SOLVED SAMPLE PAPER NO 1 (SA-I)

Subject- Science

Time :- 3Hrs. **Class –X** **Maximum Marks 90**

Section A

1] Name the hormone that controls the rate of respiration. Also name the part of the brain responsible for controlling respiration. [Marks:1]

2] Why is it advised not to use copper or brass vessels to store pickles or curd? [Marks:1]

3] Which is having more resistance: A 100 W bulb or a 60 W bulb? [Marks:1]

4] Write the balance chemical equation for the chemical reaction between Manganese dioxide and Aluminium powder. What happens if Manganese powder is heated with Aluminium oxide? [Marks:2]

5] A white powder is added while baking breads and cakes to make them soft and fluffy. What is the name of the powder? What are the main ingredients in it? What are the functions of each ingredient? [Marks:2]

6] Write any two causes that may damage the kidney of a person. [Marks:2]

7] Explain the significance of peristaltic movement that occurs all along the gut during digestion. [Marks:2]

8] You are given two solar cookers, one with a plane mirror as reflector and the other with concave mirror as reflector. Which one is more efficient? Give reason for your answer. State one more use of concave mirror. [Marks:3]

9] State the law that relates current through a conductor and the potential difference between its ends. Represent the law mathematically. Represent graphically, the variation of current I as a function of potential difference V. [Marks:3]

10] In the circuit, the two resistance wires A and B are of same length and same material, but A is thicker than B. Which ammeter A1 or A2 will indicate higher reading for current? Give reason. [Marks:3]

11] A student while studying the force experienced by a current carrying conductor in a magnetic field records the following observations

(a) The force experienced by the conductor increases as the current is increased

(b) The force experienced by the conductor decreases as the strength of the magnetic field is increased.

(c) Which of the two observations is correct and why? What is resistance of a conductor due to? [Marks:3]

12] A solution of a substance 'X' is used for white washing.

(i) Name the substance 'X' and write its formula.

(ii) Write the reaction of the substance 'X' named in (i) above with water.

(iii) Write the balanced equation for the following chemical reaction:

Barium chloride + Aluminiumsulphate--------->Barium sulphate + Aluminium chloride [Marks:3]

13] What is the main ore of mercury? Explain, how mercury is obtained from this ore? Also write the reaction involved in the extraction [Marks:3]

14] (a) Define 'water of crystallisation'.

(b) Give two examples of substances having water of crystallization. Write their chemical formula also. [Marks:3]

15] (a) Using a simple experiment, how can you prove that Magnesium is placed above Zinc in the reactivity series?

(b) Why copper metal cannot liberate Hydrogen when reacting with dil. HCl? [Marks:3]

16] Draw a diagram of human brain and label any four parts. Write one function each of any two parts. [Marks:3]

17] What is chemotropism? Give one example. Name any two plant hormones and mention their functions. [Marks:3]

18] Write one feature which is common to each of the following pairs of terms:

(i) Glycogen and starch

(ii) Chlorophyll and haemoglobin

(iii) Arteries and veins [Marks:3]

19] In a class-room, there were four or five students who were not able to read the material written on black board. The other students of class helped them to sit at the front seat, so that they can also read the material written on blackboard What can be the reason behind it, what will you recommend these students and what precautions you will insist them? [Marks:3]

20] Two identical resistors, each of resistance 50 are connected (i) in series (ii) in parallel, in turn; to a battery of 10 V. Calculate the power consumed in the combination of resistor in the two cases and ratio of the power consumed in the combination of resistor in the two cases.

OR

Two resistors of resistance 3 and 6 respectively are connected to a battery of 6V so as to have: Maximum resistance and maximum current. Suggest the probable method of resistor combination and the corresponding current that will flow through the circuit. Which sort of connection is preferable in house hold circuits?Give one reason. [Marks:5]

21] (a) Name the process by which sodium hydroxide is prepared from sodium Chloride? Why it is called so process and write down the balanced chemical equation.

(b) What will be the pH of the following salts?

(i) Salt made of strong acid and strong base

(ii) Salt made of strong acid and weak base

OR

(a) A milkman adds a very small amount of baking soda to fresh milk.

(i) Why does he shift the pH of the fresh milk from 6 to slightly alkaline?

(ii) Why does this milk take a long time to set as curd?

(b) What is a neutralisation reaction? Give two examples. [Marks:5]

22] (a) What are amphoteric oxides? Give two examples.

(b) Metals such as Sodium and Potassium are kept immersed is Kerosene, why?

(c) Give the balanced chemical equation for the reaction between Al and steam.

(d) Name a non metal

(i) Which is a liquid at room temperature?

(ii) Which is lustrous?

OR

(a) What are the main two allotropes of carbon? Distinguish these two allotropes on the basis of hardness and electrical conduction.

(b) Why Aluminium articles have a longer life and attractive finish compared to many other metals?

(c) Explain the following terms

(i) Ore

(ii) Gangue

(d) What is common feature in the electronic configuration of metal atom? [Marks:5]

23] (a) Draw diagram of human alimentary canal and label the following

(i) Part in which starch digestion starts

(ii) Part in which bile is stored

(iii) Part in which nutrients are absorbed

(iv) Part in which water is absorbed

(b) Mention the role of hydrochloric acid in the stomach.

(c) What function is served by the following:

(i) Gastric sphincter

(ii) Anal sphincter

OR

(a) Draw a diagram of respiratory system and label any four parts of it.

(b) What are alveoli? Mention their role in respiration. [Marks:5]

24] Briefly explain an activity to plot the magnetic field lines around a straight current carrying conductor. Sketch the field pattern for the same, specifying current and field directions.What happens to this field,

(i) If the strength of the current is decreased?

(ii) If the direction of the current is reversed?

OR

Briefly explain an activity to plot the magnetic field lines around a bar magnet. Sketch the field pattern for the same specifying field directions.

A region 'A' has magnetic field lines relatively closer than another region 'B'. Which region has stronger field? Give reason to support your answer. [Marks:5]

Section B

25 Two colours seen at the extreme ends of pH chart are

(a) red and blue (b) red and green (c) green and blue (d) orange and black

26 A colourless and odourless gas is liberated when hydrochloric acid is added to a solution of washing soda. The name of the gas is :

(a) Carbon dioxide. (b) Nitrogen dioxide. (c) Sulphur dioxide. (d) Sulphur trioxide

27 When crystals of FeSO4 are strongly heated the residue obtained is

(a) red in colour. (b) blue in colour. (c) green in colour. (d) colourless.

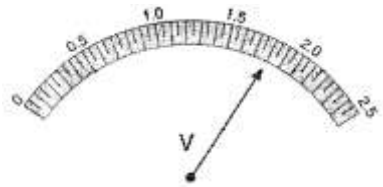
28 Reddish brown deposit observed on iron nails, when these are kept in aqueos solution of coppersulphate solution is that of

a) Cu2O b) CuO c) Cu d) CuS

29 Rahul took some zinc granules in a test tube and added dilute HCl to it. He observed that the colour of the zinc granules changed to

a) Yellow b) brown c) black d) white

30 What is the least count of the following voltmeter ?

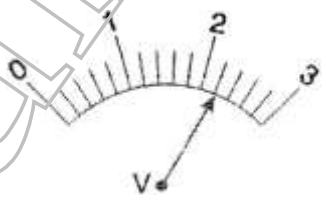


a)0.5 V b) 0.1 V c) 0.05 V d) 0.005 V

31 Resistance of a conductor depends on

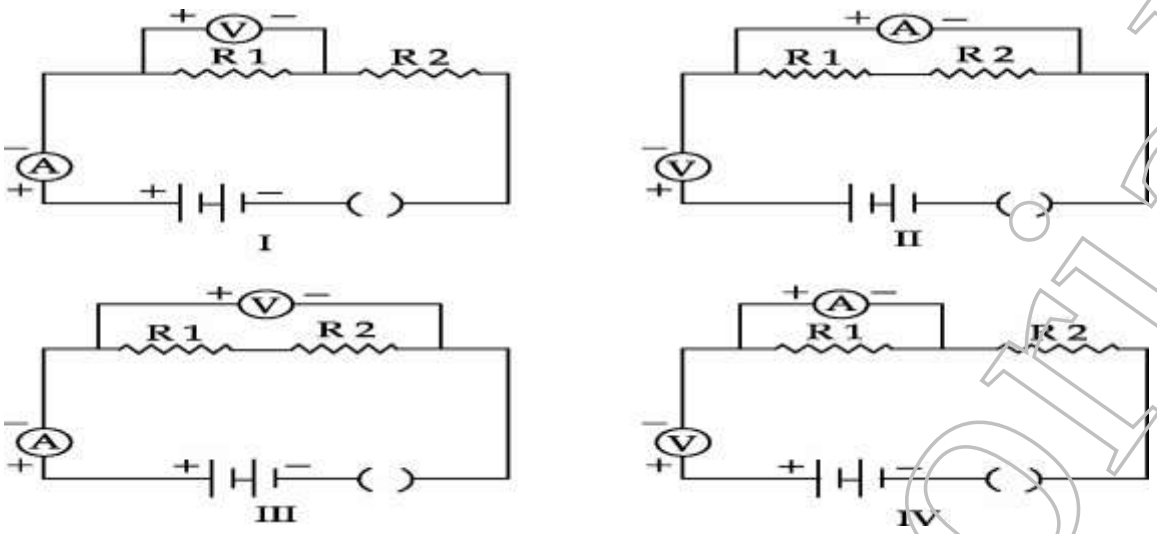
a) Its length b) Area of cross section c) Material of the conductor d) All the above

32 Four students measured the following readings by observing, the position of pointer of voltmeter



a) 2.5V b) 2.0 V c) 2.2 V d) 2.4 V

33 In the experiment on finding equivalent resistance of two resistors, connected in series, four students I, II, III and IV set up the circuit as shown below :



The correct connections have been made by student

I b) II c) III d) IV

34 In domestic circuits the colour of neutal wire is :

Black b) red c) green d) orange

35 If two resistances of 2 ohm each are connected in parallel , the equivalent resistance is

1 ohm b) 2 ohm c) 4 ohm d) 8 ohm

36 while performing the experiment to study the dependence of current on potential difference

If the circuit that is used to measure current and voltage is kept on for a long time then

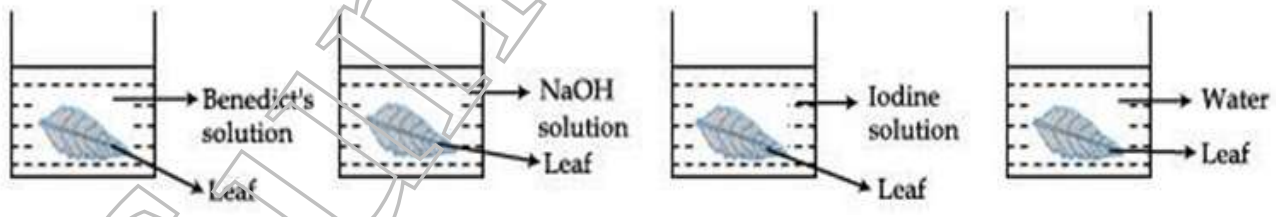
The voltmeter will start giving wrong readings

The ammeters zero error will change

The resistor will get heated up changing the value of R

The potential difference of the cell will change.

37 Figures A, B, C and D show leaves that has been boiled in alcohol, placed in four beakers containing liquids as labelled.



In which one of the above a positive test for presence of starch would be obtained ?

A (b) B (c) C (d) D

38 A student was asked to focus a permanent slide under the high power of a microscope. This involved the following steps which have not been written in a correct sequence :

(A) Place the slide on the stage (B) Clean the microscope and lenses

(C) Focus the material with coarse adjustment

(D) Place the low power objective lens above the slide

(E) Sharpen the focus with fine adjustment

(F) Bring high power objective lens over the slide

Which one of the following is the correct sequence of steps for focusing the slide under high power?

B,A,C,E,D,F (b) B,A,C,D,E,F (c) A,B,F,C,D,E (d) B,A,D,C,F,E

39 Sequence in preparing a temporary mount is

Staining, mounting, putting cover slide

Staining, putting cover slip, mounting

Putting coverslip, staining, mounting

Mounting, staining, putting cover slip

40 Stomata plays an important role in

Respiration b) photosynthesis c) transpiration d) all of the above

41. we test for starch and not glucose to prove that photosynthesis has taken place because

a)Glucose is not produced during photosynthesis in variegated leaves.

b)Glucose formed during photosynthesis get stored as sucrose.

c)Glucose formed during photosynthesis get stored as starch.

d)Glucose is a stable product and cannot be tested.

42 For the experiment "light is necessary for photosynthesis", the potted plant is first kept in darkness for a day. This is to

a) deactivate the chloroplast

b) destarch leaves

c) activate chloroplast

d) prepare leaves for photosynthesis.

ANSWERS SAMPLE PAPER NO 1 (SA1)

1] Adrenaline controls the rate of respiration. Pons is the part of the brain which controls the rate of respiration.

2] Acid present in pickles or curd will react with metals like copper and poisonous salts are produced.

3] 60 W bulb because ie resistance is inversely proportional to the power.

4] When aluminium powder is heated with manganese dioxide the following reaction takes place:

When Mn powder is heated with aluminum dioxide no reaction takes place because Mn is less reactive than Al and hence there will be no displacement reaction.

5] Baking powder is added to make breads soft and fluffy.

Baking soda and an edible acid like tartaric acid are its main ingredients.

Baking soda (Sodium hydrogen carbonate) is added to release CO2 gas when heated.

Tartaric acid is added to avoid the bitter taste by reacting with the Na2CO3 which isformed by the

heating of NaHCO3.

6] (i) Kidney infection or injury to kidneys.

(ii) Restricted blood flow to kidneys.

7] The lining of canal has muscles that contract rhythmically in order to push the food forward. Peristaltic movement is necessary to move the food in a regulated manner along the digestive tube so that the food can be processed properly in each part.

8] Solar cooker with concave mirror reflector is more efficient.

Because concave mirror can focus the heat radiations to the material kept inside to increase the temperature.

Concave mirror is used in headlight of vehicles or as shaving mirror.

9] Ohm's law relates current and potential difference.

According to this law: V/I = constant = R

10] Ammeter, A1 will show higher reading.

Because, as wire A is thicker than B, A has lesser resistance. So higher current will be drawn by A from the battery and hence ammeter A1 will show higher reading.

11] Observation a is correct.

Because force experienced by a current carrying conductor in a magnetic field is proportional to the strength of the current. Resistance of a conductor is due to the obstruction to the flow of electrons due to the collisions with atoms and other electrons.

12] (i) The substance 'X' is calcium oxide. Its chemical formula is CaO.

(ii) Calcium oxide reacts vigorously with water to form calcium hydroxide (slaked lime).

iii)write the equation

13] Main ore is cinnarbar, HgS.

When it is heated in air, it is first converted into mercuric oxide (HgO). Mercuric oxide is then reduced to mercury on further heating.

14] (a)

Water of crystallisation is the number of water molecules that combine chemically in definite molecular proportion, with the concerned salt in the crystalline state.

(b) Two correct examples are:

Copper sulphate ,chemical formula = CuSO¬¬4.5H2O

Washing soda, chemical name = Na2CO3.10 H2O.

15] (a) we can show it by an experiment of displacement reaction in which Mg rod is dipped in ZnSO4 solution. Magnesium displaces zinc from zinc sulphate solution.

(b)Cu is less reactive then hydrogen and thus place below hydrogen in the reactive series of metals, hence cannot displace hydrogen in dilute HCl.

16] (a)

Functions:

(i) Cerebrum:It controls the conscious sensations.

(ii) Mid brain: It controls the auditory impulses.

17] Chemotropism – Movement of plant parts due to chemical stimulus is called chemotropism.

Example - Growth of pollen tube.

Plant Hormones:

(i) Auxin - It helps the cells to grow longer at shoot tips.

(ii) Gibberellin – Growth of stem.

18] (i) Glycogen and starch – Both are carbohydrates and stored food products.

(ii) Chlorophyll and haemoglobin – Both are pigments.

(iii) Arteries and veins – Both are blood vessels.

19] Myopia (Reason)

Get the proper check up for the eyes.

Should wear spectacles as recommended by doctor.

Associated Value : The learners will be able to handle eye sight disorder if any in their life.

20] Series:

OR

For maximum resistance, resistors are to be connected in series.

For maximum current, resistance has to be minimum and so resistors are to be connected in parallel.

I series = V/R series = 6V/9 = 0.67 A

I parallel = V/R parallel = 6V/2 = 3A

Parallel connection is preferred over series for house hold circuits.

21] (a) Chloralkali process is used to prepare sodium hydroxide using sodium chloride.

When electricity is passed through an aqueous solution of sodium chloride (called brine), it decomposes to form sodium hydroxide. The process is called the chlor-alkali process because of the products formed– chlor for chlorine and alkali for sodium hydroxide.

(b) (i) 7 (ii) less than 7

OR

(a)

(i) The milkman shifts the pH of the fresh milk from 6 to slightly alkaline because in alkaline condition, milk does not set as curd easily.

(ii) Since this milk is slightly basic than usual milk, acids produced to set the curd are neutralised by the base. Therefore, it takes a longer time for the curd to set.

(b) A reaction in which an acid and base react with each other to give a salt and water is termed as neutralisation reaction. In this reaction, energy is evolved in the form of heat.

For example:

(i) NaOH + HClNaCl + H2O

(ii) During indigestion (caused due to the production of excess of hydrochloric acid in the stomach), we administer an antacid (generally milk of magnesia, Mg(OH)2 which is basic in nature). The antacid neutralizes the excess of acids and thus gives relief from indigestion. Mg(OH)2 + 2 HCl MgCl2 + 2 H2O

22] (a)Amphoteric oxides are those oxides which show both acids as well as bases to form salts and water.

Ex: Aluminium metal reacts in this manner with acids and bases.

SnO2 is also an example of amphoteric oxides.

(b) Metals such as Sodium and Potassium are kept immersed is Kerosene becausethey are very reactive and have high affinity towards oxygen and will violently react with atmospheric oxygen on contact with air.

(c) Aluminium reacts readily with steam to give aluminium oxide and hydrogen gas, the reaction does not always occur. This is due to a thin but strong layer of aluminium oxide being coated onto the metal, thus preventing it from the reaction. aluminium + steam aluminium oxide + hydrogen 2Al(s) + 3H2O(g) Al2O3(s) + 3H2(g) [1]

(d) (i) Bromine (ii) Iodine

Or

(a) Diamond and graphite are the two allotropes of carbon

Diamond –

• hardest substance

• electrical insulator

Graphite –

• comparatively soft, it is slippery over layers

• good electrical conductor

(b) Aluminium articles have a longer life and attractive finish compared to many other metals because of the formation of a thin transparent protective film cover of Aluminium oxide on the surface of Al formed due to its spontaneous reaction with oxygen.

(c) (i) Ore : An ore is a type of rock that contains minerals with important elements including metals. The ores are extracted through mining; these are then refined to extract the valuable element(s).

(ii) Gangue: In mining, gangue is the commercially worthless material that surrounds, or is closely mixed with, a wanted mineral in an ore deposit.

(d) Electronic configuration of metal atom is significant to know about the kind of bond that the metal will be forming for example in the formation of calcium chloride, chlorine only needs one electron to complete its octet so two atoms of chlorine accept one electron each lost by calcium ion.

23] (a)ncert page no 99 fig 6.6

(i) Part in which starch digestion starts – Mouth

(ii) Part in which bile is stored – Gall Bladder

(iii) Part in which nutrients are absorbed – Small intestine

(iv) Part in which water is absorbed – Large intestine

(b) Kills bacteria in the stomach (1/2) provide acidic medium for the action of pepsin.

(c) (i) Controls the release of food from the stomach to small intestine.

(ii) Controls the release of undigested waste from the rectum through the anus.

OR

(a)ncert page no 104 fig 6.9

(b) Within the lungs, the passage divides into smaller and smaller tubes which finally terminate in balloon – like structures which are called alveoli.

The walls of the alveoli contain an extensive network of blood-vessels which provides surface where the exchange of gases can take place.

24] Brief explanation of activity:

Connect the circuit as shown in the figure below. Switch on the battery so that the current begins to flow. Sprinkle some fine iron filings around the current carrying wire. Tap the surface gently. The iron filings get arranged in concentric circles.

When current is decreased, field gets decrease

When the current is reversed, field also gets reversed

OR

A magnet is placed on a sheet of paper. A compass needle is placed near the North Pole. The position of its two ends is marked with the help of a sharp pencil. Now the compass is moved in such a way that its south end occupies position occupied by north end previously. Again the two ends are marked with sharp pencil. In this way, process goes on step by step till the south pole of the magnet is reached. Now all points are joined to get a smooth curve which represents a field line. In this way many field lines can be drawn

Region A has stronger magnetic field

Because the strength of the field is proportional to the relative closeness of field lines.

Section B

25) b	26) a	27) d	28) c
29) c	30) a	31) d	32) c
33) c	34) a	35) a	36) c
37) c	38) a	39) a	40) d
41) c	42) b		