

Class 10 - Science
Sample Paper - 06 (2022-23)

Maximum Marks: 80

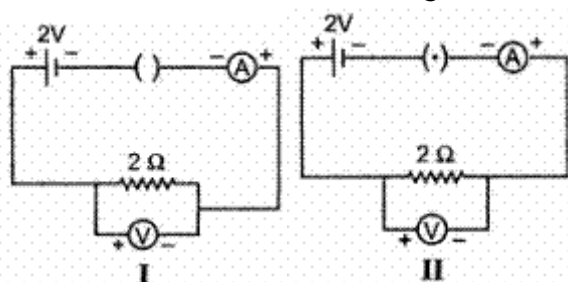
Time Allowed: : 3 hours

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. For the circuits shown in figures I and II, the voltmeter reading would be



- a) 2 V in both circuits
 - b) 0 V in circuit I and 2 V in circuit II
 - c) 2 V in circuits I and 0 V in circuit II
 - d) 0 V in both circuits
2. Select the statements that describe characteristics of genes
- i. genes are specific sequence of bases in a DNA molecule
 - ii. a gene does not code for proteins
 - iii. in individuals of a given species, a specific gene is located on a particular chromosome
 - iv. each chromosome has only one gene

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- a) (ii) and (iv)
 - b) (i) and (ii)
 - c) (i) and (iii)
 - d) (i) and (iv)
3. Instead of water, we use glycerine as a mounting medium:
- a) To enlarge the material
 - b) To clean the material
 - c) To colour the material
 - d) To prevent the material from drying
4. Choose the incorrect statement from the following regarding magnetic lines of field
- a) The direction of the magnetic field at a point is taken to be the direction in which the north pole of a magnetic compass needle points
 - b) If magnetic field lines are parallel and equidistant, they represent zero-field strength
 - c) Magnetic field lines are closed curves
 - d) The relative strength of the magnetic field is shown by the degree of closeness of the field lines
5. Which one of the following properties is not generally exhibited by ionic compounds?
- a) Electrical conductivity in solid state
 - b) Electrical conductivity in molten state
 - c) Solubility in water
 - d) High melting and boiling points
6. The name of the compound $\text{CH}_3 - \text{CH}_2 - \text{CHO}$ is
- a) Ethanol
 - b) Propanal
 - c) Ethanal
 - d) Propanone
7. HCl is a strong acid since in solution it gives
- a) more number of water molecules
 - b) less number of H^+ ions
 - c) more number of Cl^- ions
 - d) more number of H^+ ions
8. **Statement A:** Fertilization is possible if ovulation has taken place during the middle of the menstrual cycle.
Statement B: Fertilization is not possible if ovulation has taken place during the middle of the menstrual cycle.
- a) Statement A is true, B is false
 - b) Both the statement A and B are true
 - c) Statement B is true, A is false
 - d) Neither statement A nor statement B is true
9. The reaction between an acid and a base to give salt and water is called a
- a) displacement reaction
 - b) neutralization reaction

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- c) C
d) B
15. Which part of kidney act as dialysis bag?
a) distal convoluted tubules
b) Bowmans capsule
c) loop of henle
d) Glomerulus
16. A group of organisms that can interbreed to produce fertile offspring is called
a) order
b) genus
c) species
d) family
17. **Assertion (A):** Copper is used to make electric wires.
Reason (R): Copper has very low electrical resistance.
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):** pH = 7 signifies pure water.
Reason (R): At this pH, $[H^+] = [OH^-] = 10^{-7}$
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):** Our body maintains blood sugar levels.
Reason (R): Pancreas secretes insulin which helps to regulate blood sugar levels in 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):** The crown fires are most destructive as they burn the treetop.
Reason (R): Due to crown fire the temperature of that area may rise upto 700°C .
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. What would be the electron dot structure of a molecule of sulphur which is made up of eight atoms of sulphur? (**Hint** – The eight atoms of sulphur are joined together in the form of a ring.)

OR

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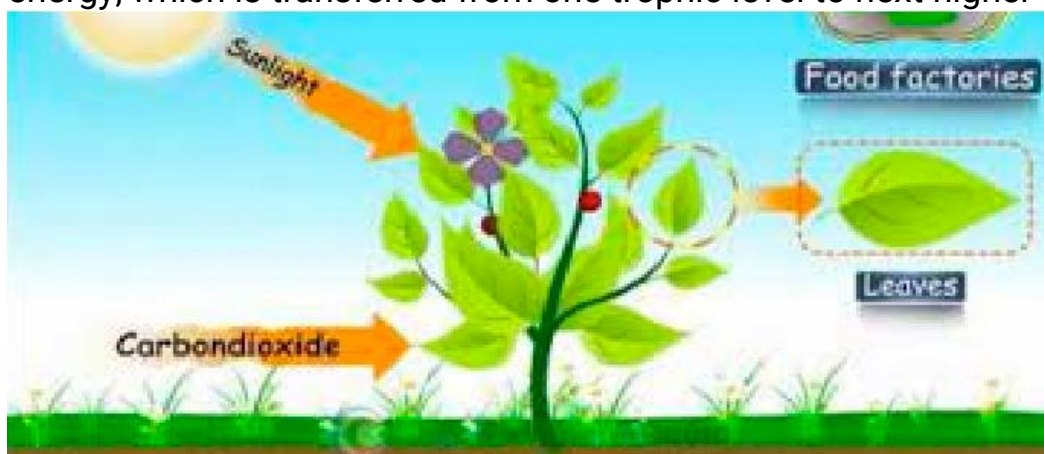
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An aldehyde as well as a ketone can be represented by the same molecular formula, say C_3H_6O . Write their structures and name them. State the relation between the two in the language of science.

22. Draw the structure of a neuron and explain its function.
23. What is a ozone and what role does it have in any ecosystem?
24. Mention the amount of solar energy captured by the green plants out of the total energy that reaches on the earth from the Sun and mention the percentage of energy, which is transferred from one trophic level to next higher one.



25. Draw a ray diagram to show the use of a convex lens for the formation of images having the following characteristics.
 - a. Real & inverted and diminished
 - b. Virtual, erect & magnified.

OR

For what position of an object, a concave mirror forms a real image equal in size to the object?

26. What is meant by functional group in an organic compound? Give the structural formula of the functional group in (i) acetic acid and (ii) ethyl alcohol.

Section C

27. What happens when dilute hydrochloric acid is added to iron filings?
28. Sudha finds out that the sharp image of window pane of her science laboratory is formed at a distance of 15 cm from the lens. She now tries to focus the building visible of her outside the window instead of the window pane without disturbing the lens. In which direction will she move the screen to obtain a sharp image of the building? What is the approximate focal length of this lens?
29. An individual may have a good health even when the whole of reproductive system is removed. What then is the function of the reproductive system?

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Answer the following:

- i. With the help of a diagram demonstrate the process of regeneration as seen in Planaria?
 - ii. Which type of cells are used by such multicellular organisms to regenerate?
30. Why do we observe difference in colours of the Sun during sunrise, sunset and noon?
31. Translate the following statement into a chemical equation and then balance it :
Barium chloride reacts with aluminium sulphate to give aluminium.
32. A pea plant with purple flowers were crossed with white flowers producing 40 plants with only purple flowers. On selfing, these plants produced 470 plants with purple flowers and 162 with white flowers. What genetic mechanism account for these results.

OR

A man with blood group A married a person with blood group O. Their daughter has blood group O. Is this information enough to tell you which of the blood group trait A or O is dominant. Why or why not?

33. How can changes of size of eyeball be one of the reason for
- i. myopic and
 - ii. hypermetropic eye?
- Compare the size of eyeball with that of a normal eye in each case. How does this changes of size affect the position of image in each case?

Section D

- 34.
- i. How is the method of extraction of metals high up in the reactivity series different from that for metals in the middle? Why cannot the same process be applied for them Name and explain the process of extraction of sodium?
 - ii. Draw a labelled diagram of electrolytic refining of copper.

OR

- i. An ore, on heating in air, give sulphur dioxide gas. Name the method in each metallurgical step, that will be required to extract this metal from its ore.
 - ii. State which of the following reactions will take place or which will not, giving suitable reason for each?
 - a. $\text{Zn(s)} + \text{CuSO}_4(\text{aq}) \rightarrow \text{ZnSO}_4(\text{aq}) + \text{Cu(s)}$
 - b. $\text{Fe(s)} + \text{ZnSO}_4(\text{aq}) \rightarrow \text{FeSO}_4(\text{aq}) + \text{Zn(s)}$
- 35.

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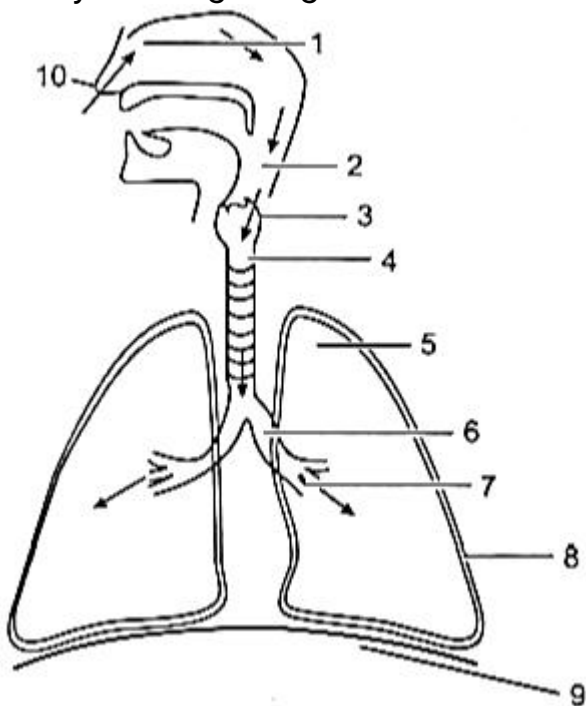
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- i. Define excretion.
- ii. Name the basic filtration unit present in the kidney.
- iii. Draw excretory system in human beings and label the following organs of excretory system which perform the following functions:
 - a. forms urine
 - b. is a long tube which collects urine from the kidney.
 - c. Store urine until it is passed out.

OR

Study the diagram given below and answer the following:



- i. Label the parts numbered 1 - 10. What does the figure represent?
 - ii. Name all the parts in a sequence through which air from outside reaches the last part of lungs.
 - iii. What is the structural and functional unit of lungs? What important role is played by them?
36. With the help of a labeled circuit diagram illustrating the pattern of field lines of the magnetic field around a current-carrying straight long conducting wire. How is the right-hand thumb rule useful to find the direction of the magnetic field associated with a current-carrying conductor?

Section E

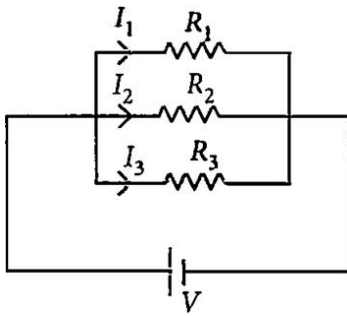
37. **Read the text carefully and answer the questions:**
If two or more resistances are connected in such a way that the same potential difference gets applied to each of them, then they are said to be connected in parallel.

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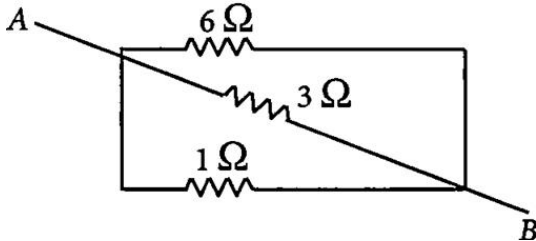


The current flowing through the two resistances in parallel is, however, not the same. When we have two or more resistances joined in parallel to one another, then the same current gets additional paths to flow and the overall resistance decreases.

- Three resistances, $2\ \Omega$, $6\ \Omega$ and $8\ \Omega$ are connected in parallel, then what will be the equivalent resistance?
- A wire of resistance $12\ \Omega$ is cut into three equal pieces and then twisted their ends together, then what will be the equivalent resistance?

OR

Three resistances are connected as shown. Calculate the equivalent resistance between A and B?



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

Following questions are based on the two tables given below. Study these tables related to blood sugar levels:

Table A (Blood glucose chart)

	Mean Blood Glucose Level (mg/dL)
Doctor's advice needed	380
	350
	315
	280
	250
	215
Good	180
	150
Excellent	115
	80
	50

39. **Table B (Blood Report of Patient X and Y)**

Time of check	Blood Glucose ranges (mg/dL)	
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	Patient X	Patient Y
Before breakfast (Fasting)	<100	70-130
Before lunch, supper and snack	<110	70-130
Two hours after meals	<140	<180
Bedtime	<120	90-15

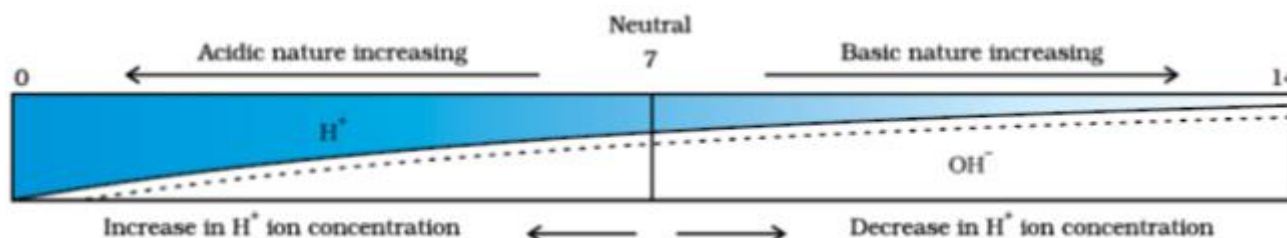
- Refer to Table B showing the blood report of the levels of glucose of patients X and Y. Infer the disease which can be diagnosed from the given data.
- Identify the hormone whose level in the blood is responsible for the above disease.
- High/low sugar and a low/high-fat diet What would you recommend to the affected patient?

OR

Refer to Table A and suggest the value of the mean blood glucose level beyond which doctor's advice is necessary.

40. Read the text carefully and answer the questions:

A scale for measuring hydronium ion in a solution is called the pH scale. The pH of a neutral solution is 7. A value of less than 7 on the pH scale represents an acidic solution. As the pH value, increases from 7 to 14 it represents OH⁻ ion concentration in solution i.e a basic solution.



- What is the pH range of the Human Body?
- The strength of acid and bases depends on which factor?
- If the pH of soil X is 7.5 while that of soil Y is 4.5, then which soil should be treated with powdered chalk to adjust its pH?

OR

Tooth decay starts when the pH of the mouth is lower than which pH?

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Solution

Section A

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1. (b) 0 V in circuit I and 2 V in circuit II

Explanation: 0 V in circuit I as key open and 2V in circuit II.

2. (c) (i) and (iii)

Explanation: Genes are units of hereditary and are responsible for inheritance. Genes control the expression of a trait or a character in an organism. Genes are located on the chromosomes inside the nucleus of the cell.

3. (d) To prevent the material from drying

Explanation: Glycerine is a good dehydrating agent. It avoids the drying of the specimen. Besides, glycerine tends to reflect light due to its refractive nature. As a result of it, the image appears clearer under the microscope. Due to these reasons, glycerine is used while preparing a temporary mount of leaf peel.

4. (b) If magnetic field lines are parallel and equidistant, they represent zero-field strength

Explanation: This statement is false about the magnetic field lines that if magnetic field lines are parallel and equidistant then they represent zero-field strength because if they are parallel and are at an equal distance then they have a uniform magnetic field and don't have zero magnetic field strength.

5. (a) Electrical conductivity in solid state

Explanation: Ionic compounds such as NaCl have a high melting point and high boiling point.

They are generally soluble in water than other organic solvents since water being polar covalent in nature breaks the ionic bonds.

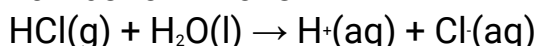
Ionic compounds are good conductors of electricity in their molten state but not in their solid-state.

6. (b) Propanal

Explanation: This compound has -CHO as active radical. It's an aldehyde. Hence, -al suffix is used.

7. (d) more number of H⁺ ions

Explanation: HCl dissociates completely in an aqueous medium to form a large number of H⁺ ions.



This is not a reversible reaction, and 100% of the HCl molecules dissociate into ions.

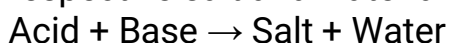
8. (a) Statement A is true, B is false

Explanation: Fertilization is possible if ovulation has taken place during the middle of the menstrual cycle.

Hence, statement A is true.

9. (b) neutralization reaction

Explanation: An acid neutralizes a base when they react with each other and respective salt and water are formed.



The reaction between acid and base both neutralize each other, hence it is also known as neutralization reaction.

Example: Sodium chloride and water are formed when hydrochloric acid reacts with

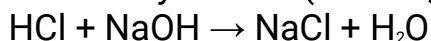
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sodium hydroxide (a strong base).



10. (c) Diploid

Explanation: Oospores are diploid as they have $2n$ number of chromosomes.

11. (a) Back cross

Explanation: Backcrossing is a crossing of a hybrid with one of its parents or an individual genetically similar to its parent, in order to achieve offspring with a genetic identity which is closer to that of the parent. It is used in horticulture, animal breeding and in production of gene knockout organisms.

12. (b) Ammeter and rheostat

Explanation: One common point only exists between ammeter, cell and rheostat.

13. (a) $i = r = 90^\circ$

Explanation: It is because when i is 90 degrees, it means incident ray is perpendicular to the refracting surface, and light travels in the shortest path that's why it bends towards the normal when it enters a denser medium. But we know that the shortest distance is perpendicular to the medium. So refracted ray doesn't bend and continues to move straight.

14. (a) D

Explanation: (A) Copper, (B) Silver, (C) Gold and (D) Germanium

Both silicon and germanium can be used as the intrinsic semiconductor when fabricating solid-state devices. In the Periodic Table of the Elements, germanium (atomic number 32) occupies the position directly below silicon (atomic number 14).

15. (a) distal convoluted tubules

Explanation: The distal convoluted tubule (DCT) is a part of the kidney nephron between the circle of Henle and the gathering conduit system of the kidney act as the dialysis bag.

16. (c) species

Explanation: A **species** is often defined as the largest group of organisms in which two individuals can produce fertile offspring, typically by sexual reproduction.

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

Explanation: The low electrical resistance of copper makes it a good conductor for electricity.

18. (d) A is false but R is true.

Explanation: $\text{pH} = 7$, signifies neutral solution.

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

Explanation: The pancreas secretes insulin which helps to regulate blood sugar levels in the body. If the sugar level in the blood rises, they are detected by the cells of the pancreas which respond by producing more insulin. As the blood sugar level falls, insulin secretion is reduced.

20. (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.

Section B

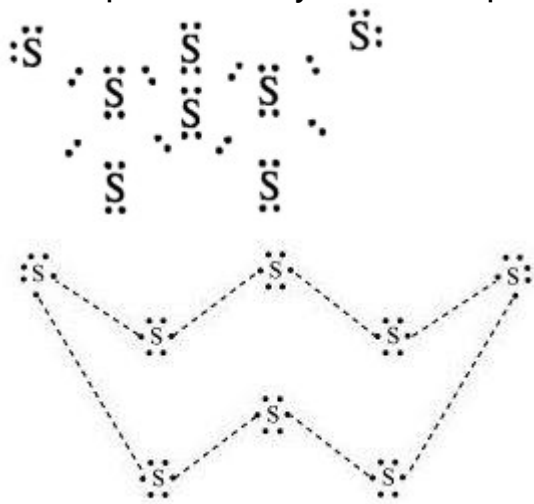
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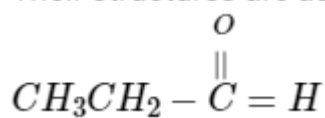
21. The atomic number (Z) of sulphur is sixteen and its electronic configuration is 2, 8, 6. The sulphur atom has six valence electrons. The chemical formula of sulphur molecule is S_8 . Each sulphur atom is linked to similar atoms on either side by single covalent bonds and thus, completes its octet. The molecule is in the form of a ring also represented by crown shape.



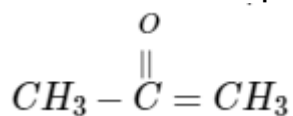
OR

An aldehyde as well as a ketone both are different functional groups and can be represented by the same molecular formula, say C_3H_6O .

Their structures are as follows:



IUPAC name Propanal



IUPAC name Propanone

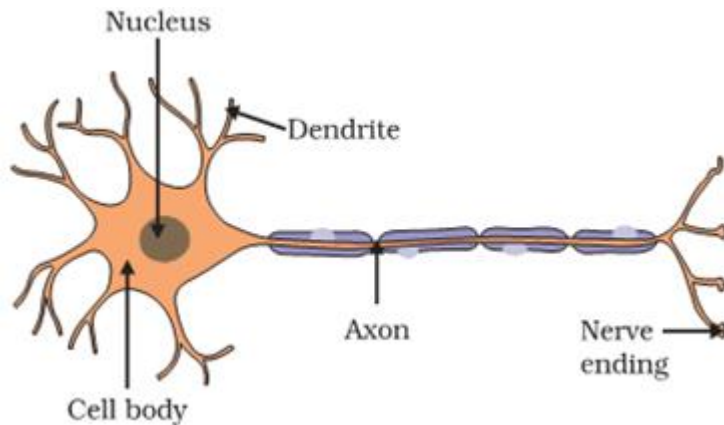
Such compounds with identical molecular formula but different structures are called structural isomers. Where number of atoms of each type remain same only the arrangement changes.

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22.

Neuron consists of three main parts- cell body, axon and nerve ending. Neuron acquires particular information through dendrite located on its cell body. This information is then passed on to the axon. Finally, axon ending passes the information into next neuron at the synapse. As soon as the impulse reaches the dendrite, an electrical impulse is generated due to certain chemical changes in neuron. When the impulse reaches axon ending some chemicals released which pass on the impulse to next neuron. These chemicals are known as neurotransmitters.

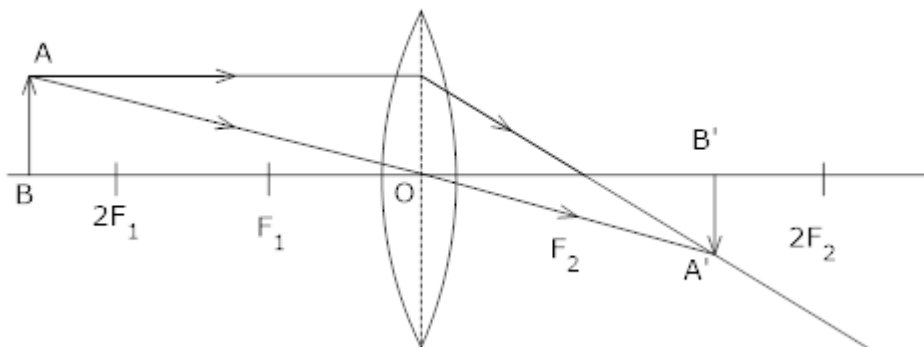
23.

Ozone is a form of oxygen. It has the molecular formula O_3 . It is present at a higher level in the atmosphere. It protects the ecosystem from the harmful effects of ultraviolet rays coming from the Sun. UV rays may cause skin cancer, cataract to us. Thus ozone forms a protective shield against harmful UV rays.

24.

In terrestrial ecosystem green plants capture about 1% of the energy of sunlight falling on earth into food by photosynthesis. On an average 10% energy is transferred from one trophic level to next higher one.

25.



a.

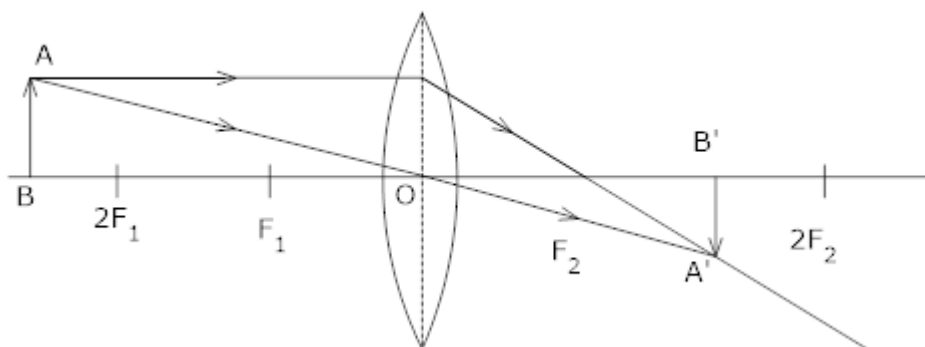
Image is formed between F_2 & $2F_2$, Diminished real and inverted.

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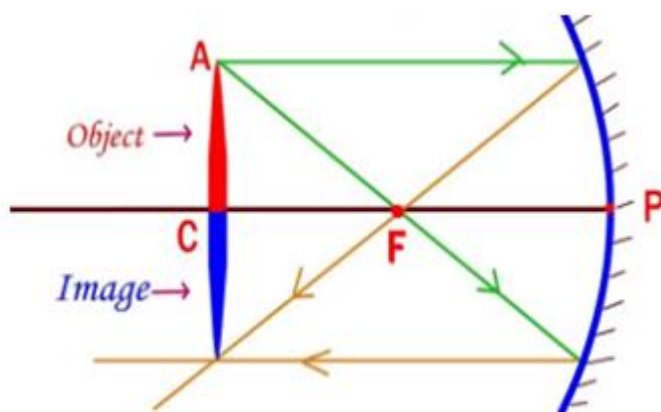


- b. Virtual & erect, highly magnified, same side of the lens where the object is placed.

OR

When an object is kept at the center of curvature of the concave mirror than the image formed is real, inverted and equal to the size of the object.

The figure below shows the ray diagram follows:

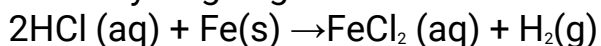


26. An atom or group of atoms which determines the properties of organic compounds is called functional group.

Compound	Structural formula	Functional group
Acetic acid	CH ₃ COOH	-COOH
Ethyl alcohol	CH ₃ CH ₂ OH	-OH

Section C

27. Hydrogen gas and Iron chloride are produced.



This is a redox reaction

$\text{Fe(0)} - 2\text{e}^- \rightarrow \text{Fe(II)}$ oxidation loss of electrons

$2\text{H}^+ + 2\text{e}^- \rightarrow \text{H}_2$ reduction: gain of electrons

So it is certainly a chemical reaction: bonds are broken and made.

HCl is not a sufficiently strong oxidizing agent to produce FeCl₃ (need Cl₂).

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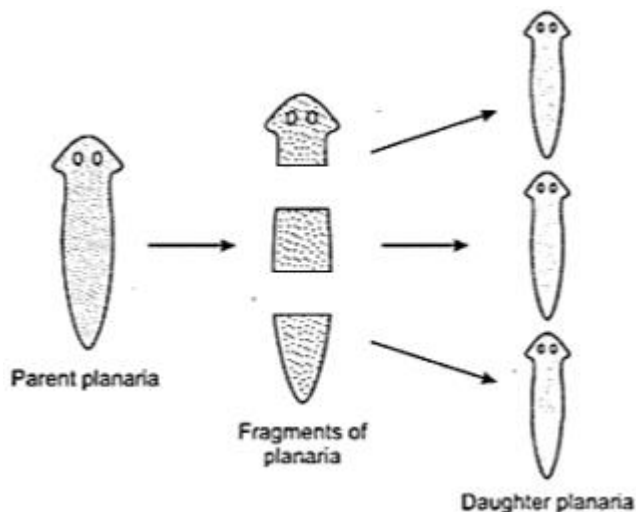
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28. Let us assume that the window pane is between F_2 and infinity from this lens and this is a convex lens. We know that when the object is between infinity and F_2 , its inverted and real image is formed between $2F$ and $2F_2$. Now, the distant building is at infinity from the lens. Its image would be formed at $2F$. So, the screen needs to be moved towards the lens in order to get a sharp image. Its approximate focal length is 10 cm (less than image distance in earlier case).
29. The main function of the reproductive system is to produce the gametes for the sexual reproduction. Reproductive system is not necessary for the survival of the individual. So even if reproductive system is fully removed, the persons may have a good health. That is why the persons who are sterile cannot reproduce but can survive.

OR

- i. Regeneration is the process by which an organism has the ability to regenerate its lost parts of the body that might have been removed by injury or by some other methods. Planaria have the ability to give rise to new individuals from their body parts. When Planaria is cut into many pieces, each piece grows into a complete organism. Regeneration is carried out by specialized cells which have the capacity to develop, proliferate and differentiate into various cell types and tissues.



- ii. A single pluripotent adult stem cell type (neoblasts) is used by such multicellular organisms to regenerate.
30. This is because of scattering of light near the horizon, most of the blue light and shorter wavelengths are scattered away by the particles present in the atmosphere during sunrise and sunset. So, the light that reaches our eyes is of longer wavelength (e.g. red). This gives rise to the reddish appearance of the sky. But during the day sun appears white as sun is near the surface of earth nearly overhead, thus the sunlight passes through much smaller distance and thus the scattering is much less and sun appears white.

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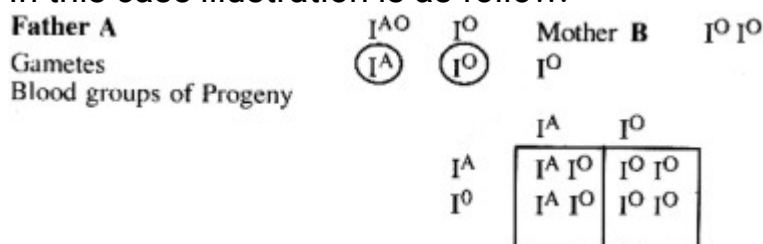
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31. Barium chloride reacts with aluminium sulphate to give aluminium and separates Barium sulfate(BaSO_4).
- $$3\text{BaCl}_2(\text{aq}) + \text{Al}_2(\text{SO}_4)_3(\text{aq}) \rightarrow 2\text{AlCl}_3(\text{aq}) + 3\text{BaSO}_4(\text{s})\downarrow$$
32. The ratio of purple flowers to white flowers in F_2 generation was approximately 3 : 1. This ratio is termed Mendelian ratio or Monohybrid ratio. It explains:
- 1) F_1 hybrids always exhibited only one of the parental form of a trait and showed dominance / recessive mechanism.
 - 2) Both parental forms of trait segregate and were expressed in F_2 (second filial) generation.
 - 3) The form of trait that appeared in F_1 offspring i.e. the dominant form was present in the F_2 generation about three times as frequently as its alternate form (470 : 162). It is approximately 3 : 1. It is due to mechanism of segregation at the time of gamete formation.

OR

Blood groups being a hereditary character, the knowledge of blood groups of parents can give information about the possible blood groups of children and vice-versa.

In this case illustration is as follow:



In the above cross 50 per cent of progeny will have A blood group and 50 per cent O blood group.

At the same time this data is insufficient. It is not mentioned father has homozygous or heterozygous A blood group. If it is homozygous A then 100 per cent of progeny will have A blood group as Gene I^A is dominant over Gene I^O .

- 33.
- i. The eye suffering from myopia or short-sightedness, has long eyeball than that of normal eye due to which the retina is at a larger distance from the eye lens thus image formation occurs before retina rather than onto it.
 - ii. The eye suffering from hypermetropia or long-sightedness has short eyeball than that of normal eye due to which the retina is at smaller distance from the eye lens thus, the formation of the image occurs behind the retina and not on retina.

Section D

- 34.

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- i. Metals placed high in the reactivity series are extracted by electrolytic reduction.

While those in the middle are extracted first by converting into oxide and then reducing by carbon. The same method cannot be used because metals have more affinity for oxygen than carbon.

Molten sodium chloride is taken for electrolytic reduction. The metals are deposited at the cathode and chlorine is liberated at the anode.

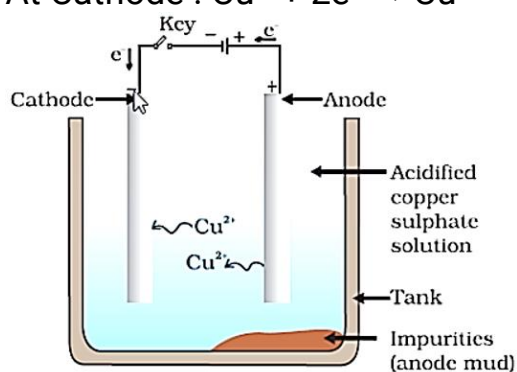
At cathode : $\text{Na}^+ + \text{e}^- \rightarrow \text{Na}$

At anode : $2\text{Cl}^- \rightarrow \text{Cl}_2 + 2\text{e}^-$

- ii. In the electrolytic refining of metal following reactions take place at the anode and cathode

At Anode : $\text{Cu} \rightarrow \text{Cu}^{+2} + 2\text{e}^-$

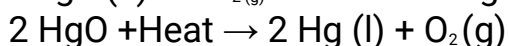
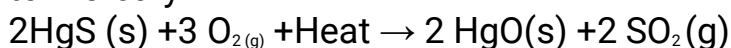
At Cathode : $\text{Cu}^{+2} + 2\text{e}^- \rightarrow \text{Cu}$



OR

- i) The ore is Cinnabar (Hg_2S)

Cinnabar is the ore of mercury (Hg) which has low reactivity and can be reduced to mercury by heating alone. So to obtain mercury from cinnabar the only step required is heating strongly in the presence of oxygen called "Roasting". In the first step, cinnabar gets converted to mercuric oxide which on further heating is reduced to mercury.



- ii) a. This reaction will take place as Zn is more reactive than Cu, so Zn will displace Cu from its salt CuSO_4 and will form colourless ZnSO_4 solution and reddish brown particles Cu.

b. This reaction will not occur as Fe is less reactive than Zn, so it will not be able to displace Zn from ZnSO_4 .

35.

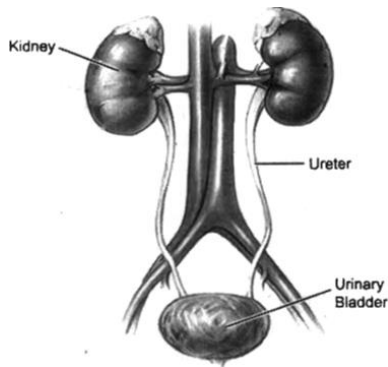
- i. The process of removing toxic waste from the human body is called excretion.
ii. The nephron is the basic filtration unit present in the kidney.

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iii.

- a. Kidney
- b. Ureter
- c. Urinary Bladder

OR

i. Label the parts numbered 1 - 10:

1. Nasal cavity,
2. Pharynx,
3. Larynx,
4. Trachea,
5. Lungs,
6. Bronchus,
7. Bronchioles,
8. Pleura,
9. Diaphragm and
10. Nostrils

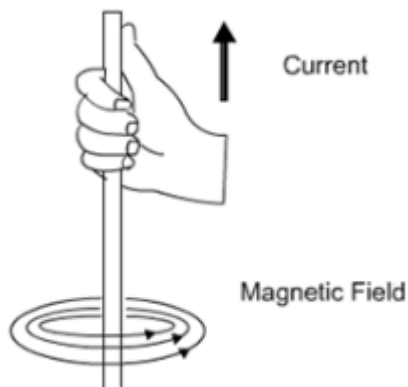
The figure represents the human respiratory system.

ii. Nostrils → Nasal

cavity → Pharynx → Larynx → Trachea → Bronchi → Bronchioles → Alveoli.

iii. Alveoli are the structural and functional unit of the lungs. They are the site of the exchange of gases between blood capillaries and lungs i.e., oxygen is taken in and carbon dioxide is given out.

36. The pattern of the magnetic field lines of the magnetic field around a current-carrying straight long conducting wire are in a circular pattern in the form of concentric circles as shown in the below diagram:



As depicted in the diagram, the direction of the magnetic field can find out by using

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the right-hand thumb rule which says that if we are holding a current-carrying conductor in the right hand such that the thumb will point towards the direction of the current. The fingers will wrap around the conductor in the direction of the field lines of the magnetic field.

Section E

37.

- i. The equivalent resistance in the parallel combination is lesser than the least value of the individual resistance.

The equivalent resistance of parallel combinations

$$\frac{1}{R_p} = \frac{1}{2} + \frac{1}{4} + \frac{1}{8}$$
$$\Rightarrow R_p = \frac{8}{7} \Omega$$

Thus equivalent resistance is less than 2Ω .

- ii. Resistance of each piece = $\frac{12}{3} = 4\Omega$ $\frac{1}{R_p} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4} = \frac{3}{4} \Rightarrow R_p = \frac{4}{3}\Omega$

OR

All the three resistors are in parallel.

$$\therefore \frac{1}{R_p} = \frac{1}{6} + \frac{1}{3} + \frac{1}{1} = \frac{1+2+6}{6} = \frac{9}{6} R_p = \frac{6}{9} = \frac{2}{3}\Omega$$

38.

- i. Diabetes, Diabetes is caused due to less or no secretion of hormone insulin by pancreas.
- ii. Insulin level in the blood is responsible for the given disease.
- iii. Low sugar high fibre diet

OR

> 180mg/dL.

39.

- i. The pH range of the Human Body is 7 to 7.8.
- ii. The strength of acids and bases depends on the number of H^+ ions produced and the number of OH^- ions produced.
- iii. Soil Y is acidic. Hence, it should be treated with powdered chalk to reduce its acidity.

OR

When the pH in the mouth falls below 5.5, tooth decay starts. Bacteria present in the mouth produce acid by degradation of sugar and food particles which remain in the mouth after eating.

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