

**CLASS X (2020-21)**  
**SCIENCE (CODE 086)**  
**SAMPLE PAPER-8**

**Time : 3 Hours****Maximum Marks : 80****General Instructions :**

- (i) The question paper comprises four sections A, B, C and D. There are 36 questions in the question paper. All questions are compulsory.
- (ii) Section–A – question no. 1 to 20 - all questions and parts thereof are of one mark each. These questions contain multiple choice questions (MCQs), very short answer questions and assertion - reason type questions. Answers to these should be given in one word or one sentence.
- (iii) Section–B – question no. 21 to 26 are short answer type questions, carrying 2 marks each. Answers to these questions should be in the range of 30 to 50 words.
- (iv) Section–C – question no. 27 to 33 are short answer type questions, carrying 3 marks each. Answers to these questions should be in the range of 50 to 80 words.
- (v) Section–D – question no. 34 to 36 are long answer type questions carrying 5 marks each. Answer to these questions should be in the range of 80 to 120 words.
- (vi) There is no overall choice. However, internal choices have been provided in some questions. A student has to attempt only one of the alternatives in such questions.
- (vii) Wherever necessary, neat and properly labelled diagrams should be drawn.

## Section-A

1. Define rancidity. [1]

**Ans :**

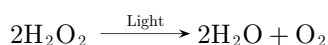
The oxidation of oils or fats in food resulting in a bad taste and smell is called rancidity.

**or**

Why is hydrogen peroxide kept in coloured bottles?

**Ans :**

This is done in order to cut off light because hydrogen peroxide decomposes into water and oxygen in the presence of light.



2. What is universal indicator? [1]

**Ans :**

Universal indicator is the mixture of synthetic indicators which is used to find pH of solutions.

3. Define catenation. [1]

**Ans :**

The property of self-linking of atoms of an element through covalent bonds in order to form straight chain, branched chains or cyclic chains of different sizes is called catenation.

4. What will happen if platelets were absent in the blood? [1]

**Ans :**

In the absence of platelets, the process of clotting will be affected.

5. What will happen to a plant if its xylem is removed? [1]

**Ans :**

The xylem tissue transports water and minerals from the soil to the leaves of a plant for photosynthesis.

If xylem is removed, upward movement of water will stop leading to wilting of leaves and ultimately causes death of a plant.

**or**

Which is the largest gland in the human body?

**Ans :**

Liver

6. Define photolysis. [1]

**Ans :**

The phenomenon of breaking down of water molecule using solar energy absorbed by chlorophyll molecules is known as photolysis.

7. Define absolute refractive index. [1]

**Ans :**

Refractive index of a medium with respect to vacuum is called absolute refractive index.

**or**

Define the term principal axis of a spherical mirror.

**Ans :**

Principal axis of a spherical mirror is the line joining the pole and the centre of curvature of a spherical mirror.

8. What is meant by power of a lens? [1]

**Ans :**

Power of a lens is the degree of convergence or divergence of light rays achieved by a lens,

$$P = \frac{1}{f(\text{in m})} \text{ (where } f = \text{focal length)}$$

9. Why does the sky appear dark to astronauts? [1]

**Ans :**

For scattering of light, particles are required. Since there are no particles in space, the sky appears dark to astronauts.

10. Define one volt. [1]

**Ans :**

One volt is defined as energy consumption of one joule per electric charge of one coulomb.

**or**

Define the term electrical resistivity of a material.

**Ans :**

Resistivity of a material is numerically equal to the resistance of a conductor of unit length and unit cross-sectional area of that material at a certain temperature.

11. What does the closeness of field lines in a magnetic field signify? [1]

**Ans :**

The degree of closeness of the field lines in a magnetic field indicates the strength of magnetic field in the region. The closer the field lines, the stronger is the field.

12. What happens if a current carrying conductor is placed in the magnetic field? [1]

**Ans :**

The conductor experiences a force and the direction of this force is given by Fleming's left hand rule.

13. Why are crop fields known as artificial ecosystems? [1]

**Ans :**

Crop fields are man-made and some biotic and abiotic components are manipulated by humans. Therefore, they are known as artificial ecosystems.

**or**

List two biotic components of a biosphere.

**Ans :**

Producers, consumers and decomposers are the biotic components of a biosphere.

**For question numbers 14, 15 and 16, two statements are given-one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below :**

- (a) Both A and R are true and R is correct explanation of the assertion.
- (b) Both A and R are true but R is not the correct explanation of the assertion.
- (c) A is true but R is false.
- (d) A is false but R is true.

14. **Assertion :** When HCl is added to zinc granules, a chemical reaction occurs. [1]

**Reason :** Evolution of a gas and change in colour indicate that the chemical reaction is taking place.

**Ans :** (b) Both A and R are true but R is not the correct explanation of the assertion.

15. **Assertion :** The sex of a child is determined by the mother. [1]

**Reason :** Humans have two types of sex chromosomes XX and XY.

**Ans :** (d) A is false but R is true.

16. **Assertion :** Decomposers act as cleaning agents of the environment. [1]

**Reason :** The decomposers recycle waste material in the hydrosphere.

**Ans :** (c) A is true but R is false.

**or**

**Assertion :** Green plants of the ecosystem are the producers.

**Reason :** Producers trap the radiant energy of the Sun and change it into chemical energy.

**Ans :** (a) Both A and R are true and R is correct explanation of the assertion.

17. **Read the following and answer any four questions from 17.1 to 17.5.**  $1 \times 4$

Dmitri Ivanovich Mendeleev, a Russian chemist developed a Periodic Table on the basis of atomic mass and also on the similarity of chemical properties. He started with 63 elements, studied their chemical reactivity and arranged them in the order of increasing atomic masses. But there were a few instances where Mendeleev had to place an element with a slightly greater atomic mass before an element with a slightly lower atomic mass. He also left some gaps in his periodic table. He could not assign a correct position to hydrogen in his table.

Due to limitations, his periodic table was modified and was adopted as the basis of Modern Periodic Table.

**17.1**The two elements selected by Mendeleev as the basis for the chemical reactivity are

- (a) hydrogen and nitrogen
- (b) oxygen and hydrogen
- (c) hydrogen and carbon
- (d) oxygen and nitrogen

**Ans :** (b) oxygen and hydrogen

Hydrogen and oxygen are very reactive and form compounds with most elements.

**17.2**The placement of which of the following pair of elements was not according to Mendeleev's Periodic Law in the table?

- (a) Co and Ni
- (b) Li and Be
- (c) N and O
- (d) Fe and Co

**Ans :** (a) Co and Ni

Co having greater atomic mass than Ni is placed before it.

**17.3**Mendeleev could not assign a fix position to hydrogen because

- (a) hydrogen does not react with any other element
- (b) hydrogen has completely filled shell
- (c) hydrogen resemble alkali metals as well as halogens in properties
- (d) hydrogen is highly reactive element

**Ans :** (c) hydrogen resemble alkali metals as well as halogens in properties

**17.4**The formula of oxide of Eka-aluminium is

- (a)  $\text{Al}_2\text{O}_3$
- (b)  $\text{GeO}_2$
- (c)  $\text{Sc}_2\text{O}_3$
- (d)  $\text{Ga}_2\text{O}_3$

**Ans :** (d)  $\text{Ga}_2\text{O}_3$

Eka-aluminium is Gallium. Its oxide is  $\text{Ga}_2\text{O}_3$ .

**17.5**How many groups and periods are there in Mendeleev's Periodic Table?

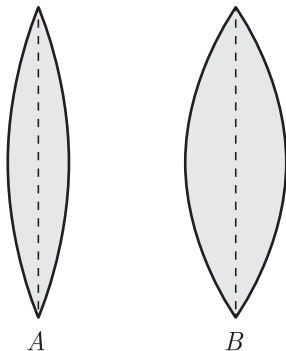


**from 19.1 to 19.5.**

**1 × 4**

Lenses are objects made of transparent materials such as glass or clear plastic that has curved surfaces. Diverging lenses are thicker at their edges than at their centres and make light rays passing through them spread out. Converging lenses are thicker in the middle than at edges and make light rays passing through them focus at a point. These are used in spectacles to help people with poor vision see better. The converging lenses magnify by bending the rays of light that pass through them to meet at a point called focus. Thicker the converging lens is at its centre, the more it magnifies and closer the focus is to the lens.

**19.1** Ravi uses two lenses *A* and *B* of same size and same material as shown.  $P_1$  and  $P_2$  are the powers of *A* and *B*. An object is kept at the same distance from the lenses between  $F$  and  $2F$  of each lens on the principal axis in turn. Let  $I_1$  and  $I_2$  be the image formed by two lenses respectively. Which one of the following statements is correct for the images formed?



- (a) Distance of image  $I_2$  will be less than distance of image  $I_1$  from the lens.
- (b) Distance of image  $I_2$  will be greater than distance of image  $I_1$  from the lens.
- (c) Size of image  $I_1$  will be equal to size of image  $I_2$ .
- (d) Size of image  $I_1$  will be lesser than size of image  $I_2$ .

**Ans :** (a) Distance of image  $I_2$  will be less than distance of image  $I_1$  from the lens.

Because thicker lens has less focal length than thinner lens.

**19.2** For the above two lenses

- (a)  $P_1 = P_2$
- (b)  $P_1 < P_2$
- (c)  $P_1 > P_2$
- (d)  $P_1$  is positive and  $P_2$  is negative

**Ans :** (b)  $P_1 < P_2$

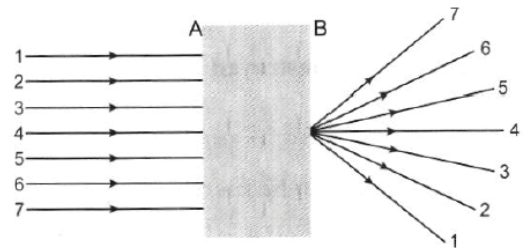
Because thin lens has more focal length than thick lens.

i.e.,

$$P = \frac{1}{f}$$

$$P_1 < P_2$$

**19.3** A beam of light is incident on the box through the holes on side *A* and emerges out of the holes on the other face of the box as shown in the figure.



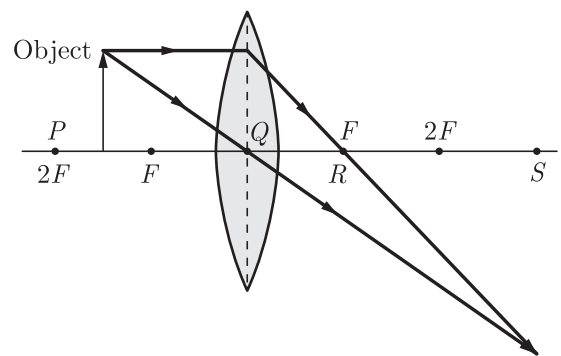
Which of the following could be inside the box?

- (a) Concave lens
- (b) Convex lens
- (c) Prism
- (d) Rectangular glass plate

**Ans :** (b) Convex lens

Because convex lens is converging in nature.

**19.4** The image represents the rays of light travelling through a convex lens.



Where is the image most likely to form?

- (a) Position *P*
- (b) Position *Q*
- (c) Position *R*
- (d) Position *S*

**Ans :** (d) Position *S*

Image formed at *S*.

**19.5** Rakhi conducts an experiment to produce an image of an object on a screen which is placed at 20 cm from the lens.

She uses a convex lens of focal length 15 cm for the experiment.

Where should she place the object in order to produce the sharpest image?

- (a) 20 cm in front of the lens
- (b) 8 cm in front of the lens
- (c) 15 cm in front of the lens
- (d) 60 cm in front of the lens

**Ans :** (d) 60 cm in front of the lens

Here,  $v = + 20$  cm;  $f = + 15$  cm;  $u = ?$

Using lens formula,

$$\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$$

$$\frac{1}{u} = \frac{1}{v} - \frac{1}{f}$$

$$\frac{1}{u} = \frac{1}{20} - \frac{1}{15} = \frac{-1}{60}$$

$$u = - 60 \text{ cm}$$

The negative sign indicates that the object is placed in front of the lens.

**20. Read the following and answer any four questions**

from 20.1 to 20.5.

1 × 4

In 19th century, Hans Christian Oersted, one of the leading scientist played a crucial role in understanding electromagnetism. In 1820, he accidentally discovered that a compass needle got deflected when an electric current passed through a metallic wire. An electromagnet is a temporary magnet of soft iron which retains magnetism only when the current passes around it.

Electromagnets are used in electric bell, telephone, electric motor, etc.

Oersted showed that electricity and magnetism were related phenomena. His research later created technologies such as the radio, television and fibre optics.

**20.1** Which of the following is not a part of an electromagnet?

- (a) Iron
- (b) Toothpick
- (c) Power source
- (d) Wire

**Ans :** (b) Toothpick

Because toothpick is not a conducting material.

**20.2** Magnetism of a magnet can be destroyed by

- (a) heating
- (b) inductive action of another magnet
- (c) hammering
- (d) all the above method

**Ans :** (d) all the above method

Heating, by inductive action and hammering the magnet their magnetic domain are disturbed or lost. So, property of magnetism can be destroyed.

**20.3** Strength of an electromagnet can be increased by

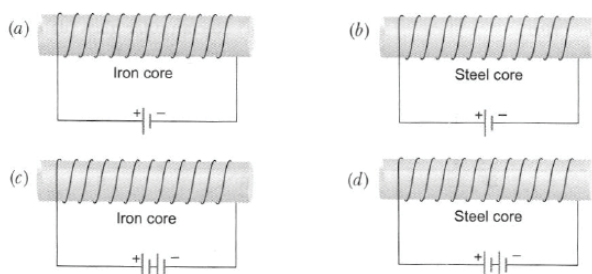
- (a) increasing the cross-sectional area
- (b) increasing the number of turns
- (c) increasing the current supply
- (d) all the above methods

**Ans :** (d) all the above methods

Strength of an electromagnet is proportional to number of turns, current supply and cross-section area of solenoid.

$$B = \mu_0 nI$$

**20.4** Which of the following is the strongest electromagnet?



**Ans :** (c)

Iron core has more magnetic property than steel core and strength of electromagnet is proportional to current supply so more cell connected in series can increase the current supply in solenoid.

**20.5** Which coil produces the strongest electromagnet for a given flow of current?

- (a) A 5 cm coil with 200 turns
- (b) A 10 cm coil with 200 turns
- (c) A 20 cm coil with 200 turns
- (d) A 10 cm coil with 100 turns

**Ans :** (a) A 5 cm coil with 200 turns

The magnetic strength of electromagnet,  $B \propto \frac{N}{l}$ .

So, more turns and less length of coil can increase the magnetic strength. So, 5 cm coil with 200 turns has strongest electromagnet.

## SECTION-B

**21.** Name a metal for each case:

- (i) It does not react with cold as well as hot water but reacts with steam.
- (ii) It does not react with any physical state of water. [2]

**Ans :**

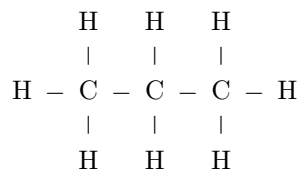
- (i) Aluminium
- (ii) Copper

**22.** (i) Write the number of covalent bonds in the molecule of propane,  $C_3H_8$ .

- (ii) Which element exhibits the property of catenation to maximum extent and why? [2]

**Ans :**

- (i) There are ten covalent bonds:



- (ii) Carbon exhibits the property of catenation due to strong C—C bond.

**or**

Catenation is the ability of an atom to form bonds with other atoms of the same element. It is exhibited by both carbon and silicon. Compare the ability of catenation of the two elements. Give reasons.

**Ans :**

Carbon exhibits catenation much more than silicon or any other element due to its smaller size which makes the C—C bonds strong while the Si—Si bonds are comparatively weaker due to its large size.

**23.** What processes would you consider essential for maintaining life? [2]

**Ans :**

The important processes essential for maintaining life are: nutrition, respiration, transportation and excretion and control and coordination.

**24.** What is the role of the acid in our stomach? [2]

**Ans :**

- (i) The acid (hydrochloric acid) secreted inside the stomach makes the medium acidic which is necessary for the activation of the enzyme pepsin. It converts inactive pepsin into active pepsin.
- (ii) Hydrochloric acid kills any bacteria which may

enter the stomach along with food.

or

Name the parts of the body responsible for excretion in

- (i) Amoeba
- (ii) Earthworm

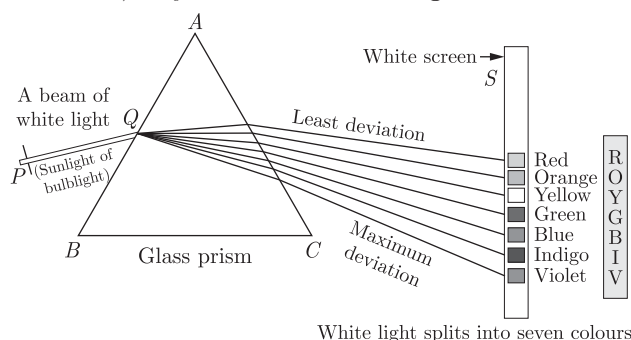
Ans :

- (i) **Amoeba** : Contractile vacuole.
- (ii) **Earthworm** : Nephridia.

25. State the cause of dispersion when white light enters a glass prism. Explain with a diagram. [2]

Ans :

Light is made of different colours. Each colour travels at its own speed and wavelength inside a prism. Therefore, they bend at different angles.



26. An electric oven of 2 kW power rating is operated in a domestic electrical circuit of 220 V that has a current rating of 5 A. What result do you expect? Explain. [2]

Ans :

Given: Power of oven,  $P = 2 \text{ kW} = 2000 \text{ W}$

Voltage used = 220 V

Current in circuit,  $I = \frac{\text{Power}}{\text{Voltage}} = \frac{2000}{220} \text{ A} = 9.1 \text{ A}$

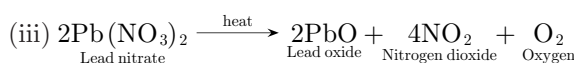
This is greater than 5 A which is current rating of oven. This implies that oven will be damaged or if there is fuse in series circuit of oven, the fuse will blow.

### SECTION-C

27. (i) Write two observations when lead nitrate is heated in a test tube.  
 (ii) Name the type of reaction.  
 (iii) Write a balanced chemical equation to represent the above reaction. [3]

Ans :

- (i) It turns yellow due to formation of lead oxide and reddish brown fumes evolve due to formation of nitrogen dioxide.
- (ii) Thermal decomposition reaction.



28. Samples of four metals A, B, C and D were taken and added to the following solution one by one. The

results obtained have been tabulated as follows:

Metal	Iron(II) sulphate	Copper(II) sulphate	Zinc sulphate	Silver nitrate
A	No reaction	Displacement	—	—
B	Displacement	—	No reaction	—
C	No reaction	No reaction	No reaction	Displacement
D	No reaction	No reaction	No reaction	No reaction

Use the table above to answer the following questions about metals A, B, C and D.

- (i) Which is the most reactive metal?
- (ii) What would you observe, if B is added to a solution of copper(II) sulphate?
- (iii) Arrange the metals A, B, C and D in the order of decreasing reactivity. [3]

Ans :

- (i) B is most reactive
- (ii) B will displace copper from copper(II) sulphate.
- (iii)  $B > A > C > D$

29. Elements have been arranged in the following sequence on the basis of their increasing atomic masses.

F, Na, Mg, Al, Si, P, S, Cl, Ar, K

- (i) Pick two sets of elements which have similar properties.
- (ii) The given sequence represents which law of classification of elements? [3]

Ans :

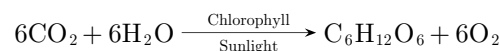
- (i) (a) F and Cl  
 (b) Na and K
- (ii) Newlands' Law of Octaves

30. A variegated leaf with green and yellow patches is used for an experiment to prove that chlorophyll is required for photosynthesis. Before the experiment the green portions (A) and the pale yellow portions (B) are observed. What will be the colour of 'N'. just before and after the starch test? Also write the equation of photosynthesis and mark, as well as validate from which molecule the by-product is obtained. [3]

Ans :

Before the starch test, 'A' would be green and after the starch test it would be blue-black.

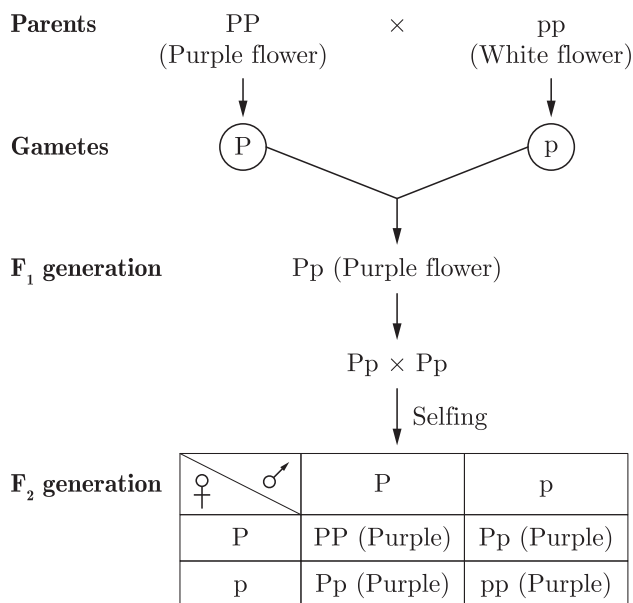
Equation of photosynthesis :



Oxygen ( $\text{O}_2$ ) is obtained from water ( $\text{H}_2\text{O}$ ). The water molecules split by sunlight resulting in formation of hydrogen, which is used for making glucose and oxygen (which is a by-product).

31. In a pea plant, the trait of flowers bearing purple colour (PP) is dominant over white colour (pp). Explain the inheritance pattern of  $F_1$  and  $F_2$  generations with the help of a cross following the rules of inheritance of traits. State the visible characters of  $F_1$  and  $F_2$  progenies. [3]

Ans :



Visible characters of all F<sub>1</sub> progeny are purple coloured flowers and in F<sub>2</sub> progeny, three of the progenies have purple coloured flower and one has white coloured flower (3 : 1 ratio).

or

What is variation? How is variation created in a population? How does the creation of variation in a species promote survival?

**Ans :**

Occurrence of differences between organisms is called variation.

New variations may arise during the process of DNA copying that already has variations accumulated from previous generations. Combining variations from two or more individuals would thus create new combinations of variations.

Force of natural selection selects individuals with useful variations in the prevailing environment so as to ensure their survival. The individuals with useful variations increase in numbers through differential reproduction in the population.

**32.** State the laws of refraction of light. Explain the term 'absolute refractive index of a medium' and write an expression to relate it with the speed of light in vacuum. [3]

**Ans :**

**Laws of refraction of light:**

**First law:** The incident ray, the refracted ray and the normal at the point of incidence all lie in the same plane.

**Second law (Snell's law):** The ratio of sine of angle of incidence to the sine of angle of refraction is a constant for a given pair of media.

$$\text{i.e., } \frac{\sin i}{\sin r} = \text{Constant}$$

Absolute refractive index is the ratio of the speed of light in air or vacuum to the speed of light in medium.

$$\text{i.e., } n_m = \frac{\text{Speed of light in air or vacuum}}{\text{Speed of light in medium}} = \frac{c}{v}$$

**33.** Why should there be equitable distribution of resources? List three forces that would be working

against an equitable distribution of our resources. [3]

**Ans :**

Equitable distribution of resources is must so that all and not just a handful of rich and powerful people benefit from the development of these resources as all living beings have a birthright to the available resources.

Forces working against equitable distribution of resources are:

- (i) Industrialists who work for their own benefit/profit.
- (ii) When environmental laws/rules are not implemented properly.
- (iii) Mismanagement in the distribution of natural resources.

## SECTION-D

- 34.** Equal length of magnesium ribbon are taken in two test tubes 'A' and 'B'. H<sub>2</sub>SO<sub>4</sub> is added to test tube 'A' and H<sub>2</sub>CO<sub>3</sub> in the test tube 'B' in equal amounts:
- (i) Identify the test tube showing vigorous reaction.
  - (ii) Give reason to support your answer.
  - (iii) Name the gas liberated in both the tubes. How will you prove its liberation?
  - (iv) Write chemical equations for both reactions.
  - (v) Out of the acids taken above, which one will have
    - (a) lower pH value?
    - (b) lower H<sup>+</sup> ion concentration respectively? [5]

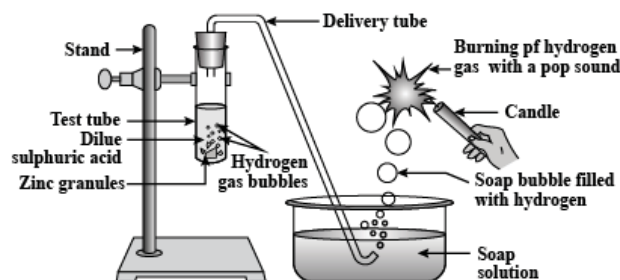
**Ans :**

- (i) A will show vigorous reaction.
- (ii) It is because H<sub>2</sub>SO<sub>4</sub> is a strong acid.
- (iii) Hydrogen gas will be formed. When we bring a burning splinter near the gas, it will burn with 'pop' sound. It shows the gas liberated is hydrogen.
- (iv)
 
$$\text{Mg} + \text{H}_2\text{SO}_4 \longrightarrow \text{MgSO}_4 + \text{H}_2$$

$$\text{Mg} + \text{H}_2\text{CO}_3 \longrightarrow \text{MgCO}_3 + \text{H}_2$$
- (v) (a) 'A' (H<sub>2</sub>SO<sub>4</sub>) will have lower pH.  
 (b) 'B' (H<sub>2</sub>CO<sub>3</sub>) will have lower concentration of H<sup>+</sup> ions.

or

- (i) In the following schematic diagram for the preparation of hydrogen gas as shown in figure, what would happen if following changes are made?
  - (a) In place of zinc granules, same amount of zinc dust is taken in the test tube.
  - (b) Instead of dilute sulphuric acid, dilute hydrochloric acid is taken.
  - (c) Sodium hydroxide is taken in place of dilute sulphuric acid and the tube is heated.

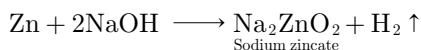


- (ii) How do metal carbonates and metal

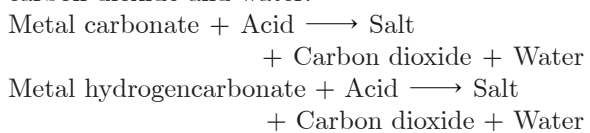
hydrogencarbonates react with acids?

Ans :

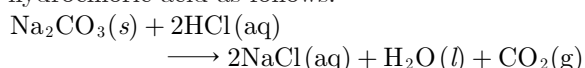
- (i) (a) Hydrogen gas will evolve with greater speed.
- (b) Almost same amount of gas is evolved.
- (c) If sodium hydroxide is taken, hydrogen gas will be evolved.



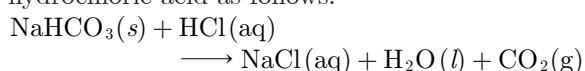
- (ii) All metal carbonates and hydrogencarbonates react with acids to form a corresponding salt, carbon dioxide and water.



For example, sodium carbonate reacts with dilute hydrochloric acid as follows:



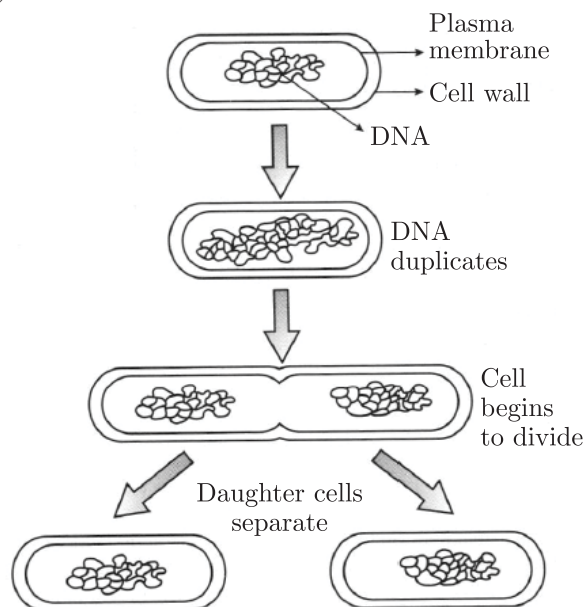
Sodium hydrogencarbonate reacts with dilute hydrochloric acid as follows:



35. (i) Describe the various steps involved in the process of binary fission with the help of a diagram.  
 (ii) Why do multicellular organisms use complex way of reproduction? [5]

Ans :

- (i)



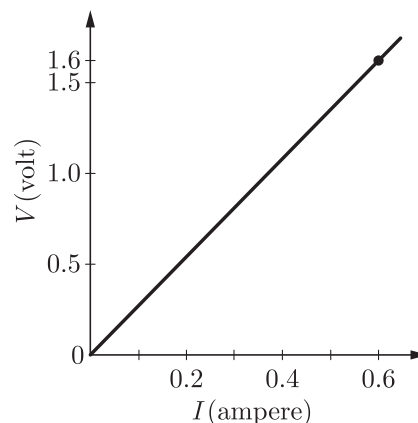
- (ii) Multicellular organisms cannot reproduce by cell because they are not a random collection of cells. In them, specialized cells are organised as tissues which are further organised into organs and organ systems. In such an organised condition, cell-by-cell division would not be possible. Multicellular organisms, therefore, require to use more complex ways of reproduction.

36. (i) Name an instrument that measures electric current in a circuit. Define the unit of electric current.  
 (ii) What do the following symbols represent in a circuit diagram?



- (iii) An electric circuit consisting of a 0.5 m long nichrome wire *XY*, an ammeter, a voltmeter, four cells of 1.5 V each and a plug key was set up.
- (a) Draw the electric circuit diagram to study the relation between the potential difference maintained between the points 'X' and 'Y' and the electric current flowing through *XY*.
- (b) Following graph was plotted between *V* and *I* values using above circuit:

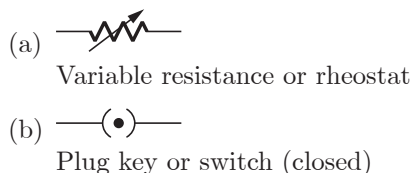
What would be the values of  $\frac{V}{I}$  ratios when the potential difference is 0.8 V, 1.2 V and 1.6 V respectively? What conclusion do you draw from these values?



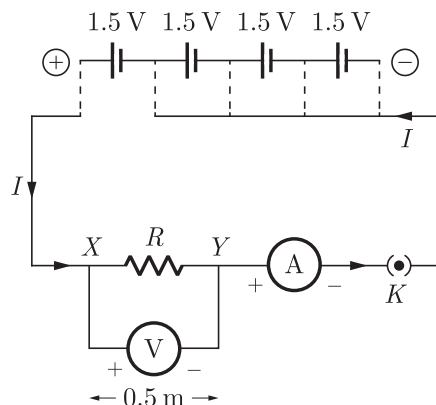
Ans :

- (i) An instrument that measures electric current in a circuit is called "ammeter". The unit of electric current is ampere (A). 1 ampere is constituted by the flow of 1 coulomb of charge through any point in an electric circuit in 1 second.

- (ii)



- (iii) (a)



- (b) Following graph was plotted between *V* and *I* values.  
 At potential difference 0.8 V,

$$\frac{V}{I} = \frac{0.8}{0.3} = \frac{8}{3} \quad \dots(1)$$

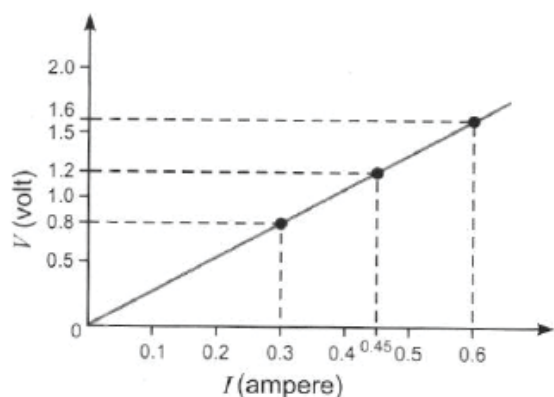
At potential difference 1.2 V,



$$\frac{V}{I} = \frac{1.2}{0.45} = \frac{8}{3} \quad \dots(2)$$

At potential difference 1.6 V,

$$\frac{V}{I} = \frac{1.6}{0.6} = \frac{8}{3} \quad \dots(3)$$



**Conclusion:**

If  $I$  be the current through  $XY$  resistor and  $V$  be the potential difference across it, then the ratio

$$\frac{V}{I} = \text{constant.}$$

$V \propto I$  and Ohm's law is obeyed.

**or**

- What are magnetic field lines? How is the direction of magnetic field at a point in a magnetic field determined using field lines?
- Two circular coils 'X' and 'Y' are placed close to each other. If the current in the coil 'X' is changed, will some current be induced in the coil 'Y'? Give reason.
- State 'Fleming's right hand rule'.

**Ans :**

- Magnetic field lines:** Path along which a hypothetical free north pole would tend to move. Direction of magnetic field at a point in a magnetic field can be determined by drawing a tangent on the magnetic field line at that point.
- Yes, some current will be induced in the coil 'Y' if current in coil 'X' is changed.  
**Reason:** With change in current in the coil X, the magnetic field associated with it also changes around the coil Y placed near it. This change in magnetic field induces a current in the coil Y.
- Fleming's right hand rule:** Stretch the thumb, forefinger and middle finger of right hand so that they are perpendicular to each other. If the forefinger indicates the direction of the magnetic field and the thumb shows the direction of motion of the conductor, then the middle finger will show the direction of induced current in the conductor.

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