Class- X Session - 2022-23

Subject - Science (086)

Sample Question Paper - 7

with Solution

Max. Marks: 80 **Time Allowed: 3 hours**

General Instructions:

i. *This question paper consists of 39 questions in 5 sections.*
ii. *All questions are compulsory. However, an internal choice is provided in some questions. A student is expected to attempt only one of these questions.*
iii. ***Section A** consists of 20 objective type questions carrying 1 mark each.*
iv. ***Section B** consists of 6 Very Short questions carrying 02 marks each. Answers to these questions should in the range of 30 to 50 words.*
v. ***Section C** consists of 7 Short Answer type questions carrying 03 marks each. Answers to these questions should in the range of 50 to 80 words*
vi. ***Section D** consists of 3 Long Answer type questions carrying 05 marks each. Answer to these questions should be in the range of 80 to 120 words.*
vii. ***Section E** consists of 3 source-based/case-based units of assessment of 04 marks each with sub-parts.*

Section A

1. Aluminum is used for making cooking utensils. Which of the following properties of aluminum are responsible for the same? **[1]**

i. Good thermal conductivity
ii. Good electrical conductivity
iii. Ductility
iv. High melting point

a) (i) and (ii) b) (i) and (iii)

c) (ii) and (iii) d) (i) and (iv)

2. Which of the following statements about the given reaction are correct? **[1]**

$3Fe(s) + 4H_2O(g) \rightarrow Fe_3O_4(s) + 4H_2(g)$

i. Iron metal is getting oxidized
ii. Water is getting reduced
iii. Water is acting as a reducing agent
iv. Water is acting as a oxidizing agent

a) (ii) and (iv) b) (iii) and (iv)

c) (i), (ii) and (iii) d) (i), (ii) and (iv)

3. The component of a chromosome that controls heredity is **[1]**

a) Histones b) Proteins

c) RNA

d) DNA

4. Alcohol produces: **[1]**

a) Non-luminous flame

b) Luminous flame

c) Sooty flame

d) Smoky flame

5. In vegetative reproduction, the new individuals are genetically: **[1]**

a) Better than the original

b) Dissimilar

c) Similar

d) Abnormal

6. You are given water, mustard oil, glycerine and kerosene. In which of these media a ray of light incident obliquely at same angle would bend the most? **[1]**

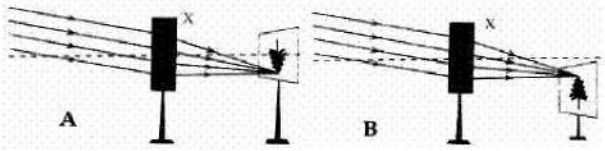
a) Glycerine

b) Kerosene

c) Water

d) Mustard oil

7. Parallel rays, from a distant tree, incident on the device X, from its distinct image on a screen as shown. The diagram, correctly showing the image of the tree on the screen, is diagram: **[1]**



a) A and the device X is a concave mirror

b) A and the device X is a convex lens

c) B and the device X is a convex lens

d) B and the device X is a concave mirror

8. Which of the following statement are correct about glands? **[1]**

A. All glands are ductless

B. The pancreas is a mixed gland

C. Glands are specific in their action

D. Endocrine glands are ductless

a) B and D

b) All of these

c) B and C

d) A and C

9. Which of the following component of our food is digested by an enzyme which is present in saliva as well as in pancreatic juice? **[1]**

a) Minerals

b) Proteins

c) Carbohydrates

d) Fats

10. Syphilis is caused by **[1]**

a) Mosquito

b) Virus

c) Parasite

d) Bacteria

11. When iron nail is placed in copper sulphate solution for a few hours the blue colour of solution will **[1]**

a) Remain blue

b) Change to colourless

c) Change to pink

d) Change to green

12. **Statement A:** Reflexes may be inborn. **[1]**
Statement B: Electrical activity of the brain is reconciled through an instrument called a stethoscope.

a) Neither statement A nor Statement B is true.

b) Both the statement A and B are true

c) Statement A is true, B is false

d) Statement B is true, A is false

13. Which of the following plants reproduce through spores? **[1]**

a) Rose

b) Amoeba

c) Hydra

d) Penicillin

14. Which of the following statements are usually correct for carbon compounds? These **[1]**

i. are good conductors of electricity

ii. are poor conductors of electricity

iii. have strong forces of attraction between their molecules

iv. do not have strong forces of attraction between their molecules

a) (ii) and (iii)

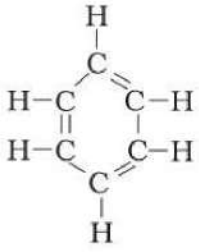
b) All of these

c) (ii) and (iv)

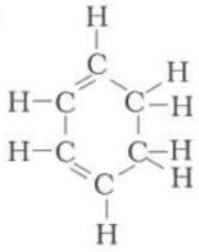
d) (i), (ii) and (iv)

15. Structural formula of benzene is **[1]**

a)

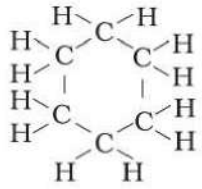


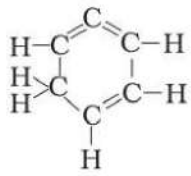
b)



c)

d)





16. Which metal is displaced when lead is put in the solution of copper chloride? **[1]**

a) Chlorine

b) Copper

c) Lead

d) All of these

17. **Assertion (A):** Electric appliances with metallic body have three connections, whereas an electric bulb has a two-pin connection. **[1]**
Reason (R): Three-pin connections reduce the heating of connecting wires.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

18. **Assertion (A):** HCl gas does not change the color of dry blue litmus paper. **[1]**
Reason (R): HCl gas dissolves in the water present in wet litmus paper to form H^+ ions.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

19. **Assertion (A):** Human body produces highly toxic substances, which if not eliminated may cause the death. **[1]**
Reason (R): Excretory substance removes nitrogenous waste from the body.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

20. **Assertion (A):** Platinum, gold and silver are used to make jewellery. **[1]**
Reason (R): Platinum, gold and silver are least reactive metals.

a) Both A and R are true and R is the correct explanation of A.

b) Both A and R are true but R is not the correct explanation of A.

c) A is true but R is false.

d) A is false but R is true.

Section B

21. i. Will the impact of removing all the organisms in a trophic level be different for different trophic levels? **[2]**

ii. Can the organisms of any trophic level be removed without causing any damage to the ecosystem?

22. What is range of vision ? **[2]**

OR

Far point of a myopic eye is 20 cm. What type of lens should be wear to see a picture on T.V. placed 2.5 m away from him ?

23. Why is less energy produced during anaerobic respiration than in aerobic respiration? **[2]**

24. Draw ray diagrams showing the image formation by a convex mirror when an object is placed at infinity. **[2]**

25. A student prepared a special ink using some basic chemical compound. The colour of the ink is blue. The imprints marked on white paper using this ink turn invisible when the paper is heated slightly and the imprints reappear when the paper is kept outside for some time. Explain the observations. **[2]**

26. Draw the electron dot structures for**:** **[2]**

a. Ethanoic acid

b. H_2S

c. Propanone

d. F_2

Section C

27. What are the advantages of cloth bags over plastic bags during shopping? **[3]**

28. There are 3 unknown metals - A, B and C. C displaces B from its oxide while with oxide of A, there is no reaction. Give the reactivity order of A, B and C. **[3]**

29. How are the power and focal length of a lens related? You are provided with two lenses of focal length 20 cm and 40 cm respectively. Which lens will you use to obtain more convergent light? **[3]**

OR

"A concave mirror of focal length f can form a magnified, erect as well as an inverted image of an object placed in front of it." Justify this statement stating the position of object with respect to the mirror in each case for obtaining these images.

30. i. State two main causes of a person developing near-sightedness. With the help of a ray diagram, suggest how he can be helped to overcome his disability? **[3]**

ii. The far point of myopic person is 100 cm in front of the eye. Calculate the focal length and power of a lens required to enable him to see distant objects clearly.

31. If a plant is releasing carbon dioxide and taking in oxygen during the day, does it mean that there is no photosynthesis occurring? Justify your Answer. **[3]**

32. The flow of current in a circular wire creates a magnetic field at its centre. How can existence of this field be detected? State the rule which helps to predict the direction of magnetic field. **[3]**

33. Ravi took three bread slices and kept them in the following conditions **[3]**

i. Slice 1 in a dry and dark place

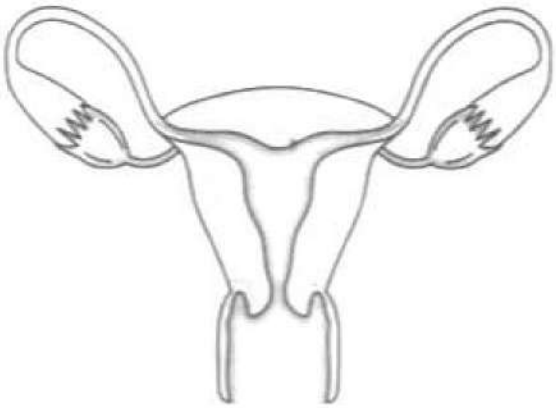
ii. Slice 2 in moist and dark place

iii. Slice 3 in moist and in refrigerator

What would he observe in each of the above conditions? Give reasons for your answer.

OR

Answer the following by carefully studying the figure:



i. Identify the image shown above.

ii. Label in the figure the ovary, oviduct, uterus, vagina.

iii. State the functions of the labeled parts in part b.

Section D

34. Explain hydrolysis of various types of salts. **[5]**

OR

When CO_2 gas pass through saturated solution of ammonical brine, two compound 'X' and 'Y' are formed. 'Y' is used as antacid and decomposes to form another solid 'Z'. Identify 'X', 'Y', 'Z' and write the chemical equations.

35. How does a solenoid behave like a magnet? Can you determine north and south poles of current carrying solenoid with the help of bar magnet? Explain. **[5]**

36. i. What are animal hormones? List their two characteristics. **[5]**

ii. Name the hormone.

a. Which brings change in male humans during the beginning of adolescence.

b. Which coordinates the level of sugar in blood?

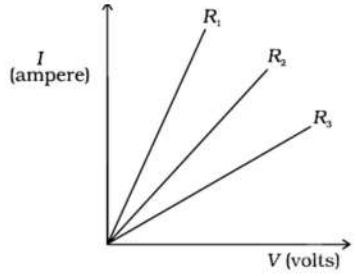
OR

How phototropism does occur in plants?

Section E

37. **Read the text carefully and answer the questions:** **[4]**

In 1827, a German physicist Georg Simon Ohm (1787-1854) found out the relationship between the current I, flowing in metallic wire and the potential difference across its terminals. He stated that the electric current flowing through a metallic wire is directly proportional to the potential difference V, across its ends provided its temperature remains the same.
The resistance of a circuit is defined as the ratio between the voltage applied to the current flowing through it. Rearranging the above relation,
$R = \frac{V}{I}$
Electric charge flows easily through some materials than others. The electrical resistance measures how much the flow of this electric charge is restricted within the circuit.



(i) What is the unit of electrical resistance?

(ii) Define Ohm's law.

(iii) From graph which resistance have high resistance?

OR

What does the slope of V-I graph at any point represent?

38. **Read the text carefully and answer the questions:** **[4]**

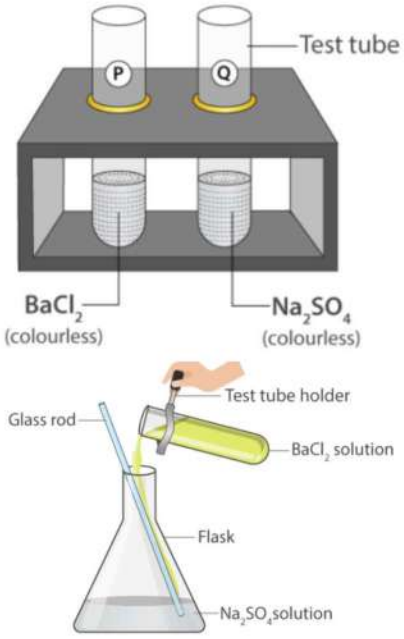
When a more reactive element displaces a less reactive element from its compound, it is called a displacement reaction. The reaction is of two types. Single displacement reaction and double displacement reaction.
Iron being more reactive than copper displaces copper from an aqueous solution of copper sulphate. This is an example of a single displacement reaction.
On adding silver nitrate solution to sodium bromide, a yellow ppt of silver bromide and solution of sodium nitrate is formed. This is an example of a double displacement reaction.

(i) When dil. sulphuric acid is added to pieces of iron sulphide, hydrogen sulphide gas is produced and soluble ferrous sulphate is formed. Which chemical reaction is involved in this process?

(ii) Mention reaction which is used for the preparation of oxygen gas in the laboratory.

(iii) What are the products formed in the double displacement reaction discussed

below?



OR

Which elements displace aluminum from its salt?

39. **Read the text carefully and answer the questions:** **[4]**

Sex determination is the method by which distinction between males & females is established in a species. The sex of an individual is determined by specific chromosomes. These chromosomes are called sex chromosomes or allosomes. X and Y chromosomes are called sex chromosomes. The normal chromosomes other than the sex chromosomes of an individual are known as autosomes.

(i) In XX-XO type of sex determination who produces two different types of gametes?

(ii) A couple has six daughters. What is the possibility of their having a girl next time?

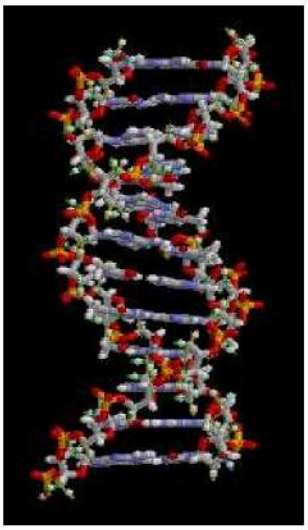
OR

What is the number of autosomes present in the liver cells of a human female?

Solution

Section A

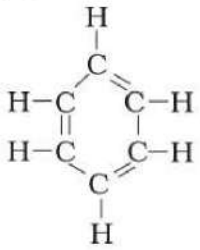
1. **(d)** (i) and (iv)
   Explanation: Aluminium has good thermal conductivity and high melting point. These properties are useful in the making of utensils. The commonly used metals in making utensils are copper, steel (an alloy of iron) and aluminium.
   Copper and aluminium are the most preferred due to their conduction of heat.
2. **(d)** (i), (ii) and (iv)
   Explanation: Here oxygen combines with water to get oxidized. Oxygen is removed from water hence it is getting reduced. Water is providing oxygen and it acts as an oxidizing agent.
3. **(d)** DNA
   Explanation: Heredity is the passing on of traits from parents to their offspring, either through asexual reproduction or sexual reproduction; the offspring cells or organisms acquire the genetic information of their parents.
   Heritable traits are known to be passed from one generation to the next via DNA, a molecule that encodes genetic information.



4. **(a)** Non-luminous flame
   Explanation: Alcohol produces a non-luminous flame. Since it burns with a clear flame and gives out a lot of heat, it is used as a fuel. The parent hydrocarbon of alcohol is alkane (which has single C-C bonds).
5. **(c)** Similar
   Explanation: Similar because It follows the principle of cloning.
6. **(a)** Glycerine
   Explanation: Refractive indices
   Water - 1.33
   Kerosenc -1.44
   Mustard oil - 1.46
   Glycerine - 1.47
   Hence Glycerine is optically dense hence ray of light bends more with glycerine.
7. **(b)** A and the device X is a convex lens
   Explanation: Inverted, sharp and real image of distant tree is formed by a convex lens.

8. **(c)** B and C
   Explanation:
   - The pancreas is known as a mixed gland because it performs functions of both exocrine and endocrine glands.
   - Most hormones produce an effect on specific target tissues that are sited at some distance from the gland secreting the hormone.
9. **(c)** Carbohydrates
   Explanation: Carbohydrates
10. **(d)** Bacteria
    Explanation: Syphilis is a sexually transmitted infection caused by the bacterium Treponema pallidum subspecies pallidum. The signs and symptoms of syphilis vary depending on which of the four stages it presents (primary, secondary, latent, and tertiary.
11. **(d)** Change to green
    Explanation: When iron nail is placed in copper sulphate solution for few hours the blue colour of the solution will change to green due to displacement of copper by iron. Iron displaces copper from copper sulphate because iron is more reactive than copper. Therefore the colour of the copper sulphate solution changes to green.
12. **(c)** Statement A is true, B is false
    Explanation:
    - Reflexes are involuntary movements or actions. Some movements are spontaneous, occurring as part of the baby's usual activity.
    - Electroencephalography (EEG) is an electrophysiological monitoring method to record the electrical activity of the brain.

    Hence, statement A is true, B is false.
13. **(d)** Penicillin
    Explanation: Penicillin reproduces by the method of spore formation. Asexual reproduction begins with the formation of asexual non-motile spores known as conidia, which are borne on the erect, aerial hyphae called conidiophores. The conidiophore may be branched or unbranched.
14. **(c)** (ii) and (iv)
    Explanation: Carbon compounds are usually poor conductors of heat and electricity. Carbon compounds are covalent compounds that have been formed by the sharing of electrons. They do not have strong forces of attraction between their molecules. They have weak interactions between their molecules. This leads to low melting points and boiling points.
15. **(a)**



    Explanation: The formula of benzene is C_6H_6. In all the arms of carbon atoms are occupied.
16. **(b)** Copper
    Explanation: Copper

17. **(c)** A is true but R is false.
Explanation: A is true but R is false.
18. **(a)** Both A and R are true and R is the correct explanation of A.
Explanation: Both A and R are true and R is the correct explanation of A.
HCl gas does not change the color of dry blue litmus paper. Blue litmus paper will change to red only when, HCl gas dissolves in the water to form H^+ ions.
19. **(b)** Both A and R are true but R is not the correct explanation of A.
Explanation: The biological process which involves the removal of harmful metabolic wastes from the body is called excretion. If these harmful wastes are not removed from the body, then it may cause the death of the organisms.
20. **(a)** Both A and R are true and R is the correct explanation of A.
Explanation: Platinum, gold and silver are highly malleable lustrous and least reactive, i.e. noble metals, so they are not corroded by air and water easily.

Section B

21. i. Yes, the impact of removing all the organisms in a trophic level will be different for different trophic levels. The lower trophic level of an ecosystem has a greater number of individuals then the higher trophic levels. Removal of producers will affect all the organisms of successive trophic levels and it will threat their survival. The removal of higher trophic levels will lead to an increase in organisms of lower tophic level and the organisms of a higher trophic level will die due to the shortage of food.
ii. No, the removal of all organisms of a trophic level will disturb the ecosystem. The killing of higher trophic level organisms will cause an explosion in the population of lower-level organisms. This will adversely affect the ecosystem.
22. The most distant point upto which the eye can see is called the far point. For normal eye, far point is infinity. The point at the shortest distance from the eye upto which the eye can see clearly is known as the near point. It is about 15 cm for a normal eye. The distance between far and near points is called range of vision. Within the range of vision, there is a certain distance where the object is most clearly seen. The distance for a normal eye is about 25 cm and is known as the least distance of distinct vision.

OR

Here u = - 2.5 m; V = - 20 cm = -0.2 m; f = ?

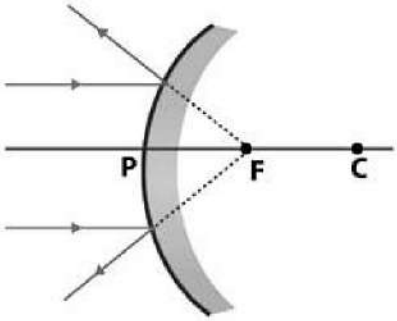
$$\frac{1}{f} = \frac{1}{v} - \frac{1}{u} = \frac{1}{(-0.2)} - \frac{1}{(-2.5)}$$

$\frac{1}{f}$ = - 5 + 0.4 = - 4.6 But $\frac{1}{f}$ = P

∴ P = - 4.6 D, $f = -\frac{1}{4.6}$ = - 0.2174 m

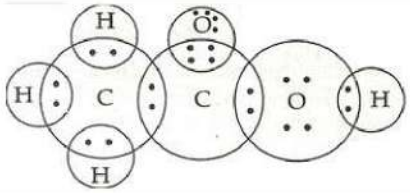
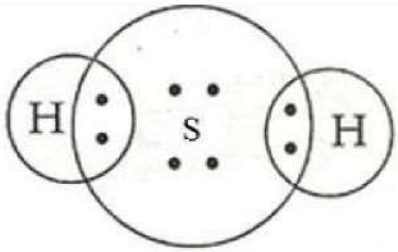
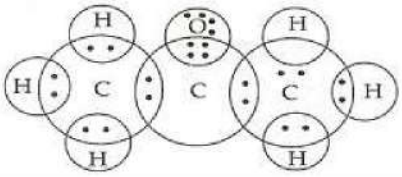
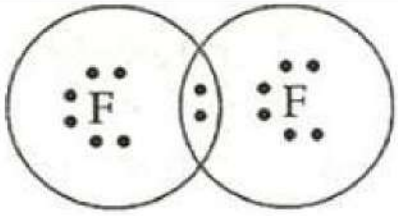
He should use concave (diverging) lens of power - 4.6 D.

23. Less energy is produced during anaerobic respiration than in aerobic respiration. There are two reasons:
a) The end products of anaerobic respiration can be further oxidized to release energy.
b) The regeneration of NADP does not yield ATP, as the electrons are not transported to oxygen.
24. The image formation by a convex mirror when an object is placed at infinity is as follows:



25. The chemical compound being used by the student is hydrated copper sulphate ($CuSO_4 \cdot 5H_2O$) which is blue in colour. On heating it loses its water of crystallization and becomes white in colour, hence white colour on white paper becomes invisible. When the paper is left exposed to atmosphere, $CuSO_4$ crystals again absorb water from surrounding and turn blue in colour.

26.

	Name of the compound	Electron dot structure of the compound
(a)	Ethanoic acid	
(b)	H_2S	
(c)	Propanone	
(d)	F_2	

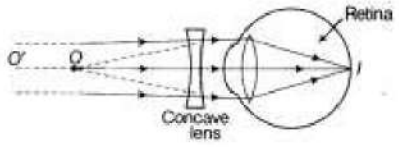
Section C

27. Cloth bags are
    a. made of biodegradable material.
    b. do not pollute our environment.
    c. can be reused over and over again.
28. C displaces B from its oxide, therefore, C is more reactive than B.
    There is no reaction when C is treated with oxide of A or C does not displace A from its oxide. So, A is more reactive than C. Thus, the reactivity order is B< C< A.
29. $P = \frac{1}{f}, P \propto \frac{1}{f}$
    The power of the lens is inversely proportional to the focal length of the lens. A lens with the focal length 20 has more power than a lens with a focal length of 40 cm. Therefore, a lens with higher power should be used to obtain more convergent light.

OR

When an object is placed between Focus and Pole of concave mirror, the image formed is virtual, magnified, erect and behind the mirror.when an object is placed between Curvature and Focus of concave mirror, the image formed is real, magnified, inverted at the same side of mirror.

30. i. Near sightedness (myopia) defect arises either because of :
    (a) decrease in focal length of eye lens.(b) elongation of the eye ball
    ii. To correct this defect of vision, he must use a concave lens of suitable focal length. The concave lens of suitable focal length will bring the image back to the retina as shown in the given figure.



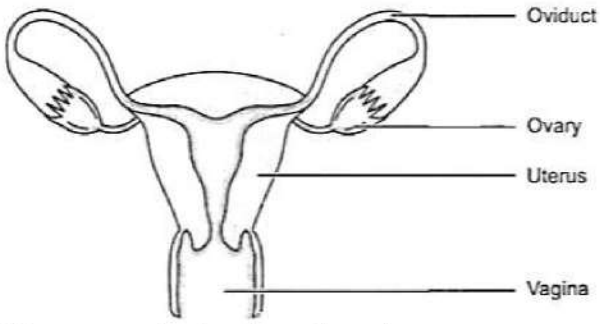
    iii. Given, v = -100 cm , u = ∞
    Using lens formula,
    $\frac{1}{f} = \frac{1}{v} - \frac{1}{u} \Rightarrow \frac{1}{-100} - \frac{1}{\infty} = \frac{1}{f}$
    f = -100 cm = -1 m.
    $\therefore$ Power of lens,
    P = $\frac{1}{f(m)} = \frac{1}{-1}$ = -1D.

31. If plant is releasing carbon dioxide and taking in oxygen during the day, it means that respiration is happening in plant. But it does not mean that photosynthesis is not happening. Carbon dioxide released after respiration comes out of stomata. For photosynthesis, the plant takes in carbon dioxide from atmosphere. In other words, plant does not depend on respiration for carbon dioxide for photosynthesis.
32. A magnetic compass can be used to detect the presence of the magnetic field around the wire.
    Maxwell's right-hand thumb rule is used to predict the direction of magnetic field. It states that " if you hold a current carrying conductor in right hand, such that the thumb points in the direction of electric current, then the direction in which fingers encircle, gives the direction of magnetic field".
33. i. In slice 1, no change will be observed or it will remain sterile because it lacks moisture, which is necessary for any organism to thrive.
    ii. A white cottony mass surrounded with black pin head-like structures are seen spreading on the surface of slice 2. This is because tiny spores of Rhizopus present in air will thrive in humid conditions. Thus slice 2 kept in moist and dark place, develops sporangia and spores, which are favourable for the growth of fungus.
    iii. In slice 3, also no change is observed (remains sterile) as it is kept at low temperature in the refrigerator. Which does not allow fungal growth. Moisture and warm conditions are necessary for fungal growth.

OR

i. The figure represents the female reproductive system.

ii. The figure with labelled part is as shown.



iii. The ovary is the female primary sex organ that produces ova or eggs. They secrete female hormones oestrogen and progesterone. The oviduct receives the egg released from the ovum and it is the site of fertilisation. The uterus is a muscular organ where implantation of zygote occurs and it takes care of the developing embryo. The vagina is a muscular tube-like structure which receives the sperms and through which the baby is delivered.

Section D

34. i. Hydrolysis of a salt of a strong acid and weak base. They give acidic solutions in water.

$$\underset{Iron(III)\ Chloride}{FeCl_3} + 3H_2O \leftrightharpoons \underset{strong\ acids}{HCl} + \underset{weakbase}{Fe(OH)_3}$$

$$\underset{CopperII)\ Sulphate}{CuSO_4} + 2H_2O \leftrightharpoons H_2SO_4 + Cu(OH)_2$$

ii. Hydrolysis of a salt of a weak acid and a strong base. They give basic solution in water.

$$\underset{SodiumII)\ Carbonate}{Na_2CO_3} + 2H_2O \leftrightharpoons \underset{weak\ acid}{H_2CO_3} + \underset{Strong\ base}{2NaOH}$$

iii. Hydrolysis of a salt of a weak acid and a weak base. They give acidic, neutral or basic (or alkaline) solutions in water depending upon the nature of weak acid and a weak base from which salt is produced.

e.g. Ammonium acetate (CH_3COONH_4) gives neutral solution on hydrolysis.

Ammonium carbonate, $(NH_4)CO_3$ given neutral solution on hydrolysis.

e.g. NaCl, KCl, KNO_3 $NaNO_3$ etc.

OR

When CO_2gas is passed through a saturated solution of ammoniacal brine, ammonium chloride and sodium bicarbonate are formed.

Compound 'Y' is used as antacid, hence compound 'Y' is sodium bicarbonate. Compound 'X' is ammonium chloride.

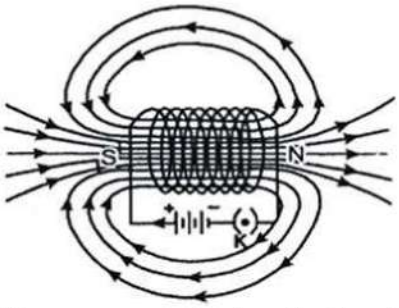
Compound 'Y' decomposes to form another solid 'Z'. Compound 'Z' is sodium carbonate.

The chemical equations for the reactions are as follows:

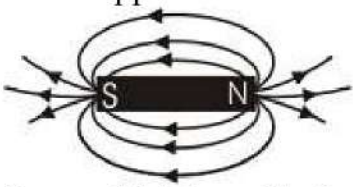
$$NaCl + H_2O + CO_2 + NH_3 \rightarrow \underset{(AmmoniumChloride)}{NH_4Cl} + \underset{Sodiumhycarbonate}{NaHCO_3}$$

$$\underset{Sodiumhycarbonate}{2NaHCO_3} \xrightarrow{Heat} \underset{Sodiumcarbonate}{Na_2CO_3(s)} + H_2O + CO_2$$

35. Solenoid is a coil of a number of turns of insulated copper wire closely wrapped in shape of a cylinder. Magnetic field around a current carrying solenoid is shown in fig.



These appear to be similar to that of a bar magnet shown in below fig.



One end [right end] of solenoid behaves like north pole and the other and [left end] behaves like south pole. Magnetic field lines inside the solenoid are in the form of parallel straight lines. This means that the field is the same at all points inside the solenoid.

When a soft iron rod is placed inside the solenoid, it behaves like a electromagnet.

36. i. Hormones are the chemical substances that regulate the biological processes in the living organisms.

Characteristics of Hormones

a. They are poured directly into the bloodstream in very small amounts and are carried throughout the body by circulatory system.

b. They act only on the specific target organs.

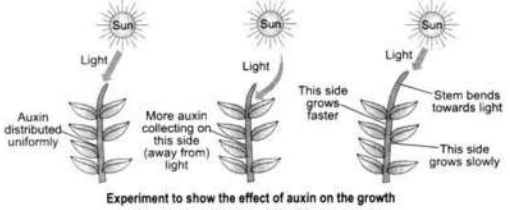
ii. a. Testosterone(produced by testes) is the hormone which brings the change in the male during adolescence.

b. Insulin (decrease blood sugar) and glucagon (increase blood sugar), secreted by pancreas coordinates the sugar level in blood.

OR

The directional movement of a plant part/plant in response to light is called phototropism. The shoot responds by bending towards light while roots respond by bending away from the light. We know that the plant stem responds to light and bends towards it due to the action of auxin hormone. When sunlight comes from above, then the auxin hormone present at the tip of the stem spreads uniformly down the stem. Due to the equal presence of auxin, both the sides of the stem grow straight and with same rapidity.This is because auxin hormone moves away from the light.

Thus, more auxin hormone is present in the left side of stem as compared to the right. The left side of stem, grows faster than its right side and therefore, the stem bends towards the right side (direction of light).



Experiment to show the effect of auxin on the growth of a plant in response to light (Phototropism)

The effect of auxin on the growth of a root is exactly opposite to that on a stem. Auxin hormone increases the rate of growth in stem but it decreases the rate of growth in a root. The side of root away from light will have all the auxin concentrated in it. Due to this, the side of root which is away from light will grow slower than the other side and make the root bends away from light.

Section E

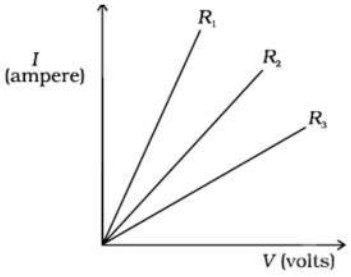
37. **Read the text carefully and answer the questions:**

In 1827, a German physicist Georg Simon Ohm (1787-1854) found out the relationship between the current I, flowing in metallic wire and the potential difference across its terminals. He stated that the electric current flowing through a metallic wire is directly proportional to the potential difference V, across its ends provided its temperature remains the same.

The resistance of a circuit is defined as the ratio between the voltage applied to the current flowing through it. Rearranging the above relation,

$R = \frac{V}{I}$

Electric charge flows easily through some materials than others. The electrical resistance measures how much the flow of this electric charge is restricted within the circuit.



(i) Ohm is the unit of electrical resistance.

(ii) According to Ohm's law, there is a relation between the current flowing through a conductor and the potential difference across it. It is given by,
$V \propto I$ $V = IR$

(iii) R_3 resistance has high resistance.

OR

The slope of V-I graph at any point represents resistance.

38. **Read the text carefully and answer the questions:**

When a more reactive element displaces a less reactive element from its compound, it is called a displacement reaction. The reaction is of two types. Single displacement reaction and double displacement reaction.

Iron being more reactive than copper displaces copper from an aqueous solution of copper sulphate. This is an example of a single displacement reaction.

On adding silver nitrate solution to sodium bromide, a yellow ppt of silver bromide and solution of sodium nitrate is formed. This is an example of a double displacement reaction.

(i) Double displacement reaction

(ii) $2KClO_3 \xrightarrow[Catalyst]{Heat} 2KCl\ (s) + 3O_2\ (g)$

It is a decomposition reaction and endothermic in nature.

(iii) Barium Sulphate, Sodium Chloride

OR

Ca elements displace aluminium from its salt.

39. **Read the text carefully and answer the questions:**

Sex determination is the method by which distinction between males & females is established in a species. The sex of an individual is determined by specific chromosomes. These chromosomes are called sex chromosomes or allosomes. X and Y chromosomes are called sex chromosomes. The normal chromosomes other than the sex chromosomes of an individual are known as autosomes.

(i) Males produce two different types of gametes
In XX-XO type and XX-XY type of sex-determining mechanisms, males produce two different types of gametes, either with or without X-chromosome (XO type), or some gametes with X-chromosome and some with Y-chromosome (XY type). Such type of sex determination mechanism is designated to be the example of male heterogamety. In both, females are homogametic and produce X type of gametes in both cases and have XX genotype.

(ii) 50%
The possibility of having a girl or boy child is equal i.e., 50%, as 50% of male gametes are Y type and 50% are X type. Fusion of egg with X-type sperm will produce a girl child.

OR

22 pairs
In human beings, 23 pairs of chromosomes are found. Out of these 22 pairs are autosomes and one pair is a sex chromosome. In men, the 23rd pair consists of X and Y chromosomes whereas in women X and X chromosomes are present.