeat the steps till the compass reached south pole (s) of the magnet.
 The deflection increases as the needle is moved towards the poles.
 (b) Poles of a bar magnet are at its edges where field is strong so large no. of field lines crowd there.
 while field is weaker in the middle so less field lines are present there

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- (c) Magnetic field is uniform. (d) It can be used to make an electro magnet
 (e) (i) Field lines are closer together where the magnetic field is strong. (ii) no two field line cross each other
 Stomata are tiny pores present on the surface of leaves. Function – Gaseous exchange
 Opening and closing of stomata is a function of guard cell, guard cells swell and stomatal pore opens.