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10

Science English Medium

10th Standard Science
Practice Question Bank

ಪರಿಕಲ್ಪನೆ ಮತ್ತು ಮಾರ್ಗದರ್ಶನ

<p>ಶ್ರೀಯುತ ಕೆ.ಎಸ್.ಪ್ರಕಾಶ್ ಉಪ ನಿರ್ದೇಶಕರು (ಆಡಳಿತ) ಶಾಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ಸಾಕ್ಷರತಾ ಇಲಾಖೆ, ಹಾಸನ.</p>	<p>ಶ್ರೀಯುತ ಪುಷ್ಪಲತಾ ಹೆಚ್.ಕೆ ಉಪ ನಿರ್ದೇಶಕರು (ಅಭಿವೃದ್ಧಿ) ಜಿಲ್ಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ತರಬೇತಿ ಸಂಸ್ಥೆ , ಹಾಸನ.</p>
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ಪರಿಕಲ್ಪನೆ ಮತ್ತು ಸ್ತರಣೆ

<p>ಶ್ರೀಯುತ ತಮ್ಮಣ್ಣಗೌಡ.ಜಿ.ಬಿ ಶಿಕ್ಷಣಾಧಿಕಾರಿಗಳು ಶಾಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ಸಾಕ್ಷರತಾ ಇಲಾಖೆ, ಹಾಸನ.</p>	<p>ಶ್ರೀಯುತ ಮೋಹನ್‌ಕುಮಾರ್.ಹೆಚ್.ಬಿ ಶಿಕ್ಷಣಾಧಿಕಾರಿಗಳು ಶಾಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ಸಾಕ್ಷರತಾ ಇಲಾಖೆ, ಹಾಸನ.</p>
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ಸ್ತರಣೆ ಮತ್ತು ನಿರ್ವಹಣೆ

<p>ಶ್ರೀಯುತ ಕೃಷ್ಣ ಗಣಿತ ವಿಷಯ ಪರಿವೀಕ್ಷಕರು ಶಾಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ಸಾಕ್ಷರತಾ ಇಲಾಖೆ, ಹಾಸನ</p>	<p>ಶ್ರೀಯುತ ರಮೇಶ್ ವಿಜ್ಞಾನ ವಿಷಯ ಪರಿವೀಕ್ಷಕರು ಶಾಲಾ ಶಿಕ್ಷಣ ಮತ್ತು ಸಾಕ್ಷರತಾ ಇಲಾಖೆ, ಹಾಸನ</p>
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ಸಾಹಿತ್ಯ ರಚನಾ ಸಂಪನ್ಮೂಲ ಶಿಕ್ಷಕರ ತಂಡ

ಶ್ರೀಯುತ ಕುಮಾರ್.ಕೆ.ಬಿ	ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ ಅಗಲಹಳ್ಳಿ, ಹಾಸನ ತಾಲ್ಲೂಕು
ಶ್ರೀಯುತ ಅಂಜನಪ್ಪ.ಕೆ.ಆರ್	ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ ಮುರುಂಡಿ ಅರಸೀಕೆರೆ ತಾಲ್ಲೂಕು
ಶ್ರೀಯುತ ಯೋಗೇಶ್ ಎಸ್.ಹೆಚ್	ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ, ಹನ್ನಾಳು ಅರಕಲಗೂಡು ತಾಲ್ಲೂಕು
ಶ್ರೀಯುತ ಆರ್.ಎಂ ಪಾಟೀಲ	ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ ಅನುಘಟ್ಟ ಬೇಲೂರು ತಾಲ್ಲೂಕು
ಶ್ರೀಯುತ ಸಿದ್ದಪ್ಪ ಎಲ್.ಎಸ್	ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ ಕುರುವಂಕ ಅರಸೀಕೆರೆ ತಾಲ್ಲೂಕು
ಶ್ರೀಮತಿ ಭಾರತಿ ಟಿ.ಎಸ್	ಸರ್ಕಾರಿ ಪ್ರೌಢಶಾಲೆ ಗವೇನಹಳ್ಳಿ, ಹಾಸನ ತಾಲ್ಲೂಕು



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1. What are the observations help to determine that a chemical reaction has occurred?

- Ans:**
- Change in State
 - Change in color
 - Release of gas
 - Change in temperature

2. What is the use of chemical equation?

Ans: A chemical reaction can be symbolically represented using chemical formulas.

3. Why should chemical equations be balanced?

Ans: The chemical equation must be balanced according to the law of conservation of mass.

4. What are the types of chemical equations? Name them.

- Ans:** Four types of chemical equations.
- Chemical combination
 - Chemical decomposition
 - Chemical displacement
 - Chemical double displacement
 -

5. What is a chemical combination? Give an example.

Ans: A chemical combination is a chemical reaction in which two or more reactants combine to form a product.

Ex: $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2 + \text{heat}$

6. What is chemical decomposition? Give an example.

Ans: The single reactant produces two or more simple products.

Ex: $2\text{FeSO}_4 \rightarrow \text{Fe}_2\text{O}_3 + \text{SO}_2 + \text{SO}_3$

7. What is the displacement function? Give an example.

Ans: A displacement reaction is when a more reactive element displaces a less reactive element in a compound.

Ex: $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$

8. What is the double displacement reaction? Give an example.

Ans: The reaction in which ions are exchanged between the reactants is called a double displacement reaction.

Ex: $\text{BaCl}_2 + \text{Na}_2\text{SO}_4 \rightarrow 2\text{NaCl} + \text{BaSO}_4$

9. What is an exothermic chemical reaction? Give an example.

Ans: A chemical reaction that releases heat with products.

Ex: $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca(OH)}_2 + \text{heat}$

10. What is thermal decomposition? Give an example.

Ans: If the fission process is carried out by heat, it is called thermal fission process.

Ex: $\text{CaCO}_3 \rightarrow \text{CaO} + \text{CO}_2$

11. What are endothermic reactions?

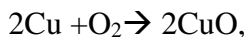
Ans: Energy absorbed during the chemical reaction.

12. What is the precipitation reaction?

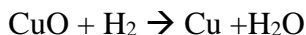
Ans: A chemical reaction that produces a water-insoluble precipitate.

13. Write the difference between oxidation and reduction reactions.

Ans: An oxidation reaction occurs when a substance gains oxygen or loses hydrogen in the reaction



In a reduction reaction a substance loses oxygen or gains hydrogen.



14. What are redox reactions? Give an example.

Ans: A reaction in which one reactant is oxidized and the other reactant is reduced.



15. What is corrosion? Give an example.

Ans: The process by which a metal is reacting by its materials such as gases, moisture, acids, etc.

Eg: Rusting of iron, black coating on silver and green coating on copper.

16. What is rancidity?

Ans: Fats and oils oxidize and change their smell and taste.

17. How to prevent corrosion?

Ans: Paint, coating grease, oil coating and galvanizing of metals.

18. Why are packets of chips filled with nitrogen?

Ans: Chips packets are filled with nitrogen to avoid the rancidity.

19. Diagram to be practiced...

Science Textbook Part-1

Figure 1.6

Electrolysis of water

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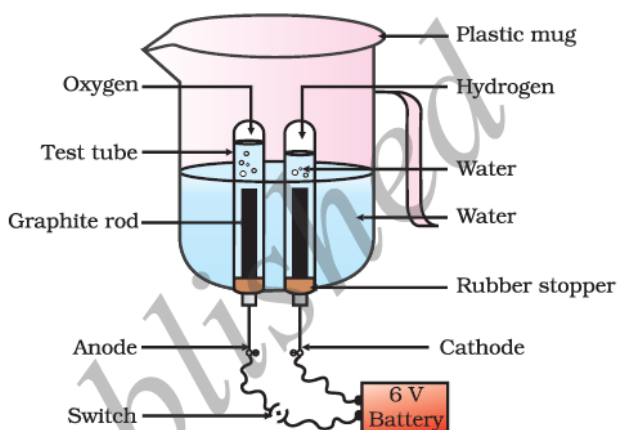


Figure 1.6
Electrolysis of water

1. What are acids? Give examples.

Ans: Acids are compounds that contain one or more hydrogen atoms and give hydronium ions (H_3O^+) when dissolved in water.

Eg: Hydrochloric acid (HCl), Nitric acid (HNO_3), Sulfuric acid (H_2SO_4), Carbonic acid (H_2CO_3), etc.

2. State two properties of acids.

Ans: Acids have a sour taste and turn blue litmus red.

3. What are bases? Give examples.

Ans: Acids are metal oxides or hydroxides that react with acids to form salts and water.

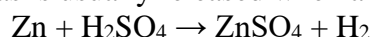
Eg: Sodium Hydroxide (NaOH), Potassium Hydroxide (KOH), Magnesium Hydroxide ($\text{Mg}(\text{OH})_2$), Ammonium Hydroxide (NH_4OH), Sodium Carbonate (Na_2CO_3), Sodium Hydrogen Carbonate (NaHCO_3), etc.

4. State two qualities of bases.

Ans: Bases have a bitter taste and turn red litmus blue.

5. Which gas is usually released when an acid reacts with a metal?

Ans: Hydrogen gas is usually released when an acid reacts with a metal.

**6. Why does dry HCl gas not change the colour of dry litmus paper?**

Ans: In the absence of water dissociation of H^+ ions in HCl molecules are not possible. So dry HCl gas does not change the color of dry litmus paper.

7. What is the effect of concentration of H^+ ions on the nature of a solution?

Ans: pH 1 to 6.9 becomes acidic as the concentration of H^+ ions in the solution increases. As the concentration of H^+ ions in the solution decreases, the pH of the solution decreases from 7.1 to 14.

8. What is the common name of the compound CaOCl_2 ?

Ans: Common name of CaOCl_2 compound bleaching powder.

9. Name the sodium compound used to soften hard water.

Ans: A sodium compound used to soften hard water is $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$ (washing soda).

10. What types of drugs are used to treat indigestion?

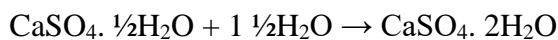
Ans: Antacid

11. Acids do not show an acidic nature in the absence of water. Why?

Ans: In the absence of water, H^+ ions in acid molecules do not dissociate. So, acids do not show acidic nature in the absence of water.

12. Plaster of Paris should be stored in a moisture proof container. Why?

Ans: Plaster of Paris absorbs moisture and turns into a hard solid.



Plaster of Paris should therefore be stored in a moisture-proof container.

13. Why curd and sour ingredients should not be stored in brass and copper vessels?

Ans: The acid in curd and sourdough reacts with brass and copper to produce hydrogen gas and toxic substances. So, curd and sour ingredients should not be stored in brass and copper vessels.

- 14. These five solutions A, B, C, D and E show 4, 1, 11, 7 and 9 respectively when tested by universal indicator. Which solution is neutral? Name the strong base? Name the Strongly acidic solution? Arrange weakly acidic and weakly basic solutions in ascending order of hydrogen ions.**
Ans: A= 4 Weak acidic solution, B= 1 Strong acidic solution, C= 11 Strong acidic solution D= 7 Neutral solution, E= 9 Weak acidic solution.
The ascending order of increasing concentration of hydrogen ions:
C (11) > E (9) > D (7) > A (4) > B (1)
- 15. Magnesium strips of equal length are taken in test tubes A and B. Hydrochloric acid (HCl) is added to test tube A, Acetic acid (CH₃COOH) is added to test tube B. Both acids have the amount and concentration. In which test tube more gas bubbles produced? Why?**
Ans: A large number of gas bubbles come with the magnesium strip fragments in test tube A. Because hydrochloric acid is stronger than acetic acid. Strong acid means it contains more hydrogen (H⁺) ions.
- 16. What is neutralization reaction?**
Ans: Acid neutralizes the effect of base and base neutralizes the effect of acid. Salt and water are produced in this reaction. This is called neutralization process.
Acid + Base → Salt + Water
Example: NaOH + HCl → NaCl + H₂O
- 17. Write the important uses of washing soda.**
Ans:
1. Used in glass, soap and paper factories.
 2. Used in the production of sodium compounds such as borax.
- 18. Write the important uses of baking soda.**
Ans:
- Used in antacids.
 - Used in soda-acid fire extinguishers.
- 19. What is salt?**
Ans: A salt is a compound formed when metal and acid, non-metal and base, acid and base react with each other.
- 20. What is chloro-alkali process?**
Ans: When an electric current is passed through an aqueous solution of sodium chloride, it decomposes to form sodium hydroxide, a process known as the chloro-alkali process.
- 21. Name two chemicals made from common salt.**
Ans: Sodium hydroxide, baking soda
- 22. Bleaching powder is an excellent disinfectant but why should it not be overused?**
Ans: The fine powder reacts with water to release chlorine gas. Excessive use of bleaching powder is not good as chlorine causes ozone destruction.
- 23. How is acid rain harmful to aquatic life?**
Ans: Acid rain is harmful to aquatic life as it destroys the eggs of aquatic life.
- 24. Solutions of compounds like alcohol and glucose do not exhibit acidic properties. Why?**
Ans: Because solutions of compounds like alcohol and glucose contain hydrogen but do not dissociate in water.
- 25. When diluting an acid, the acid itself should be added to the water and not the water to the acid. Why?**

Ans: When acid is diluting, the acid itself should be added to the water, not water to the acid, as there is a risk of explosion or burning as the dissolution of acid in water is an exothermic reaction that releases enormous amounts of heat.

26. Write the uses of bleaching powder.

Ans:

- To bleach cotton and fiber in textile factories
- As oxidizing agent in many chemical factories
- To sterilize drinking water.

27. Write an equation showing the reaction between plaster of Paris and water.

Ans: $\text{CaSO}_4 \cdot \frac{1}{2}\text{H}_2\text{O} + 1\frac{1}{2}\text{H}_2\text{O} \rightarrow \text{CaSO}_4 \cdot 2\text{H}_2\text{O}$ (Plaster of Paris) (Gypsum)

28. Write the uses of plaster of Paris.

Ans:

- Used by doctors to anchor broken bones in place
- Plaster of Paris is used in making toys, decorative items and for building smooth surfaces.

29. Diagrams to be practiced...

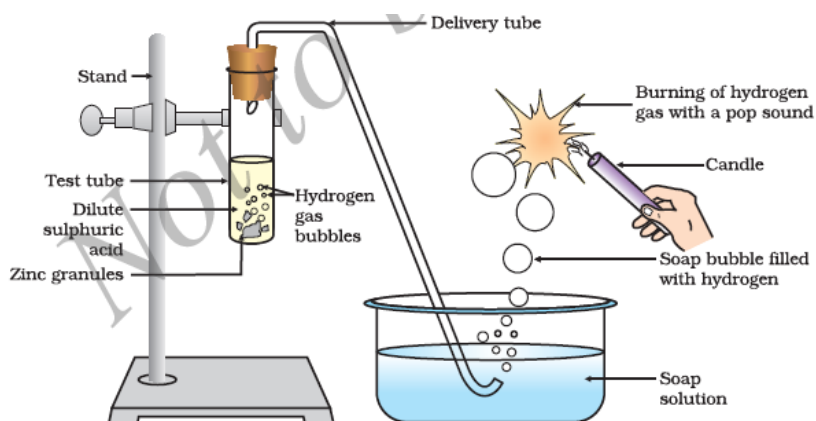


Figure 2.1 Reaction of zinc granules with dilute sulphuric acid and testing hydrogen gas by burning

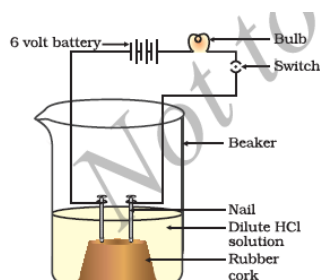


Figure 2.3
Acid solution in water
conducts electricity

1. **Ductility:** The property of metals to become wires.
2. **Malleability:** The property of metals to form sheets.
3. **Sonorous:** The property of making sound when a metal is hit.
4. **Alloy:** Homogeneous mixture of metal-metal or non-metals.
5. **Alkali:** Oxides of metal soluble in water.
6. **Anodization:** The action of forming a thick oxide layer on aluminum.
7. **Mud:** The sand-like impurities soil in the ores.
8. **Liquid metal:** Mercury.
9. **Liquid non-metal:** Bromine.
10. **Electrical conducting non-metal:** Graphite.
11. **Non-metal with luster:** Iodine.
12. **The hardest natural material:** Diamond.
13. **Mercury ores:** Cinnabar (HgS).
14. **Metals found in free state:** gold, silver, platinum.
15. **Metals available in free and combined form:** Copper and silver
16. **Metals stored in kerosene:** Sodium and potassium.
17. **Metals with highly malleable properties:** gold and silver.
18. **Metal with high ductility:** Gold.
19. **The best heat conducting metals:** silver and copper.
20. **Metallurgy:** Separating metals from ores and processing them for use.
21. **Reactivity Series:** Writing metals in descending order based on reactivity.
22. **Alkaline metals:** Lithium, sodium, potassium has low density and melting point and are soft metals which can be cut by knife.

23. **What is thermite reaction?**
Ans: The process of obtaining a metal from the metal oxide using aluminium as a reducing agent.

24. **What is galvanization?**
Ans: Thin coating of zinc to protect steel and iron from corrosion.

25. **What is zwitterionic oxide? Give an example.**
Ans: Metal oxides that produce salt and water when reacted with both an acid and a base. Eg: Aluminium oxide (Al_2O_3), Zinc oxide (ZnO)

26. **The melting point and boiling point of ionic compounds are higher. What is the reason?**
Reason: More energy is required to break the strong ionic bond between molecules.

27. **Silver vessels turn black when exposed to air. What is the reason?**
Reason: Silver reacts with sulfur in the air to form a layer of silver sulphide (HgS) which turns black.

28. **Copper loses its brown colour when exposed in air and turns green. What is the reason?**
Reason: Copper reacts with moist carbon dioxide in the air to form a green colored copper carbonate [$\text{CuCO}_3 \cdot \text{Cu}(\text{OH})_2$] layer. It turns green.

29. **Hydrogen gas is not released when the metal reacts with nitric acid. What is the reason?**
Reason: Nitric acid is a strong oxidizing agent. It oxidizes the liberated hydrogen to form water. and itself decomposes into nitrogen oxides.

30. **The metals sodium and potassium are stored in kerosene. What is the reason?**
Reason: These metals react rapidly when exposed to air and catch fire. So, these metals are stored in kerosene to preserve and avoid fire.

31. List the differences in the physical properties of metals and non-metals.

Metal	Non-metal
1. They have a verbal quality.	It does not have the quality of sound.
2. Malleable and ductile	Non-malleable and non-ductile
3. Glow	Does not glow
4. Good conductors of electricity and heat	Weak conductors of electricity and heat

32. List the differences in the chemical properties of metals and non-metals.

Metal	Non-metal
1. Electron donors	Electron Recipients
2. Hydrogen is displaced by dilute acids.	Hydrogen is not displaced by dilute acids.

33. Make a list of the differences between calcination and roasting.

Calcination	Roasting
1. Less air, high temperature	More air, high temperature
2. To convert carbonate ore into metal oxide	To convert sulfide ore into metal oxide

34. List the differences between acidic oxide and basic oxide.

Acidic oxide	Basic oxide
1. Oxide of non-metal	Oxides of metals
2. Blue litmus paper turns to red.	Red litmus paper turns to blue.

35. List the general properties of ionic compounds.

- Ans:**
- Hard solids
 - Have a high melting point and boiling point.
 - Soluble in water and not in organic solvent.
 - Non-conductors in solid state and conductors in solution state.

36. Methods to prevent the rusting of iron.

- Answer:**
- Painting.
 - Oil rubbing.
 - Galvanization.
 - Anodization.
 - Chromium coating.

37. Diagrams to be practiced...

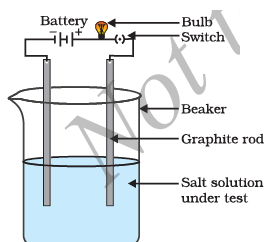


Figure 3.8
Testing the conductivity of a salt solution

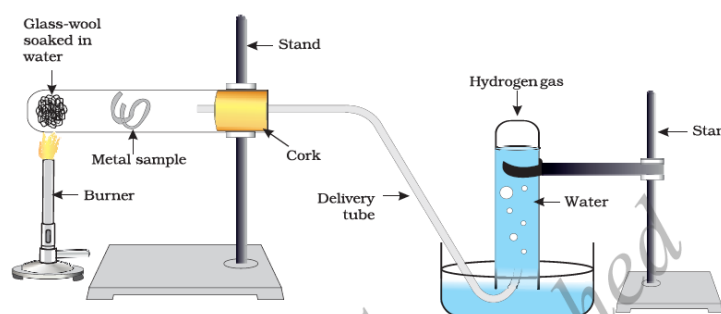


Figure 3.3 Action of steam on a metal

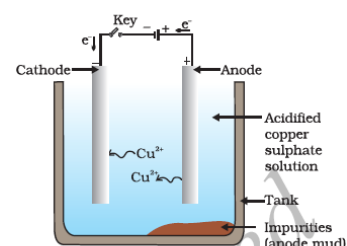


Figure 3.12
Electrolytic refining of copper.

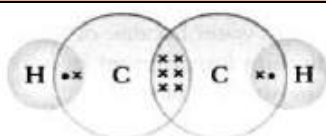
Carbon Compounds: Molecular formula, Structural formula and Electron Dot Structures
Alkanes (General Molecular Formula = C_nH_{2n+2})

Carbon number	Name	Molecular Formula	Structural Formula	Electron Dot Structure
1	Methane	CH_4	$\begin{array}{c} H \\ \\ H-C-H \\ \\ H \end{array}$	
2	Ethane	C_2H_6	$\begin{array}{c} H & H \\ & \\ H-C & -C-H \\ & \\ H & H \end{array}$	
3	Propane	C_3H_8	$\begin{array}{c} H & H & H \\ & & \\ H-C & -C & -C-H \\ & & \\ H & H & H \end{array}$	
4	Butane	C_4H_{10}	$\begin{array}{c} H & H & H & H \\ & & & \\ H-C & -C & -C & -C-H \\ & & & \\ H & H & H & H \end{array}$	
5	Propane	C_5H_{12}	$\begin{array}{c} H & H & H & H & H \\ & & & & \\ H-C & -C & -C & -C & -C-H \\ & & & & \\ H & H & H & H & H \end{array}$	

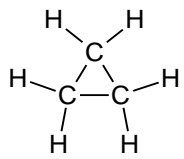
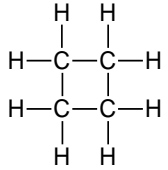
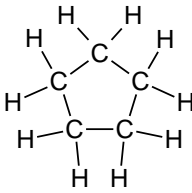
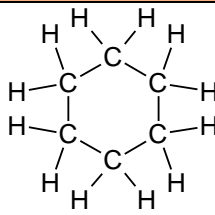
Alkenes (General Molecular Formula = C_nH_{2n})

Carbon number	Name	Molecular Formula	Structural Formula	Electron Dot Structure
2	Ethene	C_2H_4	$\begin{array}{c} H & & H \\ & \backslash & / \\ & C=C & \\ & / & \backslash \\ H & & H \end{array}$	
3	Propene	C_3H_6	$\begin{array}{c} H & & H & & H \\ & \backslash & / & & \\ & C=C & -C & -H \\ & / & & \\ H & & & H \end{array}$	
4	Butene	C_4H_8	$\begin{array}{c} H & & H & & H & & H \\ & \backslash & / & & & & \\ & C=C & -C & -C & -H \\ & / & & & & \\ H & & & H & & H \end{array}$	
5	Pentene	C_5H_{10}	$\begin{array}{c} H & & H & & H & & H & & H \\ & \backslash & / & & & & & & \\ & C=C & -C & -C & -C & -H \\ & / & & & & & & \\ H & & & H & & H & & H \end{array}$	

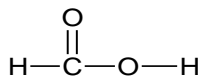
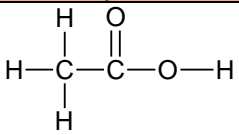
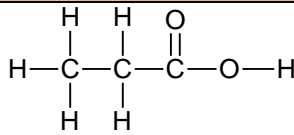
Alkynes (General Molecular Formula = C_nH_{2n-2})

Carbon number	Name	Molecular Formula	Structural Formula	Electron Dot Structure
2	Ethyne	C_2H_2	$H-C \equiv C-H$	
3	Propyne	C_3H_4	$H-C \equiv C-\overset{\overset{H}{ }}{\underset{\underset{H}{ }}{C}}-H$	$H:C \equiv C:\overset{\overset{H}{\cdot\cdot}}{\underset{\underset{H}{\cdot\cdot}}{C}}:H$
4	Butyne	C_4H_6	$H-C \equiv C-\overset{\overset{H}{ }}{\underset{\underset{H}{ }}{C}}-\overset{\overset{H}{ }}{\underset{\underset{H}{ }}{C}}-H$	$H:C \equiv C:\overset{\overset{H}{\cdot\cdot}}{\underset{\underset{H}{\cdot\cdot}}{C}}:\overset{\overset{H}{\cdot\cdot}}{\underset{\underset{H}{\cdot\cdot}}{C}}:H$
5	Propyne	C_5H_8	$H-C \equiv C-\overset{\overset{H}{ }}{\underset{\underset{H}{ }}{C}}-\overset{\overset{H}{ }}{\underset{\underset{H}{ }}{C}}-\overset{\overset{H}{ }}{\underset{\underset{H}{ }}{C}}-H$	$H:C \equiv C:\overset{\overset{H}{\cdot\cdot}}{\underset{\underset{H}{\cdot\cdot}}{C}}:\overset{\overset{H}{\cdot\cdot}}{\underset{\underset{H}{\cdot\cdot}}{C}}:\overset{\overset{H}{\cdot\cdot}}{\underset{\underset{H}{\cdot\cdot}}{C}}:H$

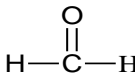
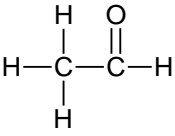
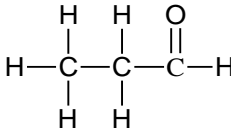
Cycle alkanes (Closed or Ring chains)

 Cyclopropane	 Cyclobutane	 Cyclopentane	 Cyclohexane
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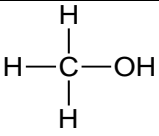
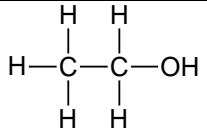
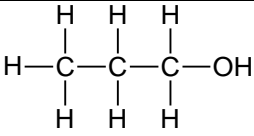
Carboxylic acids:

 Methanoic acid (Formic acid) $HCOOH$	 Ethanoic acid (Acetic acid) CH_3COOH	 Propanoic acid C_2H_5COOH
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Aldehyde:

 Methanal $HCHO$	 Ethanal CH_3CHO	 Propanal C_2H_5CHO
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Alcohol:

 Methanol CH_3OH	 Ethanol C_2H_5OH	 Propanol C_3H_7OH
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Ketone:

$\begin{array}{c} \text{H} \quad \text{O} \quad \text{H} \\ \quad \quad \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{H} \\ \quad \\ \text{H} \quad \text{H} \end{array}$ <p>Propanone CH_3COCH_3</p>	$\begin{array}{c} \text{H} \quad \text{O} \quad \text{H} \quad \text{H} \\ \quad \quad \quad \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{C}-\text{H} \\ \quad \quad \\ \text{H} \quad \text{H} \quad \text{H} \end{array}$ <p>Butanone $\text{CH}_3\text{COCH}_2\text{CH}_3$</p>	$\begin{array}{c} \text{H} \quad \text{O} \quad \text{H} \quad \text{H} \quad \text{H} \\ \quad \quad \quad \quad \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{C}-\text{C}-\text{H} \\ \quad \quad \quad \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array}$ <p>Pentanone $\text{CH}_3\text{COCH}_2\text{CH}_2\text{CH}_3$</p>
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Haloalkanes:

$\begin{array}{c} \text{H} \\ \\ \text{H}-\text{C}-\text{Br} \\ \\ \text{H} \end{array}$ <p>Bromo-methane CH_3Br</p>	$\begin{array}{c} \text{H} \quad \text{H} \\ \quad \\ \text{H}-\text{C}-\text{C}-\text{Cl} \\ \quad \\ \text{H} \quad \text{H} \end{array}$ <p>Chloro-ethane $\text{CH}_3\text{CH}_2\text{Cl}$</p>	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \\ \quad \quad \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{I} \\ \quad \quad \\ \text{H} \quad \text{H} \quad \text{H} \end{array}$ <p>Iodo-propane $\text{CH}_3\text{CH}_2\text{CH}_2\text{I}$</p>	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\ \quad \quad \quad \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{C}-\text{F} \\ \quad \quad \quad \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array}$ <p>Fluro-butane $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{F}$</p>
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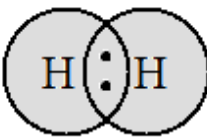
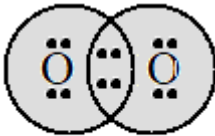
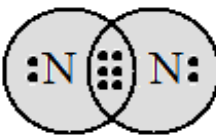
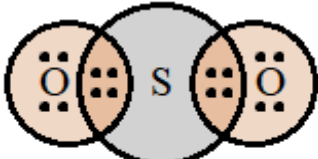
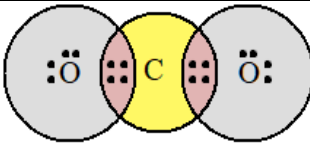
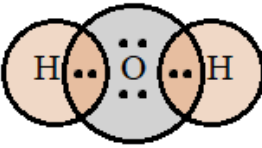
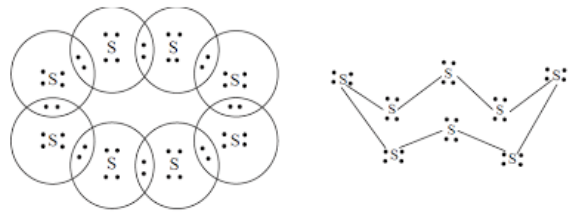
Isomers of butane

$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\ \quad \quad \quad \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{C}-\text{H} \\ \quad \quad \quad \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array}$ <p>n-butane</p>	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \\ \quad \quad \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{H} \\ \quad \quad \\ \text{H} \quad \text{C} \quad \text{H} \\ \quad \\ \text{H} \quad \text{H} \end{array}$ <p>isobutane</p>
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Isomers of pentane

$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\ \quad \quad \quad \quad \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{C}-\text{C}-\text{H} \\ \quad \quad \quad \quad \\ \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \end{array}$ <p>n-pentane</p>	$\begin{array}{c} \text{H} \quad \text{H} \quad \text{H} \quad \text{H} \\ \quad \quad \quad \\ \text{H}-\text{C}-\text{C}-\text{C}-\text{C}-\text{H} \\ \quad \quad \quad \\ \text{H} \quad \text{C} \quad \text{H} \quad \text{H} \\ \quad \\ \text{H} \quad \text{H} \end{array}$ <p>Iso-pentane</p>
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Electron Dot Structure:

 <p>$\text{H}-\text{H}$ Hydrogen Molecule</p>	 <p>$\text{O}=\text{O}$ Oxygen molecule</p>	 <p>$:\text{N}\equiv\text{N}:$ Nitrogen molecule</p>	 <p>$\text{O}=\text{S}=\text{O}$ Sulphur dioxide</p>
 <p>$\text{O}=\text{C}=\text{O}$ Carbon dioxide</p>	 <p>$\text{H}-\text{O}-\text{H}$ Water</p>	 <p>S_8 Molecule</p>	

1. What is catenation? Give an example.

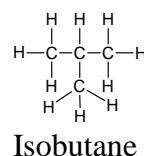
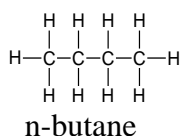
Ans: Carbon has the property of forming bonds with other atoms to form large molecules.

Eg: a. normal chain b. Branched chain c. closed chain

2. What is isomerism? Give an example.

Ans: Hydrocarbon compounds having the same molecular formula and different structural formula are called isomers. This phenomenon is called isomerism.

Eg:



3. What is tetravalent?

Ans: Carbon's ability to combine with four other carbon atoms or with single valence elements.

4. What are homologous series?

Ans: A series of compounds with a reactive group that displaces the hydrogen in the carbon chain. The difference in the molecular formula of these two compounds is $-CH_2$.

5. What are catalysts? Give an example.

Ans: Substances that change the rate of reaction without being chemically altered.

Eg: Palladium, Nickel, etc.

6. Differences between saturated carbon compounds and unsaturated carbon compounds.

Saturated carbon compounds	Unsaturated carbon compounds
1. Single bond between carbon and carbon	Double bond or triple bond between carbon and carbon
2. Less Active	More active

7. Differences between alkane, alkene and alkyne.

Alkane	Alkene	Alkyne
1. Single bond between carbon and carbon	Double bond between carbon and carbon	The triple bond between carbon and carbon
2. General Formula: C_nH_{2n+2}	General Formula: C_nH_{2n}	General Formula: C_nH_{2n-2}

8. Covalent compounds have lower melting and boiling points. What is the reason?

Reason: Because when covalent bond is formed intramolecular bond is strong whereas intermolecular bond is weak.

9. Unsaturated oils should be hydrogenated. What is the reason?

Reason: Unsaturated oils react with the air and get spoiled very quickly and produce a pungent smell. These oils can be stored for longer days if they undergo a hydrogenation reaction.

10. What is hydrogenation? Give an example.

Ans: The reaction of converting unsaturated fat into saturated fat by passing hydrogen gas in the presence of the catalyst nickel.

Eg: Vanaspati.

11. What is the addition reaction? Give an example.

Ans: When a mixture of methane and chlorine is exposed to ultraviolet rays, chlorine displaces hydrogen in methane to form a new compound.

Eg: $CH_4 + Cl_2 \xrightarrow{\text{UV rays}} CH_3Cl + HCl$
Chloromethane

12. List the properties of ethanol.

- Ans:**
- It is in liquid form at room temperature.
 - Being a good solvent, tincture is used in iodine, cough medicine and many tonics.
 - It dissolves in water.
 - Reacts with sodium and releases hydrogen gas.

13. List the properties of ethanoic acid.

- Ans:**
- Weak acid
 - It freezes in the cold winter season. Hence it is called glacial acetic acid.
 - Does not dissociate in electrolysis reaction.

14. What is vinegar?

Ans: A solution of 5-8% acetic acid in water is called vinegar.

15. What is the esterification reaction?

Ans: The formation of esters by the reaction between acid and alcohol is called esterification reaction.

16. What is saponification?

Ans: The reaction of esters with sodium hydroxide to form alcohol and sodium salts of carboxylic acid is called saponification.

17. What is soap? Give an example.

Ans: Sodium or potassium salt of long chain carboxylic acid.

Eg: Sodium Stearate, Sodium Oleate, Sodium Palmitate

18. How do micelles form?

Ans: Ionic end of the soap reacts with water, the carbon chain reacts with the oil to form a structure called micelles.

19. What are the salts that cause hardness in water?

Ans: Bicarbonate, sulphate and chloride salts of calcium and magnesium

20. What is detergent? Give an example.

Ans: Sodium salt of sulphonic acid or ammonium salt of chloride or bromide ions.

Eg: Sodium T-dodecyl benzene sulphonate.

21. List out the advantages of detergents.

Ans:

- It does not produce water insoluble precipitates.
- It is also effective in hard water.

22. List the disadvantages of detergents.

Ans:

- It is non-biodegradable.
- Causes environmental pollution.

23. Pure acetic acid is called glacial acetic acid. Why?

Reason: The melting point of pure acetic acid is very low (290K) and hence it freezes in winter. Hence it is called glacial acetic acid.

- 1. Who introduced the law of triads?**
Ans: Dobereiner
- 2. Who introduced the law of octaves?**
Ans: Newland
- 3. Who made the first attempt at classification of elements?**
Ans: Dobereiner
- 4. Define Mosley's modern periodic rule.**
Ans: The physical and chemical properties of elements are the periodic function of their atomic numbers.
- 5. What happens to the size of an atom as we move below the group in the modern periodic table?**
Ans: It increases.
- 6. What is ionizing energy?**
Ans: The energy required to remove the electron in the outermost shell of an atom is called ionizing energy.
- 7. In the modern periodic table, the atomic size increases as we move down the group. Give reason.**
Ans: Because of the addition of new shells around the nucleus.
- 8. Why are f-block elements isolated?**
Ans: The horizontal similarity is high.
- 9. What is the relation between atomic size and ionisation energy?**
Ans: Atomic size is inversely proportional to the ionisation energy.
- 10. In the periodic table, the elements of class 18 are called noble gases. Why?**
Ans: The elements of class 18 do not make chemical bonds with other elements on their own.
- 11. Why is the 18th group in the periodic table called the "zero" group?**
Ans: The 18th class in the periodic table is called the "zero" group, because the valency of the elements of this group is zero in most cases.
- 12. What is valency?**
Ans: The binding capacity of an atom is called valence of that element.
- 13. What is atomic size?**
Ans. The distance between the outermost shell of a free atom to its nucleus is called atomic size.
- 14. What are metalloids? Give an example.**
Ans: The elements which show both the characteristics of metals and non-metals are called metalloids.
Eg: boron, silicon, germanium, arsenic, antimony, tellurium and polonium.
- 15. Define Dobereiner's law of triads.**
Ans: when elements are arranged in order of increasing atomic masses, groups of three elements, having similar properties are obtained. The atomic mass of middle element of the triad being nearly equal to the average of the atomic masses of the other two elements.

16. State the limits of Dobereiner's classification.

Ans: Only three triads could be identified among the elements.

17. Define Newland's law of octaves.

Ans: when elements are placed in order of increasing atomic masses, the physical and chemical properties of every 8th element are a repetition of the properties of the first element.

18. What is the period and group in the periodic table?

Ans. In the modern periodic table, the horizontal lines are called periods.
In a modern periodic table, the columns are called groups.

19. Noble gases should be placed in a separate group. Why?

- Ans:**
- Their outer shell has a constant configuration (octet configuration)
 - Their valency is zero.
 - These do not react normally with any chemicals.
 - These are called inert gases.

20. Periodic table trends:

Property	How to go	What happens?	Reason
Atomic size	Along the period	Decreases	As more electrons are added to the outer shell
	Down the group	Increases	As new shells are added
Ionization power	Along the period	Increases	As the atomic size decreases
	Down the group	Decreases	As the atomic size increases
Electro-positivity	Along the period	Decreases	Decreases in the tendency of an atom to donate an electron.
	Down the group	Increases	Increases in the tendency of an atom to donate an electron
Electro-negativity	Along the period	Increases	Increases in the tendency of an atom to gain an electron
	Down the group	Decreases	Decreases in the tendency of an atom to gain an electron
Metallic Property	Along the period	Decreases	Electron accepting property increases
	Down the group	Increases	Electron donating property increases.

1. **Name the life process that takes place in lower organisms such as single cells.**
Ans: Diffusion process
2. **Diffusion is insufficient to meet the oxygen requirements of multicellular organisms such as humans. Why?**
Ans: For breakdown of food and release of energy
3. **What criteria do we use to determine that something has life?**
Ans: Movement, Nutrition and growth.
4. **What processes do you consider necessary to maintain life?**
Ans: Movement, respiration, transportation, growth and Nutrition,
5. **What is nutrition?**
Ans: The process by which organisms consume food, digest it, and make it into the body.
6. **Write the chemical reaction of photosynthesis.**
Ans:

$$6\text{CO}_2 + 12\text{H}_2\text{O} \xrightarrow[\text{Chlorophyll}]{\text{sun light}} \text{C}_6\text{H}_{12}\text{O}_6 + 6\text{CO}_2 + 6\text{H}_2\text{O}$$
7. **What is double blood circulation?**
Ans: Blood passes through the heart twice.
8. **What is the function of heart valves?**
Ans: Allows blood to flow in only one direction.
9. **State the function of veins.**
Ans: Various organs collect A's blood and bring it back to the heart.
10. **State the function of arteries.**
Ans: Blood is carried from the heart to various organs.
11. **What is the function of blood platelets?**
Ans: Coagulate the blood, stopping leakage.
12. **What is material displacement?**
Ans: Translocation is the transport of photosynthetic products that can be assimilated.
13. **What is the essential nutrient for sprout growth?**
Ans: Sugary substances
14. **Name the structural and functional unit of adrenal glands.**
Ans: Nephron.
15. **What are the different stages of urine production in humans?**
Ans: Glomerular filtration, differential reabsorption and tubular secretion
16. **What is excretory function?**
Ans: The process of excreting waste products produced by metabolism

17. State the function of lymph.

Ans: Lymph carries fat that has been digested and absorbed from the intestines.

18. What are the transport units of more complex plants?

Ans: Xylem and phloem

19. Name the major life processes that take place in living organisms.

Ans:

- In plants: photosynthesis, transport, respiration, excretion.
- In animals: digestion, respiration, transport, excretion. . etc

20. What are the external raw materials used for the growth of an organism?

Ans:

- Among the nutrients: food, water, oxygen,
- In plants: water, carbon dioxide, oxygen, sunlight

21. What is the role of acid in our stomach?

Ans:

- Stomach secretes hydrochloric acid.
- This creates an acidic medium to stimulate the action of the pepsin enzyme, mixing the food well.

22. What is the role of digestive enzymes?

Ans:

- Digestive enzymes break down complex food into simple substances
- They provide essential substances for biological processes.

23. How is the small intestine designed to absorb digested food?

Ans: The inner walls of the small intestine are lined with finger-shaped structures called villi, which increase the surface area for food absorption.

24. How is oxygen and carbon dioxide transported in humans?

Ans: Hemoglobin in red blood cells has a high affinity for oxygen, which carries oxygen from the lungs to other parts of the body.

25. In mammals and birds, it is necessary to distinguish between oxygenated and deoxygenated blood. Why?

Ans:

- Since mammals and birds are highly active animals
- Being warm blooded animals

26. Explain the structure and function of nephrons.

Ans:

- Structural and functional unit of adrenal glands.
- Nephron consists of major parts namely glomerulus, Baumann's sheath and loops of Henle.
- Nephrons are the adrenal units that purify the blood.
- Excrete nitrogenous wastes like urea or uric acids.

27. How does the kidney control the urine produced?

Ans:

- The amount of urine excreted is less than the amount of urine produced in Baumann's cell.
- The amount of urine produced depends on the water content of the body.
- The higher the water content in the body, the higher the amount of urine produced.

28. What are the problems caused by lack of hemoglobin in our body?

Ans: The main function of haemoglobin is to absorb oxygen. If its content in the blood decreases, the rate of oxygen absorption also decreases. Due to this, lack of sufficient oxygen to release energy leads to weakness or weakness which means anaemia

29. What are the waste products excreted in plants and animals?

Ans: In plants: carbon dioxide, oxygen, water, nitrogenous substances

In animals: carbon dioxide, ammonia, urea, uric acid, guanine and creatine In humans: carbon dioxide, excess water, ammonia, urea and uric acid.

30. Why does the heart have different chambers?

Ans: Because both oxygen and carbon dioxide must be transported through the blood, the heart has separate chambers to prevent oxygenated blood from mixing with carbon dioxide-rich blood.

31. What are the components of the transport system in humans? What are the functions of these units?

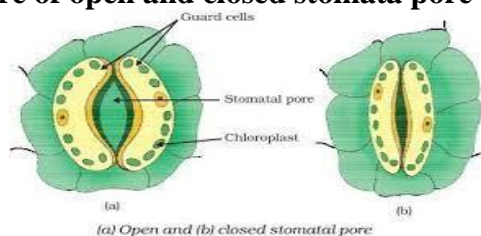
Ans: Heart, blood and vessels

Blood: transport of nutrients, oxygen, carbon dioxide and waste products

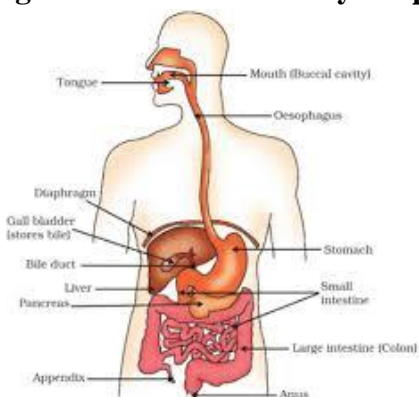
Heart: Pumps deoxygenated and oxygenated blood regularly to the lungs and other parts of the body.

Blood vessels: transport oxygenated blood from the heart to different parts of the body and deoxygenated blood from different parts of the body to the heart.

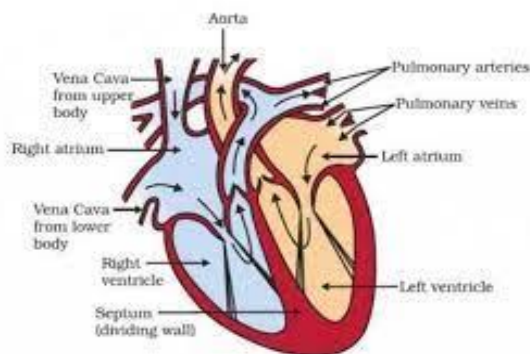
32. Draw a neat picture of open and closed stomata pore and identify the parts.



33. Draw a neat picture of the digestive tract and identify the parts.



34. Draw a nice picture of human heart and identify the parts.



1. **What is the structural and functional unit of the brain?**
Ans: Neuron
2. **What are the main parts of a neuron?**
Ans: Dendrite, Vesicle, Axon and Nerve.
3. **State the function of axon.**
Ans: Carries electrical impulses out of the neuron.
4. **What is transitive action?**
Ans: A sudden reaction to events in the environment
5. **What is the center of reaction?**
Ans: Spinal cord
6. **What is a refracted arc?**
Ans: An afferent arc is a connection between a cognitive neuron and an action neuron.
7. **What are the two components of the central nervous system?**
Ans: Brain and brain cords
8. **What is the main center of coordination of the body?**
Ans: The brain
9. **What is the main function of the peripheral nervous system?**
Ans: Creates communication between the central nervous system and other parts of the body.
10. **What are the components of the peripheral nervous system?**
Ans: Cranial nerves and brain cord nerves
11. **What is the center of thought?**
Ans: Cerebrum (cerebrum)
12. **Which parts of the brain control involuntary actions?**
Ans: Mid brain and spinal cord
13. **State the function of spinal medulla.**
Ans: Controls blood pressure, mouth-watering and involuntary actions like vomiting.
14. **What is the function of cerebrospinal fluid?**
Ans: The brain contains cerebrospinal fluid. It protects the brain from shocks.
15. **State the function of hindbrain.**
Ans: Controls accuracy of voluntary actions and body posture and body balance.
16. **Which part protects the brain cord?**
Ans: Vertebral column or spine.
17. **Which was the first hormone identified in plants?**
Ans: Auxin (indole acetic acid IAA)

18. What are plant hormones?

Ans: Plant hormones are chemicals that regulate and co-operate in plants.

19. What is the movement of plants called?

Ans: Light adaptation.

20. What is the function of intercourse?

Ans: Conjugation ultimately allows nerve impulses to be transmitted from neurons to other cells such as muscles or tendons.

21. What is the function of cerebellum?

Ans: Walking in a straight line, riding a bicycle, picking up a pencil, is responsible for maintaining body balance.

22. How does chemical adaptation take place in animals?

Ans: By the production of hormones

23. What is the function of dendrites?

Ans:

- Receive stimulation.
- A neuron carries electrical impulses to the vesicle to conduct activity.

24. How do we detect the smell of an incense stick?

Ans: When the smell of incense smoke comes into contact with the nose, it dissolves in the mucus-like substance in the nose, where there are odour receptors in the olfactory nerve, a sensory nerve in the upper walls of the nasal cavity. When these reach the olfactory region of the cerebrum, we become aware of smell.

25. Name the plant hormones.

Ans: Auxin, gibberellin, ethylene, cytokinin, abscisic acid.

26. Name the growth hormones in plants.

Ans:

- Auxin, gibberellin and cytokinin: These are growth promoting hormones
- Abscisic acid and ethylene: These are growth retarding hormones

27. State the important function of auxins.

Ans:

- Increases cell division, cell length/thickness and differentiation
- Stimulates the growth of white roots in plants
- Stimulating root, flower and bud growth

28. State the function of gibberellins.

Ans:

- Stimulates leaf and shoot growth
- Prevention of seed and bud dormancy
- This hormone is helpful in stem elongation and flower blooming

29. State the function of cytokinin.

Ans:

- Stimulates cell division,
- The development of lateral buds,
- Helpful in increasing the length of stems
- Stimulates opening of stomata in some plants.

30. List the functions of ethylene.

Ans:

- It is a plant growth retarding hormone.
- Induces flower and leaf shedding
- Promotes ripening of fruits

31. State the function of abscisic acid.

- Ans:**
- It is a plant growth retarding hormone.
 - Stimulates occlusion of the leaflets,
 - Stimulates stem growth,
 - Slows down leaf fall in plants.

32. What is geo-tropism?

Ans: The upward growth of stem and downward growth of roots in response to the pull of the earth or gravity is called geo-tropism.

33. How do auxins promote shoot growth around a base?

Ans: Plant stems are sensitive to touch. Auxins are produced in plant apices. As soon as the vines touch the base, the base becomes coiled. Auxin increases the length of vines required for this.

34. What transmission of signals is interrupted when the brain cord is injured?

Ans: When the spinal cord is injured, the transmission of signals for reflexes and involuntary actions is disrupted.

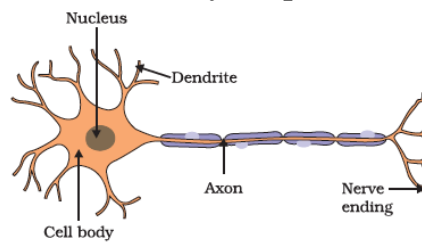
35. What is the need for coordination and control system in an organism?

Ans: Multicellular organisms, especially animals, are highly active, with each organ performing a specific function. The functional activity of all these organs requires cooperation and control.

36. Some people who have consumed alcohol have unsteady gait. What is the reason for this?

Ans: Alcohol affects the cerebellum, which is responsible for body balance and muscle movement, making them unsteady.

37. Draw a neat picture of a neuron and identify the parts.



38. Draw a nice picture of human brain and identify the parts.

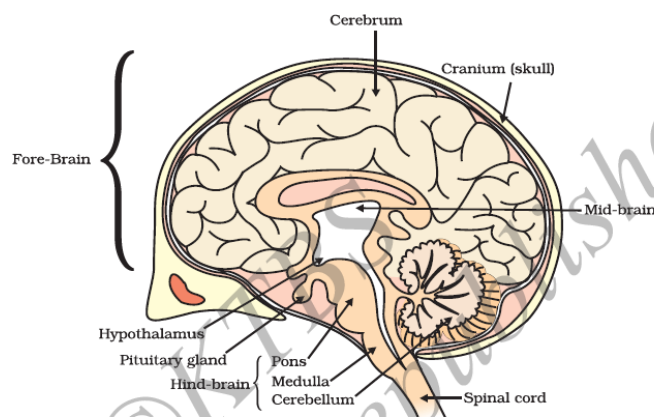


Figure 7.3 Human brain

1. What is reproduction?

Ans: Reproduction is a biological process by which new organisms arise.

2. State the types of reproduction.

Ans: Sexual reproduction and asexual reproduction.

3. What is sexual reproduction?

Ans: The fusion of male and female gametes

4. Name the male and female reproductive parts of a plant.

Ans: Male part: Stamen, Female part: Pistil.

5. Name the three parts in pistil.

Ans: Ovary, Fallopian tubes, and Fallopian tubes.

6. What is pollination?

Ans: Pollination is the transfer of pollen grains in stamens onto the stigma.

7. What is menstrual cycle?

Ans: Menstruation is the discharge of an unfertilized ovum from the vagina every twenty-eight days through the bleeding of a woman who has reached puberty.

8. What is the function of sperm cell?

Ans: Sperm follicle provides nutrition to sperm cells.

9. What is the function of prostate gland?

Ans: The prostate gland produces a fluid substance necessary for the transport of sperm cells.

10. How does the fetus get nutrition inside the mother's body?

Ans: The fetus receives nourishment from the mother's blood through a special organ called the placenta (intestinal cord).

11. Name the parts of the female reproductive system in humans.

Ans: Ovary, fallopian tubes, uterus and vagina.

12. Name the parts of the male reproductive system in humans.

Ans: Testes, vas deferens, seminal vesicles, prostate gland, urethra and penis that produce sperm.

13. A woman using Copper-T. Does it save her from sexually transmitted diseases?

Ans: Copper-T works as a contraceptive but does not help protect against sexually transmitted diseases.

14. How does chromosome number in new generation of organisms is maintained?

Ans: During sexual reproduction the gametes (haploid) of two organisms combine to form a new organism resulting in a maintaining of chromosomes number.

15. Define two types of pollination.

Ans:

Self-Pollination	Cross-Pollination
The transfer of pollen grains from the stamens of the same flower or two different flowers of the same plant onto the stigma.	The transfer of pollen grains from the stamens of the one flower to other flowers of the different plant onto the stigma.

16. Name the male and female reproductive organs in humans and the hormones they secrete.

Ans: Male Reproductive Organ: Testes, Secreted hormone- Testosterone
 Female Reproductive Organ: Ovary, Secreted hormones – estrogen and progesterone

17. What are the changes seen in girls during puberty?

Ans:

- Monthly menstruation begins,
- Breasts begin to increase in size,
- The nipples are dark in color.
- Waist size increases
- Attraction between opposite sexes increases.

18. What are the possible reasons for adopting methods of contraception?

Ans:

- (i) To maintain sexual health
- (ii) To not have children
- (iii) To prevent pregnancy
- (iv) To prevent sexually transmitted diseases like HIV.

19. What are the different methods of contraception?

Ans:

- Mechanical barrier to prevent sperm from reaching the ovum.
- Using birth control pills.
- Wearing a contraceptive device (condom) on the penis.
- Insertion of a bag into the vagina,
- Altering the balance of the body's hormones
- Implantation of contraceptive devices (copper-T) into the uterus.

20. Diagrams to be practiced...

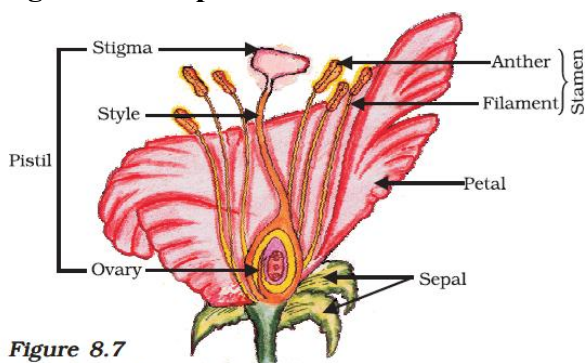


Figure 8.7
Longitudinal section of flower

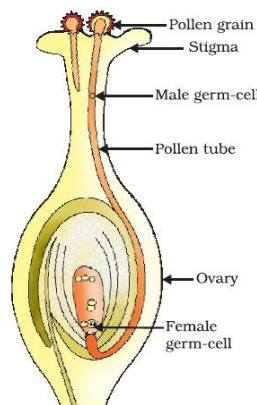


Figure 8.8
Germination of pollen on stigma

1. What is heredity?

Ans: Traits of organisms are transferred from one generation to another.

2. What are the characteristics of organisms?

Ans: Eye and hair colour, height, cheek and nose shape, ear structure.

3. What are the differences?

Ans: Variations are differences found in organisms belonging to the same species.

4. What is genetics?

Ans: Genetics is the study of genetic traits.

5. Who is the father of modern genetics?

Ans: Gregorian Mendel

6. What were the characteristics of the pea plant selected by Medal for his experiments?

Ans: Plant Length: Tall and Short, Seed Structure: Round and Wrinkled, Flower Colour: White and Purple

7. What are the reasons for the differences?

Ans: Meiosis Crossing over of chromosomes during cell division

8. What is Biodiversity?

Ans: The slow changes that take place in organisms are called evolution. Charles Darwin

9. What are fossils?

Ans: Fossils are the remains of primitive organisms preserved in rocks.

10. What is the importance of fossils?

Ans: Provides evidence for the evolution of life.

11. What is diversification?

Ans: The formation of new and different species is called diversification

12. What are the main causes of diversification?

Ans: Genetic predisposition and natural selection.

13. Traits acquired by an organism during its lifetime are not heritable. Why?

Ans: A typical cell variants are not heritable.

This is because changes in the asexual organ are not transferred to the DNA in the sex cells.

14. Give examples of fossils.

Ans: Archeopteryx fossil, dinosaur skull, petrified wood, ammonite, nyctia,

15. State the relative methods for estimating how old fossils are.

Ans: Relative method and carbon dating are used.

16. How do organisms with specific characteristics determine their numbers in a population?

Ans: Organisms increase their numbers in the ecosystem in three different ways.

a) Differences, b) Natural selection c) Genetic predisposition

17. What are homologous organs? Give an example.

Ans: Although the structure of organs is similar, the functions are different in different organisms. These are called structural organs. Eg: human hand, horse's foreleg, whale's flipper, bat's wing.

18. What are functional organs? Give an example.

Ans: Organs of different types of organisms have the same function and if there is a difference in their structure, they are called functional organs. Eg: insect wing, bird wing, bat wing, etc.

19. How do differences in species promote their survival?

Ans:

- Variations arise to adapt to changes in environment.
- For example, some types of bacteria are able to survive at very high temperatures.
- Divergences can also lead to the emergence of new types of organisms.

20. Why did Mendel choose pea plants for his experiments?

Ans:

- They could easily be grown in pots.
- Their lifespan is short.
- The differences were easily distinguishable.

21. How do you interpret elephant trampling/endangered species survival in an environment?

Ans:

- Differences are not considered here.
- Due to natural calamities or trampling by elephants, the OA species has become extinct.
- This is the genetic direction that provides diversity without any adaptations.

22. What are the effects on insect populations when plants in a particular environment suffer from diseases?

Ans: As the beetle begins to expand its colony, the plants suffer from diseases.

Because of this, the beetles do not get proper nutrition.

However, the ones that survived differed in their weight. Then when they get proper nutrition, the weight of the beetles will be the same as the beetles in the first generation, and they will start to survive in nature.

23. How is sex determined in humans/ How is sex determined in a baby?

Ans: The sex-determining chromosomes are XX in females and XY in males.

A genetic makeup of X's and Y's results in half of the children being boys and half being girls. Whether a child is a boy or a girl, they inherit the same X-chromosome from the mother. Thus, the sex of children is determined by the genes they inherit from their father. A child who inherits an X chromosome from the father will be a girl and a child who inherits a Y chromosome will be a boy. or sex determination in humans.

1. Important terms to be remembered.

Pole of mirror	Centre of the Spherical Mirror
Optic Centre	Centre of the Lens
Centre of Curvature	The centre of the sphere of which the reflecting (refracting) surface of a spherical mirror(lens) forms a part.
Radius of Curvature	The radius of the sphere of which the reflecting (refracting) surface of a spherical mirror(lens) forms a part
Principal Axis	A straight line passing through the pole and the centre of curvature of a spherical mirror.
Principal Focus	The point on principal axis at which the rays after reflection (refraction) actually (or appear to) meet
Focal Length	The distance between the centre of mirror (lens) and the principal focus
Aperture	The diameter of the reflecting surface of spherical Mirror

2. State laws of reflection.

Ans:

- (i) The angle of incidence is equal to the angle of reflection.
- (ii) The incident ray, the normal to the mirror at the point of incidence and the reflected ray all lie in the same plane.

3. State laws of Refraction.

Ans:

- (i) The incident ray, refracted ray and the normal to the interface of two transparent media at the point of incidence all lie in the same plane.
- (ii) The ratio of sine of angle of incidence to the sine of angle of refraction is a constant for the light of a given colour and for the given pair of media. (Snell's Law)

4. List the difference between Reflection and Refraction of Light.

Ans:

Reflection of Light	Refraction of Light
When light is incident on a smooth polished surface it bounces back to same medium. Eg: when light is incident on mirrors it reflects	When light travels obliquely from one medium to other medium of varying optical densities it changes its path(bends) Eg: when light travels from air to water it bends

5. List out the differences between Real image and Virtual image

Ans:

Real Image	Virtual Image
1.It can be taken on a screen. 2. It is formed in front of the mirror. 3. It is always inverted 4. The rays of light actually meet at a point after reflection or refraction.	1. It can't be taken on a screen. 2. It is formed behind the mirror. 3. It is always erect 4. The ray of light appears to diverge from a point after reflection or refraction.

6. What are the differences between Concave and Convex Mirrors.

Ans:

Concave Mirror	Convex Mirror
1. Both real and virtual images are formed 2. Both inverted and erect images are formed	1. Images are always virtual and very small 2. Images are always erect

7. List out the characteristics of image formed by a plane mirror.

- Ans: 1. The Image formed is always virtual and erect
2. The size of the image is equal to that of the object.
3. The image is laterally inverted.

8. On what factors do refractive Index of a material depend?

- Ans: 1. Nature of an object 2. Density of medium 3. The relative speed of propagation of light

9. On what factors do the lateral shift (displacement) of light depend during refraction of light?

- Ans: 1. Angle of incidence 2. Refractive index of the medium
3. Nature of the medium 4. Wavelength of incident ray.

10. List the uses of Mirrors and Lenses.

Ans:

- (i) Concave Mirror: Torch, Search-light, Vehicle headlights, shaving mirrors, Solar furnace, Dentist use concave mirror to see large images of the teeth
(ii) Convex Mirror: Rear view Mirror
(iii) Concave Lens: Spectacles, Binoculars, Torch lights
(iv) Convex Lens: Microscopes, Telescopes, Binoculars

11. Mention the reason for the refraction of light.

Ans: The change in the speed of the light when travelling from one medium to another medium

12. What is refractive Index? Mention the refractive index of water.

Ans: The extent of the change in direction that take place in a given pair of media is expressed in term of Refractive Index.

Refractive index of water $n=1.33$.

13. Define The power of a lens. Write its SI unit.

Ans: The power of lens is defined as the reciprocal of its focal length. (Or)

The degree of measure of ability of lens to converge or diverge the rays of light incident on it.

SI unit: dioptre

Formula: $P = 1/f$

14. What is Magnification?

Ans: The ratio between the height of the image to the height of the object.

15. Define 1 dioptre. mention the Power of Concave and Convex lenses.

Ans: A lens is said to have a power of 1 dioptre if its focal length is 1 metre. $1D=1m^{-1}$. The power of a convex lens is positive and concave lens is negative.

16. Image formation by a concave mirror for different positions of the object

Position of the object	Position of the image	Size of the image	Nature of the image
At infinity	At the focus F	Highly diminished, point-sized	Real and inverted
Beyond C	Between F and C	Diminished	Real and inverted
At C	At C	Same size	Real and inverted
Between C and F	Beyond C	Enlarged	Real and inverted
At F	At infinity	Highly enlarged	Real and inverted
Between P and F	Behind the mirror	Enlarged	Virtual and erect

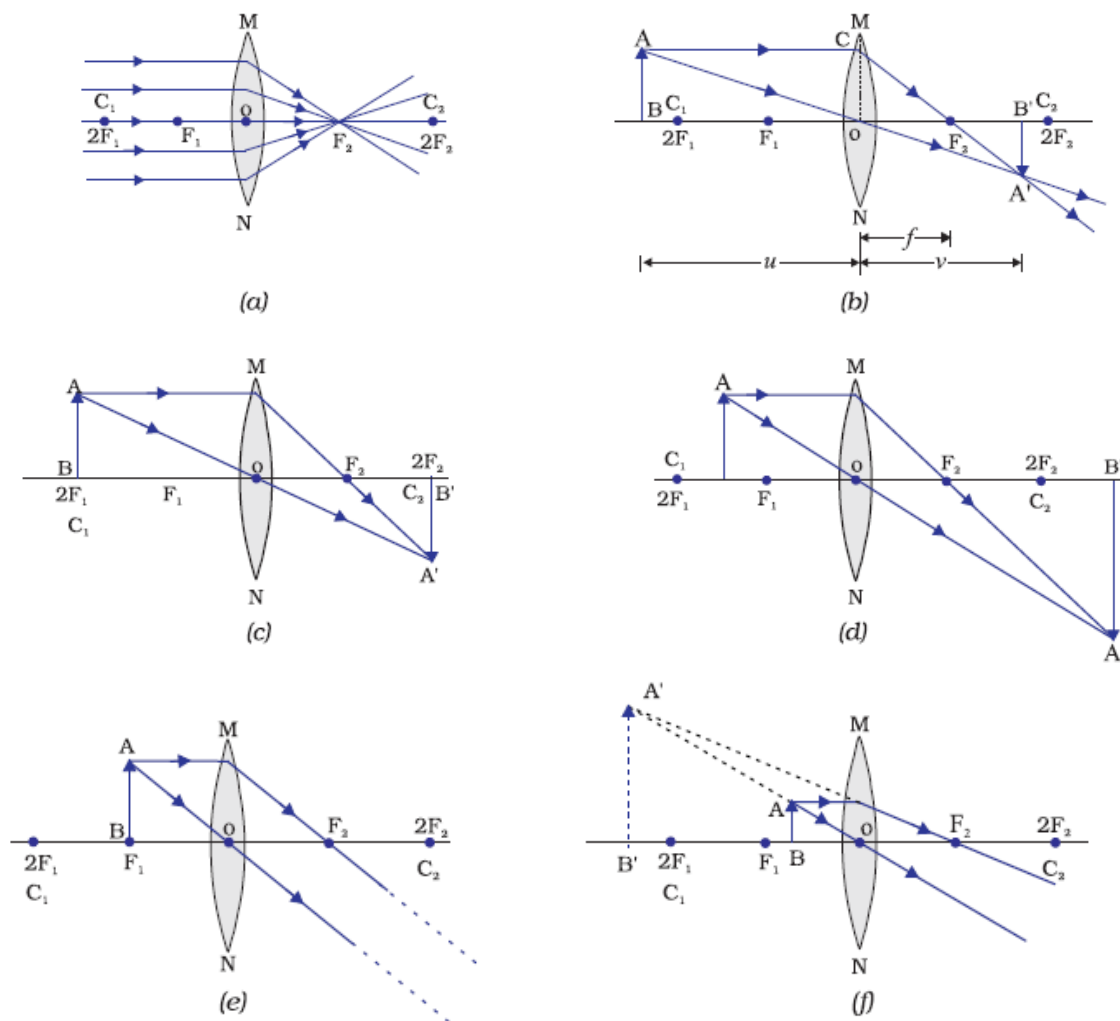
17. Nature, position and relative size of the image formed by a convex lens for various positions of the object

Position of the object	Position of the image	Size of the image	Nature of the image
At infinity	At the focus F_2	Highly diminished, point-sized	Real and inverted
Beyond $2F_1$	Between F_2 and $2F_2$	Diminished	Real and inverted
At $2F_1$	At $2F_2$	Same size	Real and inverted
Between F_1 and $2F_1$	Beyond $2F_2$	Enlarged	Real and inverted
At focus F_1	At infinity	Highly enlarged	Real and inverted
Between focus F_1 and optical centre O	On the same side of the lens as the object	Enlarged	Virtual and erect

18. Nature, position and relative size of the image formed by a concave lens for various positions of the object

Position of the object	Position of the image	Size of the image	Nature of the image
At infinity	At the focus F_1	Highly diminished, point-sized	Virtual and erect
Between infinity and optical centre O	Between focus F_1 and optical centre O	Diminished	Virtual and erect

19. Diagrams to be practice:



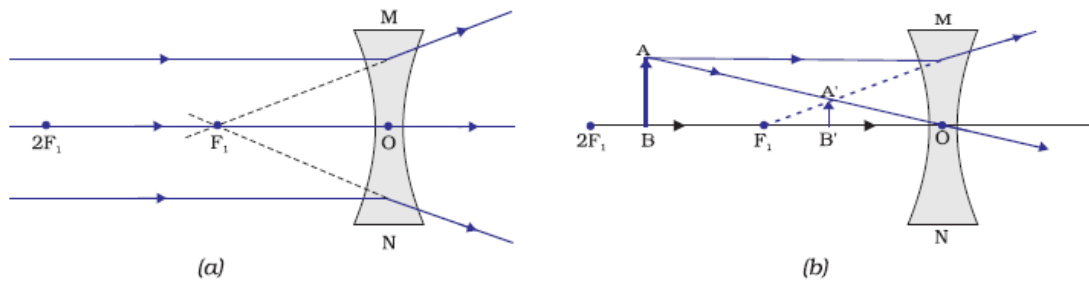


Figure 10.17 Nature, position and relative size of the image formed by a concave lens

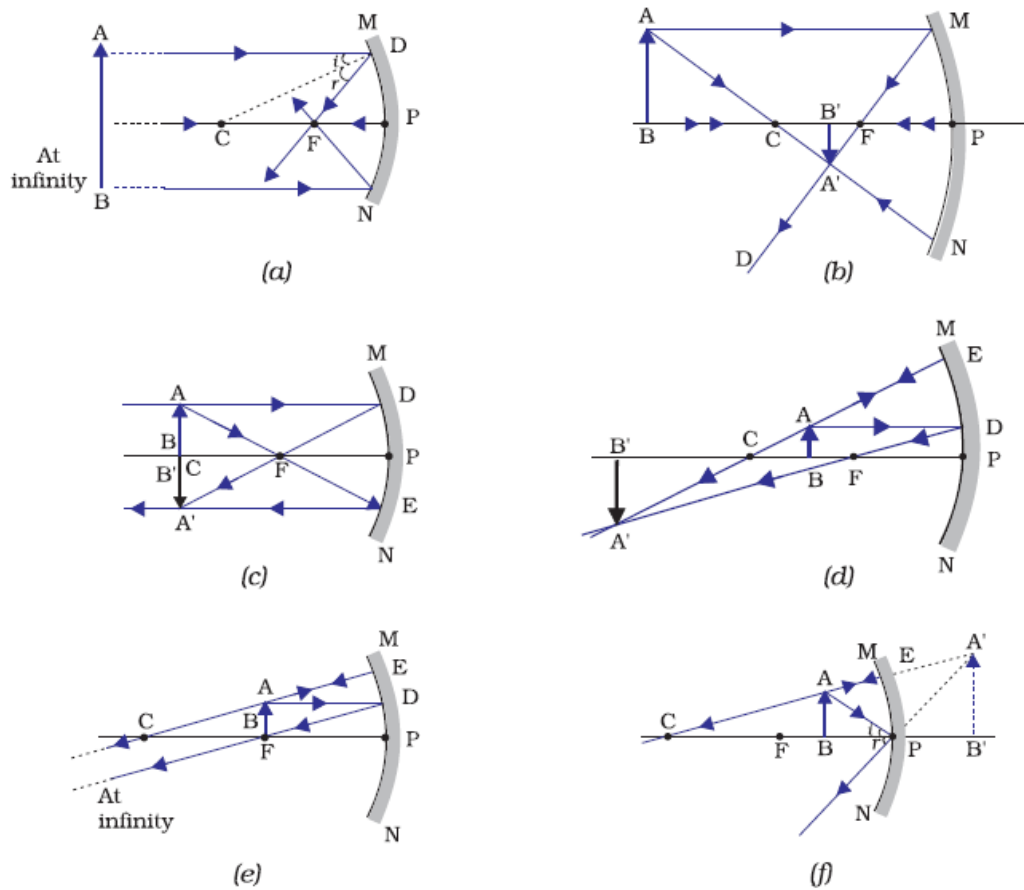


Figure 10.7 Ray diagrams for the image formation by a concave mirror

1. List the different parts of the eye and their functions.

Ans: Pupil: Controls the amount of light entering the eye.
 Eye lens: Forms an inverted real image of an object onto the bird's eye.
 Optic disc: Thin membrane of vast number of light visual receptor cells.

2. What is eye accommodation?

Ans: Accommodative power is the ability of the eye to adjust its focal distance to see distant and near objects.

3. What are near points and far points for normal vision?

Ans: For normal vision the near point is 25 cm, and the far point is infinity

4. What is the Tyndall effect?

Ans: The phenomenon of light scattering by dark matter is called Tyndall effect.

5. What is dispersion of light?

Ans: The splitting of white color into its different colored components is called chroma dispersion of light.

6. Mention eye defects and remedies

Ans: Hypermetropia or farsightedness: A condition in which distant objects can be seen clearly but close objects cannot be seen clearly Convergent distance of the eye lens is too long Too short of the eyeball.

Can be corrected with a convex lens of suitable power.

Myopia or nearsightedness: Can see near objects clearly but cannot see distant objects clearly Excessive curvature of the lens of the eye, the eyeball being longer than normal.

Can be corrected with the help of your lens of suitable power

Presbyopia: In the elderly, the ability of the eye to adapt decreases, the near point gradually drifts away, and the near point gradually drifts away, a defect in which close objects cannot be seen clearly.

7. Why does the clear sky appear blue?

Ans: When sunlight enters the atmosphere, tiny particles in the air scatter more blue (shorter wavelength) than red (longer wavelength).

8. Why do the stars twinkle?

Ans: Starlight is continuously refracted before entering the Earth's atmosphere and reaching the Earth. As the path of the light rays from the stars changes slightly, the apparent position of the stars changes and the starlight entering the eye appears twinkling.

9. Why do planets not twinkle?

Ans: The planets are very close to the Earth and the average difference of light reaching our eye at all points A is equal.

10. Why is the sun red in the morning?

Ans: Red color with higher wavelengths is less scattered by atmospheric particles near the horizon.

11. Why does the sky appear black to the astronaut instead of blue?

Ans: Because there is no atmosphere there, the phenomenon of light scattering does not occur

12. Name the maximum and minimum bending colors in the color spectrum of light.

Ans: Maximum-Violet, Minimum- Red

13. Diagrams to be practiced:

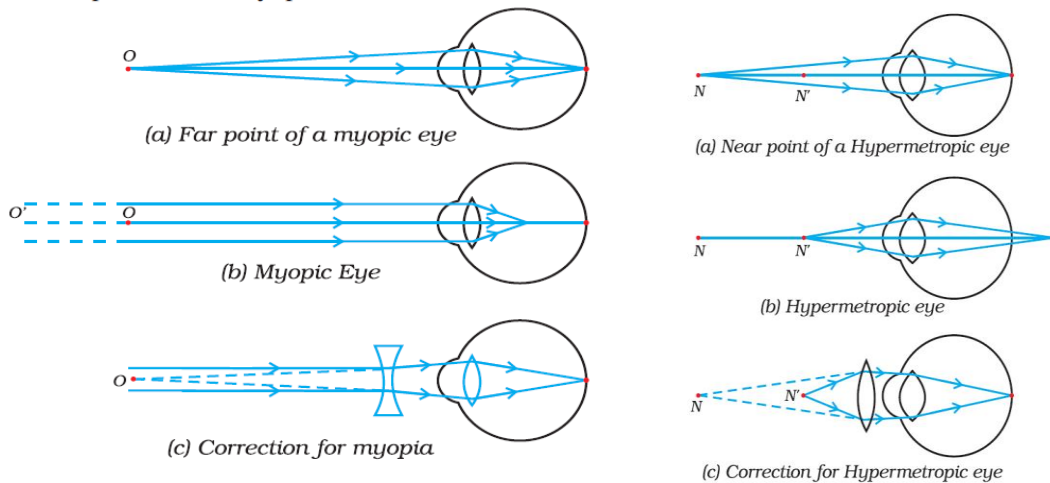


Figure 11.2
(a), (b) The myopic eye, and (c) correction for myopia with a concave lens

Figure 11.3
(a), (b) The hypermetropic eye, and (c) correction for hypermetropia
N = Near point of a hypermetropic eye.
N' = Near point of a normal eye.

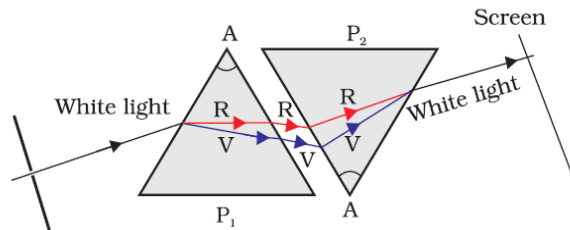


Figure 11.6 Recombination of the spectrum of white light

1. What is an electric circuit?

Ans: Continuous and looping path of electric current.

2. What is Resistance?

Ans: The property of a conductor that resists the flow of charges flowing through the conductor.

3. What is variable resistance?

Ans: A device that controls current without changing the source of voltage.

4. State Ohm's Law.

Ans: The electric potential between a metal wire in an electric circuit at constant temperature is directly proportional to the current flowing through it.

$$V \propto I$$

$$V / I = \text{constant}$$

$$V/I = R$$

$$V = IR$$

5. What is a fuse? How should it be arranged in Circuit?

Ans: When any improperly high current flows through the equipment in a circuit, the wire melts and cuts off the circuit, the device that protects them is called a fuse. Fuses are connected in series in an electrical circuit.

6. What are the factors on which the impedance of a conductor depends?

Ans: Length of conductor, cross section of conductor, physical property of material, temperature

7. It is convenient to connect electrical appliances in parallel rather than in series. Why?

Ans: A parallel connection is especially useful when each electrical appliance has a different impedance and requires a different current to operate properly. / In parallel arrangement each electrical appliance can be used separately.

In a series arrangement, the current flowing in the circuit is constant in all parts of the circuit, so all the devices cannot operate at the same value of current.

If any one component / equipment fails, then the circuit breaks down.

8. How to connect an ammeter and voltmeter in an electrical circuit? What is the use of these devices in electronics?

Ans:

- Ammeter should be connected in series.
- Voltmeter should be connected in parallel.
- Ammeter is used to measure electric current.
- Voltmeter is used to measure electrical voltage.

9. Name the devices that work on the heat producing effect of electric current.

Ans: Electric iron box, electric stove, electric heater, electric bulb. Electric fuse

10. Explain the meaning of the statement "The difference between two points is 1v".

Ans: If 1 joule of work is done in bringing a charge of 1 coulomb (1 C) between two points of any consecutive conductor from one point A to another point B, then the potential difference between the two points is 1v.

11. Three formulas used to find electric potential

- $P=VI$ or $P=IV$
- $P=I^2R$
- $P=V^2/R$

12. Write the differences between series connection of resistors and parallel connection of resistors.

Ans:

Series connection of resistors

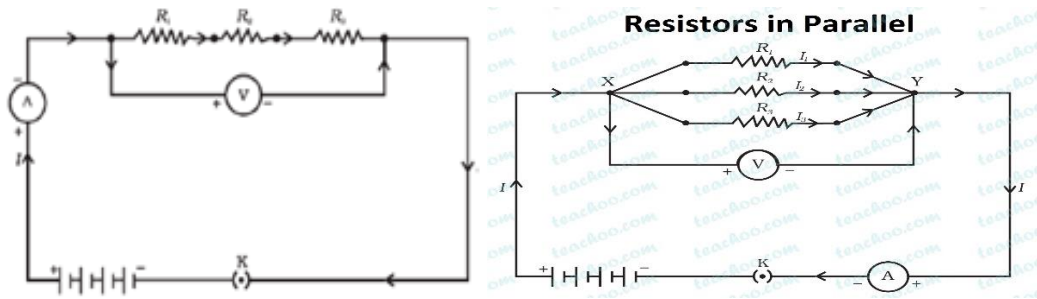
- Here the resistors are connected in order from one end to the other end.
- Here equal current flows through each resistor.
- Here, if any one component fails, the power supply of the entire circuit will be interrupted.
- Formula- $R_s = R_1 + R_2 + R_3$

Parallel connection of resistors

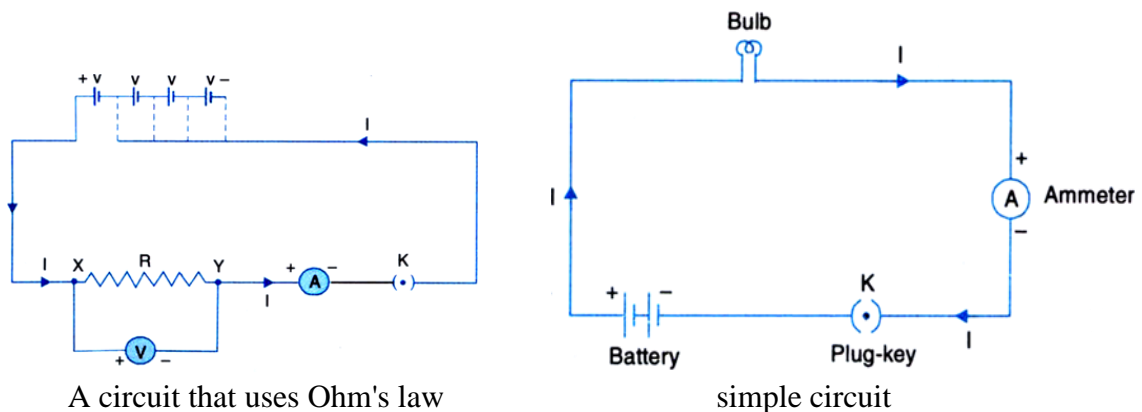
- Here several resistors are connected to two common ends.
- Here electricity is divided according to the resistance of each resistor. The current is not equal.
- Here, if any one unit fails, the whole circuit will work separately without interruption
- Formula: $\frac{1}{R_p} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$

13. Draw diagrams showing the arrangement of resistors in series and resistors in parallel.

Ans:



Ohm's law practice circuit and simple circuit diagram.



A circuit that uses Ohm's law

simple circuit

1. What is a magnetic field?

Ans: The area of magnetic influence around the magnet is called magnetic field.

2. State the characteristics of magnetic field lines.

Ans:

- Magnetic field lines start from the North Pole and end at the South Pole.
- No two magnetic field lines intersect each other.
- Magnetic field lines are denser at magnetic poles.

3. What does the current flowing in a conductor cause around the conductor?

Ans: It produces a magnetic field.

4. State the right-hand rule of thumb.

Ans: When a straight current-carrying conductor is placed in the right hand, the thumb points in the direction of the current. The fingers are wrapped around the conductor in the direction of the magnetic field lines.

5. What is a solenoid?

Ans: A cylindrical shape consisting of multiple coils of insulated copper wire.

6. What is an electromagnet?

Ans: A piece of soft iron, a magnetic material, can be placed inside a solenoid with a high magnetic field and used to make a magnet. The magnet created in this way is called an electromagnet.

7. State Fleming's left-hand rule.

Ans: The index finger of the left hand indicates the direction of the magnetic field, the middle finger indicates the direction of the electric current and the thumb indicates the direction of motion acting on the conductor.

8. What is an electric motor? Explain the principle of electric motor.

Ans: A device that converts electrical energy into mechanical energy.

Principle: Magnetic effect of electric current

9. Which devices use electric motor?

Ans: Electric fan, Refrigerator, Mixers, Computer, MP3.

10. What is a rectifier?

Ans: A device that reverses the direction of current in a circuit is called a rectifier.

11. Which acts as an inverter in a motor.

Ans: Split ring

12. What is electromagnetic induction?

Ans: A magnetic field applied to one conductor induces an electric current in another conductor.

13. State Fleming's right-hand rule.

Ans: When the thumb, index and middle fingers of the right hand are placed perpendicular to each other, the index finger indicates the direction of the magnetic field, the thumb indicates the direction of motion of the conductor and the middle finger indicates the direction of the induced current.

14. What is a generator? What is the principle of generator?

Ans: A device that converts mechanical energy into electrical energy.

Principle: Electromagnetic Induction.

15. What is the frequency and voltage of alternate current produced in India?

Ans: Frequency: 50 Hz

Voltage: 220 V

16. What are the main advantages of alternating current?

Ans: Electrical energy can be sent to remote locations without much energy loss.

17. State the situations in which overload occurs.

- Ans:**
- Overload occurs when live wire and neutral wire come in contact with each other.
 - Overload can occur when the voltage increases.
 - Connecting too many pins to a single socket can cause overload.

18. What is short circuit?

Ans: Overload can occur when both live and neutral wires are in direct contact. In such situations, the electric current drops suddenly and it is called short circuit.

19. State the function of fuse.

Ans: FUSE protects the electrical systems from short circuit and overload caused in the electrical system.

20. Diagrams to be practiced...

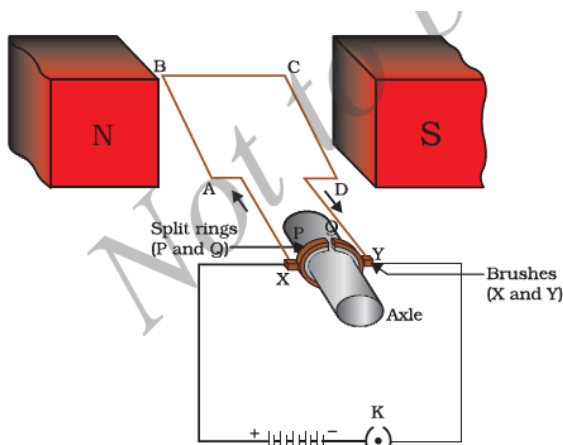


Figure 13.15
A simple electric motor

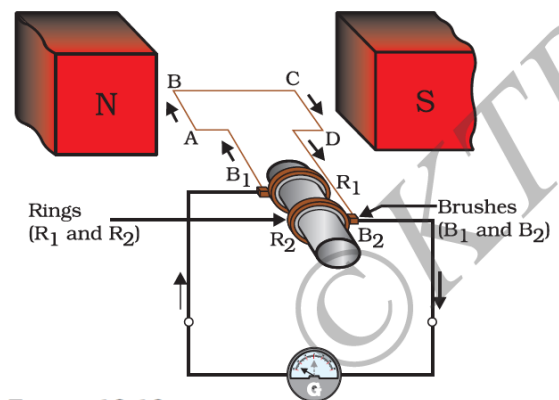


Figure 13.19
Illustration of the principle of electric generator

1. What is geothermal energy?

Ans: Thermal energy found deep in the earth by subsurface processes.

2. What is Bioenergy?

Ans: Energy obtained from plant and animal wastes.

3. What is a solar cell?

Ans: A device that converts solar energy into electrical energy.

4. Which is the main substance in biogas?

Ans: Methane (75 percent)

5. Write examples of conventional forms of energy.

Ans: Fossil fuels, thermal power, hydropower and wood etc

6. Write examples of non-conventional sources of energy.

Ans: Solar energy, wind energy, wave energy, geothermal energy, nuclear energy.

7. What are the characteristics of a good energy source? (OR) Write the characteristics of an ideal fuel.

Ans:

- 1) Should be more work per unit mass
- 2) Should be economical
- 3) Should be easy to store and transport
- 4) Should be less polluting.

8. List 2 disadvantages of fossil fuels.

Ans: 1) More pollution 2) Expiration (non-renewable)

9. State the problems arising from the construction of large dams.

Ans:

- 1) Destruction of forest wealth
- 2) Destruction of agricultural land
- 3) Problem of adequate compensation for victims
- 4) Expenditure of more resources (money).

10. What are the limitations of using wind energy?

Ans:

- 1) Wind speed should be more than 15 kmph
- 2) Requires huge space for installation
- 3) High technology required for protection of tower and wings
- 4) High installation cost

11. Bio-Gas plants are a boon for farmers. Why?

Ans:

- 1) Raw materials are easily available
- 2) Residue mixture is an excellent fertilizer
- 3) Disposal is easy and healthy.

12. “Biogas is the best fuel”- give reason.

Ans: 1) No ash or residue left when burnt 2) Non-polluting 3) High efficiency

13. State the uses of solar cells.

Ans: 1) In artificial satellites and space vehicles,
2) Used in traffic lights, calculators, and toys

14. What are the limitations of using solar energy?

Ans: 1) More expensive 2) Lower performance
3) Limited availability of special grade silicon.
4) Manufacturing process is expensive

15. Differentiate between conventional and non-conventional sources of energy.

Ans:

Conventional	Non-conventional
These are non-renewable resources Air pollution is high Eg: Coal, Petroleum	These can be renewed are eco-friendly Eg: wind power, solar power

16. State 2 limitations of using geothermal energy, wave energy, tidal energy, and ocean thermal energy.

Ans: 1) Places available for use are limited.
2) Power generation is not possible in all seasons.

17. What is nuclear fission? Name the fuels used in an electric reactor.

Ans: The act of splitting a heavy atomic nucleus into lighter nuclei by hitting it with a low energy neutron.

Fuels: Uranium, Plutonium, Thorium

18. What are the dangers of nuclear power generation?

Ans: 1) Accumulation and disposal of organic waste causes environmental pollution.
2) Radiation leakage leads to massive disaster.

19. Diagram to be practiced...

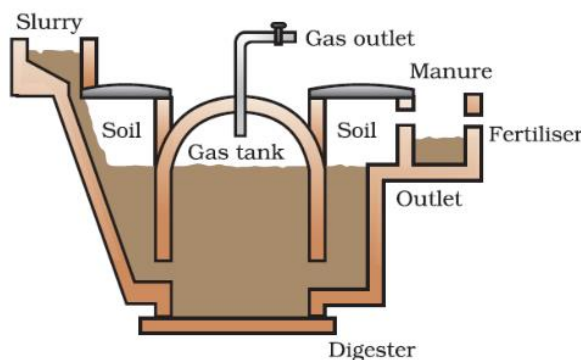


Figure 14.4
Schematic diagram of a bio-gas plant

1. On what basis do we classify into producers, consumers and decomposers?

Ans: On the basis the organisms obtain energy from the environment.

2. What is meant by consumers?

Ans: Organisms that directly eat food produced by producers or indirectly eat omnivores are called consumers.

3. State the types into which eaters can be classified.

Ans: Primary consumers, secondary consumers, tertiary consumers, quaternary consumers and decomposers.

4. Why are bacteria and microorganisms called decomposers?

Ans: Break down complex organic substances into simpler, inorganic substances. Decompose dead organic matter and wastes.

5. Why is the flow of energy in the environment unidirectional?

Ans: Energy always travels in the same direction from one nutrient to another. It does not propagate backwards.

6. What is food chain? Give an example.

Ans: A food chain is the relationship between organisms as they depend on each other for food.

Example: Grasshopper Frog Snake Eagle

7. What are tropic levels?

Ans: Each stage of the food chain is called tropic levels.

8. What is a food web?

Ans: A food web is a complex relationship between organisms where one organism is fed by many other organisms.

9. What is the amount of energy transmitted between nutrient layers?

Ans: Only 10 percent.

10. What is biomagnification?

Ans: The amount of harmful chemicals like DDT increases as it moves up the food chain is called biomagnifications.

11. Why is protection of ozone layer necessary?

Ans: Ozone protects the Earth's surface by blocking ultraviolet radiation that comes with sunlight and causes diseases such as skin cancer in humans.

12. Name the chemical responsible for ozone depletion.

Ans: CFC (chlorofluorocarbon)

13. What are substances that are broken down by biological processes called?

Ans: Biodegradable materials Eg: vegetable peel, cow dung etc.

14. What are substances that are not broken down by biological processes called?

Ans: Non-biodegradable materials. Eg: plastic materials.

1. The presence of which bacteria indicates that the water is contaminated with pathogenic microorganisms?

Ans: Coliform bacteria

2. Give any four reasons why wood, our traditional fuel, should be discontinued.

Ans:

- It leads to deforestation.
- It has low fuel value
- It is required in large quantities
- It causes maximum pollution.

3. Name two stakeholders who benefit from forests

Ans: 1. Forest dwellers and tribal people 2. Entrepreneurs

4. Name one biodiversity hotspot.

Ans: forests or forests

5. In which part of the human body are coliform bacteria found?

Ans: Small intestine

6. State any two reasons why sustainable management of groundwater fails.

Ans:

- Use of ground water throughout the year (refills only during rainy season)
- Inadequate implementation of rain harvesting system

7. Name two easily recyclable items that we usually throw away.

Ans: Used paper, polythene, metal wastes, etc.

8. What is water harvesting?

Ans: Collecting rainwater through many methods and using it throughout the year is called water harvesting.

9. What is eutrophication?

Ans: Elevation of nitrate and phosphate content in water is called eutrophication. This causes aquatic plants to grow enormously in the water.

10. What is sustainable management of natural resources?

Ans: Sustainable management of natural resources is the development of natural systems and their products that can be maintained over a long period of time without harming the environment.

11. What is a forest?

Ans: A forest is an area containing a dense variety of plant resources and wildlife.

12. What is wildlife?

Ans: Uncultivated plants and non-domesticated animals are called wild animals. These are organisms that live within their habitat.

13. What are natural resources?

Ans: The things found in nature that are useful to man are called natural resources.

14. Write two important uses of dams.

Ans: 1. Implementation of irrigation plan 2. Power generation

15. Which pollutant makes it difficult for the lungs to absorb oxygen from the blood?

Ans: Carbon Monoxide (CO)

16. What is mining?

Ans: Extracting ores from underground and processing them is called mining.

17. What are the common elements in coal and petroleum?

Ans: Carbon, hydrogen, nitrogen, and sulfur. Because coal and petroleum are fuels formed from biomass.

18. What are the toxic gases released when fossil fuels are burned?

Ans: Sulfur oxides, nitrogen oxides, carbon dioxide and carbon monoxide.

19. What changes can you make in your hobbies to be more eco-friendly?

Ans:

- In order to be more eco-friendly, one should try to protect the environment and keep it pollution free.
- Emphasizing the use of renewable and degradable resources.
- Use of paper instead of plastic 4. Use of IPU, solar energy, wind energy.

20. Why should we conserve forests and wildlife?

Ans:

- A forest is a habitat for wildlife.
- Along with the economic development of the country, forests also result in good wind and rainy weather.
- Trees prevent soil erosion and fertilize the soil.
- Wildlife is essential to the balance of the food chain.
- These enhance natural beauty. Therefore, forests and wildlife should be preserved.

21. Explain some methods of conservation of forests.

Ans:

- Afforestation: Planting saplings in empty spaces and creating forests.
- Reforestation: Reforestation by planting saplings in forest areas destroyed due to encroachment.
- Prevention of grazing of grasslands.
- Social afforestation: Cultivation of multi-purpose plants and shrubs in mangroves, roadsides.
- Agroforestry: Growing trees around agricultural land to provide fodder, fuel and timber.

22. What is deforestation?

Ans: Reducing or destroying forests is called deforestation. Forests are destroyed by cutting down too many trees, overgrazing and monocultures.

23. What are the demerits of deforestation?

Ans: a) Soil erosion b) Reclamation c) Flooding d) Destruction of wildlife
e) Climate change f) There is a shortage of water.

24. Name the industries that depend on forest products.

Ans: A. Timber industry b. Paper industry c. Agar industry d. Sports Goods Manufacturing Industry

25. State the importance of forests. Or what are the benefits of forests to us?

Ans:

- Forests are habitats for wildlife

- Forests provide good rainfall and wind
- Spices and medicinal plants are available.
- They maintain soil fertility and prevent soil erosion.
- Increases the water holding capacity of the soil.
- CO₂ and oxygen balance in the atmosphere.

26. What are the 5 habits to protect the environment? Explain in brief.

Ans:

- Refuse: Refusal when people come to give things that harm the environment. Eg: Plastic, polythene bags
- Reduce: using useful resources like water, food, electricity only when needed.
- Reuse: Reuse as much as possible of once-used materials. Eg: re-use envelope, container of ready meals.
- Repurpose: Reusing an object for other purposes when it is no longer for its original purpose. Eg: Using cracked mud pots for growing plants.
- Recycle: Recycling plastic, paper, glass and metal materials after they have been damaged to make essential items.

27. Why should we use our resources carefully?

Ans: Because,

- These are not available continuously.
- Increasing demand for resources due to population explosion.
- Should be used with caution as it should be available to everyone, not just the rich and influential.

28. Who are the four main stakeholders to consider when considering forest and wildlife conservation?

Ans:

- People living in and around the forest.
- Forest Department of Government
- From road builders to industrialists
- Enthusiasts who love wildlife and nature

29. What is the Chipko Movement? How did it benefit the locals and the environment?

Ans: The women of Reni village in Garhwali, Uttar Pradesh, Himalayas, hugged and prevented workers from cutting down the trees in their forests. This is called the Chipko movement.

- The Chipko movement spread rapidly in the community and media and forced the government to rethink the preferences of people who use forest products.
- Learned that deforestation affects not only the availability of forest products but also soil quality and water resources.
- Participation of local people meant that it allowed for efficient management of forests.

30. What are Green House Gases? State the adverse effects on the atmosphere due to their increase.

Ans: Greenhouse gases are carbon dioxide, methane, nitrogen oxides and to a lesser extent ozone.

These gases trap the infrared rays emitted by the Sun, causing an increase in the temperature of the atmosphere, resulting in a greenhouse effect on Earth.

31. What are the common problems of construction of massive dams?

Ans: There are three problems with the construction of massive dams.

- Social problems: Many peasant and tribal people are displaced without adequate compensation and rehabilitation.
- Financial problems: They swallow huge amounts of public money without generating proper benefits.
- Environmental problems: leading to massive deforestation and loss of biodiversity.

32. List the ways in which the amount of carbon dioxide in the atmosphere can be reduced.

Ans:

- Use of public vehicles.
- Going by cycle, walking.
- Using Compressed Natural Gas (CNG).
- Growing and saving trees more often.
- Converting wastes into compost instead of burning them

33. Give examples of ancient water harvesting structures found in different regions of India.

- Ans:**
1. Rajasthan: Khadin, tanks, Nadis
 2. Maharashtra: Bandhara and Tals
 3. Madhya Pradesh and Uttar Pradesh: Bundhis
 4. Bihar: Ahar and Pyne
 5. Himachal Pradesh: Kulhs
 6. Jammu: Ponds
 7. Tamil Nadu: Eris (tank)
 8. Kerala: Surangams
 9. Karnataka: Tattas

34. What are the benefits of storing water underground?

Ans:

- Water does not evaporate.
- Wells, groundwater recharge.
- Provides moisture to plants.
- Mosquitoes are not allowed to lay eggs and hatch.
- Water is not polluted by plant and animal wastes.

35. What is called a 'biodiversity hotspot'? Give the reason.

Ans: Forests are known as micro-sites of biodiversity. Because forests are home to a wide range of organisms such as bacteria, fungi, ferns, flowering plants, roundworms, insects, birds, and reptiles.

36. How can we reduce the pressure on the environment?

Ans: We can reduce the pressure on the environment by sincerely adopting refuse, reduce, reuse, repurpose and recycle in our lives.