



Class
10
CBSE

Chapterwise Previous Years' Questions

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- Q.1** State one basic difference between a physical change and a chemical change. [CBSE 2011]
- Q.2** What is meant by a chemical reaction? [CBSE 2011]
- Q.3** Hydrogen being a highly inflammable gas and oxygen being a supporter of combustion, yet water which is a compound made up of hydrogen and oxygen is used to extinguish fire. Why? [CBSE 2011]
- Q.4** Write the balanced equation for the following reaction and identify the type of reaction in each case.
 (i) Potassium bromide + Barium iodide → Potassium iodide + Barium bromide.
 (ii) Hydrogen(g) + Chlorine(g) → Hydrogen chloride(g) [CBSE 2011]
- Q.5** A zinc plate was put into a solution of copper sulphate kept in a glass container. It was found that blue colour of the solution gets fader and fader with the passage of time. After few days, when zinc plate was taken out of the solution, a number of holes were observed on it.
 (i) State the reason for changes observed on the zinc plate.
 (ii) Write the chemical equation for the reaction involved. [CBSE 2011]
- Q.6** Define combination reaction. Give one example of a combination reaction which is also exothermic [CBSE 2011]
- Q.7** Write balanced chemical equations for the following reactions.
 (i) Silver bromide on exposure to sunlight decomposes into silver and bromine.
 (ii) Sodium metal reacts with water to form sodium hydroxide and hydrogen gas. [CBSE 2012]
- Q.8** Identify the type of reaction(s) in the following equations.
 (i) $\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}$
 (ii) $\text{Pb}(\text{NO}_3)_2 + 2\text{KI} \rightarrow \text{PbI}_2 + 2\text{KNO}_3$
 (iii) $\text{CaO} + \text{H}_2\text{O} \rightarrow \text{Ca}(\text{OH})_2$
 (iv) $\text{CuSO}_4 + \text{Zn} \rightarrow \text{ZnSO}_4 + \text{Cu}$ [CBSE 2012]
- Q.9** Write balanced equation for the reaction between magnesium and hydrochloric acid. Name the product obtained, identify the type of reaction. [CBSE 2012]
- Q.10** Describe an activity to observe what happens when quick lime is added to water taken in a beaker. State two important observations and name the type of reaction taking place. [CBSE 2012]
- Q.11** What is the colour of ferrous sulphate crystals? How does this colour change after heating? [CBSE 2012]
- Q.12** Why does the colour of copper sulphate solution change when an iron nail is dipped in it? Write two observations. [CBSE 2012]
- Q.13** Translate the following statement into chemical equation and then balance it Barium chloride reacts with aluminium sulphate to give aluminium chloride and a precipitate of barium sulphate. State the two types in which this reaction can be classified. [CBSE 2012]
- Q.14** Why are decomposition reactions called the opposite of combination reactions? Write equations for these reactions. [CBSE 2012]
- Q.15** What is rancidity? Mention any two ways by which rancidity can be prevented. [CBSE 2012]
- Q.16** Write balanced chemical equation for the reactions that take place during respiration. Identify the type of combination reaction that takes place during this process and justify the name. Give one more example of this type of reaction. [CBSE 2012]

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- Q.17** What is redox reaction? Identify the substance oxidised and the substance reduced in the following reactions.
 (i) $2\text{PbO} + \text{C} \rightarrow 2\text{Pb} + \text{CO}_2$
 (ii) $\text{MnO}_2 + 4\text{HCl} \rightarrow \text{MnCl}_2 + 2\text{H}_2\text{O} + \text{Cl}_2$ [CBSE 2012]
- Q.18** Write the balanced chemical equations for the following reactions and identify the type of reaction in each case. Thermite reaction, iron (III) oxide reacts with aluminium and gives molten iron and aluminium oxide. [CBSE 2012]
- Q.19** A solution of potassium chloride when mixed with silver nitrate solution, an insoluble white substance is formed. Write the chemical reaction involved and also mention the type of the chemical reaction? [CBSE 2012]
- Q.20** Which products will be obtained when lead nitrate is heated simply. Write balanced chemical equation for the reaction? State the type of chemical reaction that occur in the change. [CBSE 2013]
- Q.21** What is meant by skeletal type chemical equation? What does it represent? Using the equation for electrolytic decomposition of water, differentiate between a skeletal chemical equation and a balanced chemical equation. [CBSE 2013]
- Q.22** What is observed when a solution of potassium iodide solution is added to a solution of lead nitrate? Name the type of reaction. Write a balanced chemical equation to represent the above chemical reaction. [CBSE 2014]
- Q.23** Write chemical equation reactions taking place when carried out with the help of
 (a) Iron reacts with steam
 (b) Magnesium reacts with dil HCl
 (c) Copper is heated in air. [CBSE 2014]
- Q.24** (a) Write one example for each of decomposition reaction carried out with help of
 (i) Electricity (ii) Heat (iii) Light
 (b) Which of the following statements is correct and why copper can displace silver from silver nitrate and silver can displace copper from copper sulphate solution. [CBSE 2014]
- Q.25** "We need to balance a skeletal chemical equation." Give reason to justify the statement. [CBSE 2015]
- Q.26** Giving an example list two information which make a chemical equation more useful (informative). [CBSE 2015]
- Q.27** Name the reducing agent in the following reaction:
 $3\text{MnO}_2 + 4\text{Al} \rightarrow 3\text{Mn} + 2\text{Al}_2\text{O}_3$
 State which is more reactive, Mn or Al and why? [CBSE 2015]
- Q.28** (i) Write a balanced chemical equation for process of photosynthesis.
 (ii) When do desert plants take up carbon dioxide and perform photosynthesis? [CBSE 2015]

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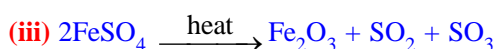
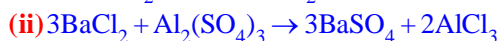
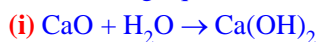
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Q.29 A Name the type of chemical reaction represented by the following equation:



[CBSE 2015]

Q.30 Write the chemical equation of the reaction in which the following changes have taken place with an example of each:

(i) Change in colour

(ii) Change in temperature

(iii) Formation of precipitate [CBSE 2015]

Q.31 State the type of chemical reactions and chemical equations that take place in the following:

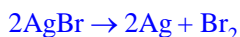
(i) Magnesium wire is burnt in air.

(ii) Electric current is passed through water.

(iii) Ammonia and hydrogen chloride gases are mixed.

[CBSE 2015]

Q.32 (a) Write the essential condition for the following reaction to take place:



Write one application of this reaction.

(b) Complete the following chemical equation of a chemical reaction 2FeSO_4 -

(c) What happens when water is added to quick lime. Write chemical equation. [CBSE 2015]

Q.33 2g of ferrous sulphate crystals are heated in a dry boiling tube.

(i) List any two observations.

(ii) Name the type of chemical reaction taking place.

(iii) Write the chemical equation for the reaction.

[CBSE 2015]

Q.34 (a) Define a balanced chemical equation. Why should an equation be balanced?

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

(i) Phosphorus burns in presence of chlorine to form phosphorus penta chloride.

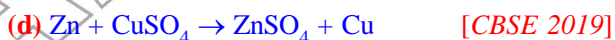
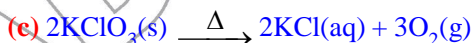
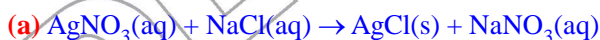
(ii) Burning of natural gas.

(iii) The process of respiration [CBSE 2015]

Q.35 (a) Explain two ways by which food industries prevent rancidity.

(b) Discuss the importance of decomposition reaction in metal industry with three points. [CBSE 2015]

Q.36 (i) Classify the following reactions into different types:



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Q.37 When potassium iodide solution is added to a solution of lead (II) nitrate in a test tube, a precipitate is formed.

(i) What is the colour of this precipitate? Name the compound precipitated.

(ii) Write the balanced chemical equation for this reaction.

(iii) List two types of reactions in which this reaction can be placed. [CBSE 2019]

Q.38 2 g of silver chloride is taken in a china dish and the china dish is placed in sunlight for sometime. What will be your observation in this case? Write the chemical reaction involved in the form of a balanced chemical equation. Identify the type of chemical reaction. [CBSE 2019]

Q.39 2 g of ferrous sulphate crystals are heated in a dry boiling tube.

(i) List any two observations

(ii) Name the type of chemical reaction taking place.

(iii) Write balanced chemical equation for the reaction and name the products formed. [CBSE 2019]

Q.40 (i) What is a double displacement reaction? Explain with an example.

(ii) A small amount of quick lime is added to water in beaker.

(a) Name and define the type of reaction that has taken place.

(b) Write balanced chemical equation for the above reaction and the chemical name of the product formed.

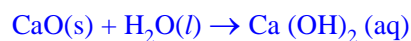
(c) List two main observations of this reaction. [CBSE 2019]

Q.41 (i) Design an activity to demonstrate the decomposition reaction of lead nitrate.

(ii) Draw labelled diagram of the experimental set up. List two main observations.

(iii) Write balanced chemical equation for the reaction stating the physical state of the reactant and the products. [CBSE 2019]

Q.42 Calcium oxide reacts vigorously with water to produce slaked lime.



This reaction can be classified as :

(A) Combination reaction

(B) Exothermic reaction

(C) Endothermic reaction

(D) Oxidation reaction

Which of the following is a correct option ?

(a) (A) and (C) (b) (C) and (D)

(c) (A), (C) and (D) (d) (A) and (B)

[CBSE 2020]

Q.43 When hydrogen sulphide gas is passed through a blue solution of copper sulphate, a black precipitate or copper sulphide is obtained and the sulphuric acid so formed remains in the solution. The reaction is an example of a :

(a) Combination reaction

(b) Displacement reaction

(c) Decomposition reaction

(d) Double displacement reaction [CBSE 2020]

Q.44 In a double displacement reaction such as the reaction between sodium sulphate solution and barium chloride solution :

(A) exchange of atoms takes place

(B) exchange of ions takes place

(C) a precipitate is produced

(D) an insoluble salt is produced

The correct option is :

(a) (B) and (D) (b) (A) and (C)

(c) only (B) (d) (B), (C) and (D)

[CBSE 2020]

Q.45 Baking soda is a mixture of

(A) Sodium carbonate and acetic acid

(B) Sodium carbonate and tartaric acid

(C) Sodium hydrogen carbonate and tartaric acid

(D) Sodium hydrogen carbonate and acetic acid

[CBSE 2020]

Q.46 List the important products of the Chlor-alkali process. Write one important use of each. [CBSE 2020]

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How is washing soda prepared from sodium carbonate? Give its chemical equation. State the type of this salt. Name the type of hardness of water which can be removed by it ? [CBSE 2020]

Q.47 3 mL of ethanol is taken in a test tube and warmed gently in a water bath. A 5% solution of alkaline potassium permanganate is added first drop by drop to this solution, then in excess.

- (a) how is 5% solution of KMnO_4 prepared ?
- (b) State the role of alkaline potassium permanganate in this reaction. What happens on adding it in excess?
- (c) Write chemical equation of this reaction.

[CBSE 2020]

Q.48 1 g of copper powder was taken in a China dish and heated. What change takes place on heating ? When hydrogen gas is passed over this heated substance, a visible change is seen in it. Give the chemical equations of reactions, the name and the color of the products formed in each case [CBSE 2020]

Q.49 The compound obtained on reaction of iron with steam is/are:

- (a) Fe_2O_3
- (b) Fe_3O_4
- (c) FeO
- (d) Fe_2O_3 and Fe_3O_4

[CBSE 2020]

Q.50 An element 'X' reacts with O_2 to give a compound with a high melting point. This compound is also soluble in water. The element 'X' is likely to be :

- (a) iron
- (b) Calcium
- (c) carbon
- (d) silicon [CBSE 2020]

Q.51 (a) What is thermit process ? Where is this process used ? Write balanced chemical equation for the reaction involved.

- (b) Where does the metal aluminium, used in the process, occurs in the reactivity series of metals ?
- (c) Name the substances that are getting oxidised and reduced in the process. [CBSE 2020]

Q.52 When sodium hydrogen carbonate is added to ethanoic acid, a gas evolves. Consider the following statements about the gas evolved ?

- I. It turns lime water milky.
- II. It is evolved with a brisk effervescence.
- III. It has a smell of burning sulphur
- IV. It is also a by-product of respiration.

The correct statements are :

- (a) I and II only
- (b) II and IV only
- (c) I, III and IV
- (c) III and IV

[CBSE 2020]

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- Q.1** State the chemical name of Plaster of Paris. Write a chemical equation to show the reaction between Plaster of Paris and water. [CBSE 2011]
- Q.2** State in brief the preparation of washing soda from baking soda. Write balanced chemical equation of the reaction involved. [CBSE 2011]
- Q.3** What is the colour of $\text{FeSO}_4 \cdot 7\text{H}_2\text{O}$ crystals? How does this colour change upon heating? Give balanced chemical equation for the changes. [CBSE 2011]
- Q.4** A student dropped few pieces of marble in dilute HCl contained in a test tube. The evolved gas was passed through lime water.
- What change would be observed in lime water?
 - Write balanced chemical equation for the above change. [CBSE 2011]
- Q.5** A gas 'X' reacts with lime water and forms a compound 'Y' which is used as a bleaching agent in chemical industry. Identify 'X' and 'Y'. Give the chemical equation of the reactions involved. [CBSE 2011]
- Q.6** (i) Name the compound which is obtained from baking soda and is used to remove permanent hardness of water.
- Write its chemical formula.
 - What happens when it is recrystallised from its aqueous solution? [CBSE 2011]
- Q.7** What is a neutralisation reaction? Give two examples. [CBSE 2011]
- Q.8** What is tooth enamel chemically? State the condition when it starts corroding. What happens when food particles left in the mouth after eating degrade? Why do doctors suggest use of tooth powder/toothpaste to prevent tooth decay? [CBSE 2011]
- Q.9** What is Plaster of Paris chemically? How is it prepared? List its two important uses. [CBSE 2011]
- Q.10** What is baking soda chemically called? Give reaction involved in its preparation. Write one of its uses. [CBSE 2011]
- Q.11** How will you test for the gas which is liberated when hydrochloric acid reacts with an active metal? [CBSE 2012]
- Q.12** (a) Write the name given to bases that are highly soluble in water. Give an example.
- How is tooth decay related to pH? How can it be prevented?
 - Why does bee sting cause pain and irritation? Rubbing of baking soda on the sting area gives relief. How? [CBSE 2012]
- Q.13** A white powder is added while baking breads and cakes to make them soft and fluffy. Write the name of the powder. Name its main ingredients. Explain the function of each ingredient. Write the chemical reaction taking place when the powder is heated during baking. [CBSE 2012]
- Q.14** "Sodium hydrogencarbonate is a basic salt". Justify the statement. How is it converted into washing soda? Explain. [CBSE 2012]
- Q.15** Describe an activity with diagram to illustrate that the reaction of metal carbonates and metal bicarbonates with acids produces carbon dioxide. Write the relevant equations of all the reactions that take place. Name any two forms in which calcium carbonate is found in nature. [CBSE 2012]
- Q.16** (a) Identify the acid and the base whose combination forms the common salt that you use in your food. Write its formula and chemical name of this salt. Name the source from where it is obtained.
- What is rock salt? Mention its colour and the reason due to which it has this colour.
 - What happens when electricity is passed through brine? Write the chemical equation for it. [CBSE 2012]
- Q.17** (i) Explain why is hydrochloric acid a strong acid and acetic acid, a weak acid. How can it be verified?
- Explain why aqueous solution of an acid conducts electricity.
 - You have four solutions A, B, C and D. The pH of solution A is 6, B is 9, C is 12 and D is 7,
 - Identify the most acidic and most basic solutions.
 - Arrange the above four solutions in the increasing order of H^+ ion concentration.
 - State the change in colour of pH paper on dipping in solution C and D. [CBSE 2012]
- Q.18** (i) Dry pellets of a base 'X' when kept in open absorb moisture and turns sticky. The compound is also formed by chlor-alkali process. Write chemical name and formula of X. Describe chlor-alkali process with balanced chemical equation. Name the type of reaction occurs when X is treated with dilute hydrochloric acid. Write the chemical equation.
- While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid? [CBSE 2012]

- Q.19** A student dropped few pieces of marble in dilute hydrochloric acid, contained in a test-tube. The evolved gas was then passed through lime water. What change would be observed in lime water? What will happen if excess of gas is passed through lime water? With the help of balanced chemical equations for all the changes explain the observations. [CBSE 2012]
- Q.20** Identify the compound of calcium which is yellowish white powder and is used for disinfecting drinking water. Write its chemical name and formula. How is it manufactured? Write the chemical equation for the reaction involved. Also list two other uses of the compound. [CBSE 2012]
- Q.21** Write the balanced chemical equation of chlor-alkali process. [CBSE 2012]
- Q.22** (a) Mention the pH range within which our body works. Explain how antacids give relief from acidity. Write the name of one such antacid.
 (b) Fresh milk has a pH of 6. How does the pH will change as it turns to curd? Explain your answer.
 (c) A milkman adds a very small amount of baking soda to fresh milk. Why does this milk take a longer time to set as curd?
 (d) Mention the nature of toothpastes. How do they prevent tooth decay? [CBSE 2012]
- Q.23** (a) Crystals of a substance changed their colour on heating in a closed test tube but regained it after sometime when they were allowed to cool down. Name the substance and write its formula and explain the phenomenon involved.
 (b) Name the compound whose one formula unit is associated with 10 water molecules. How is it prepared? Give equations of related reactions. Give two uses of the compound. [CBSE 2012]
- Q.24** A student detected the pH of four unknown solution A, B, C and D as follows 11, 5, 7 and 2. Predict the nature of the solution. [CBSE 2013]
- Q.25** (i) Give the constituents of baking powder
 (ii) Why cake or bread swells on adding baking powder? Write chemical equation. [CBSE 2013]
- Q.26** Equal length of magnesium ribbon are taken in two test tubes 'A' and 'B'. H_2SO_4 is added to test tube 'A' and H_2CO_3 in the test tube 'B' in equal amounts:
 (a) Identify the test tube showing vigorous reaction.
 (b) Give reason to support your answer.
 (c) Name the gas liberated in both the tubes. How will you prove its liberation?
 (d) Write chemical equations for both reactions.
 (e) Out of the two acids taken above
 (i) which one will have lower pH value.
 (ii) lower H^+ concentration respectively. [CBSE 2013]
- Q.27** Name the natural source of each of the following acid
 (i) Citric acid. (ii) Oxalic acid.
 (iii) Lactic acid. (iv) Tartaric acid. [CBSE 2014]
- Q.28** Name the acid present in the following:
 (i) Tomato (ii) Vinegar (iii) Tamarind
 2.15 mL of water and 10 mL of sulphuric acid are to be mixed in a beaker
 (i) State the method that should be followed with reason.
 (ii) What is this process called? [CBSE 2015]
- Q.29** Explain how antacid works. [CBSE 2015]
- Q.30** (a) Define olfactory indicators. Name two substances which can be used as olfactory indicator.
 (b) Choose strong acids from the following:
 CH_3COOH , H_2SO_4 , H_2CO_3 , HNO_3 [CBSE 2015]
- Q.31** A white coloured powder is used by doctors for supporting fractured bones.
 (a) Write chemical name and formula of the powder.
 (b) When this white powder is mixed with water a hard solid mass is obtained. Write balanced chemical equation for the change. [CBSE 2015]
- Q.32** Explain the action of dilute hydrochloric acid on the following with chemical equation:
 (i) Magnesium ribbon (ii) Sodium hydroxide
 (iii) Crushed egg shells [CBSE 2015]
- Q.33** State reason for the following statements:
 (i) Tap water conducts electricity whereas distilled water does not.
 (ii) Dry hydrogen chloride gas does not turn blue litmus red whereas dilute hydrochloric acid does.
 (iii) During summer season, a milk man usually adds a very small amount of baking soda to fresh milk.

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- (iv) For a dilution of acid, acid is added into water and not water into acid.
- (v) Ammonia is a base but does not contain hydroxyl group. [CBSE 2015]
- Q.34** (a) Write the chemical formula of hydrated copper sulphate and anhydrous copper sulphate. Giving an activity illustrate how these are inter convertible.
- (b) Write chemical names and formula of plaster of paris and gypsum. [CBSE 2015]
- Q.35** What is meant by water of crystallisation ? Explain that the crystalline salts contain water of crystallisation. [CBSE 2016]
- Q.36** Identify the acid and the base from which sodium chloride is obtained. Which type of salt is it ? When is it called rocksalt ? How is rock salt formed ? [CBSE 2019]
- Q.37** Write the chemical formula of washing soda. How can it be obtained from baking soda ? List two industries in which washing soda is used for other purposes than washing clothes. [CBSE 2019]
- Q.38** Salt A commonly used in bakery products on heating gets converted into another salt B which itself is used for removal of hardness of water and a gas C is evolved. The gas C when passed through lime water, turns it milky. Identify A, B and C. [CBSE 2019]
- Q.39** Explain the formation of
(i) acidic (ii) basic and (iii) neutral salts. [CBSE 2019]
- Q.40** In one of the industrial processes used for manufacture of sodium hydroxide, a gas X is formed as by-product. The gas X reacts with lime water to give a compound Y which is used as a bleaching agent in chemical industry. Identify X and Y giving the chemical equation of the reactions involved. [CBSE 2019]
- Q.41** A dry pellet of a common base B, when kept in open absorbs moisture and turns sticky. The compound is also a by-product of chlor-alkali process. Identify B.
- What type of reaction occurs when B is treated with an acidic oxide ? Write a balanced chemical equation for one such solution. [CBSE 2019]
- Q.42** Why does dry HCl gas not change the colour of the dry litmus paper ? [CBSE 2019]
- Q.43** While diluting an acid, why is it recommended that the acid should be added to water and not water to the acid ? [CBSE 2019]
- Q.44** Identify the acid and base which form sodium hydrogen carbonate. Write chemical equation in support of your answer. State whether this compound is acidic, basic or neutral. Also write its pH value. [CBSE 2019]
- Q.45** State the effect of concentration of H^+ (aq) ions on the nature of the solution. Do basic solution also have H^+ (aq) ions ? If yes, then why are these basic ? [CBSE 2019]
- Q.46** A white powder is added while baking cakes to make it soft and spongy. Name its main ingredients. Explain the function of each ingredient. Write the chemical reaction taking place when the powder is heated during baking. [CBSE 2019]
- Q.17** For question statements are given - one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below :
- (a) Both A and R are true and R is the correct explanation of the Assertion.
- (b) Both A and R are true but R is not the correct explanation of the Assertion.
- (c) A is true but R is false.
- (d) A is false but R is true
- Assertion (A) : Esterification is a process in which a sweet smelling substance is produced.
- Reason (R) : When esters react with sodium hydroxide an alcohol and sodium salt of carboxylic acid are obtained. [CBSE 2020]

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SUMMER VACATION COURSE

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- Q.1** (a) What is meant by corrosion? Name any two methods used for the prevention of corrosion.
 (b) Suppose you have to extract metal M from its enriched sulphide ore. If M is in the middle of the reactivity series, write various steps used in extracting this metal. [CBSE 2009]
- Q.2** (a) Distinguish between ionic and covalent compounds under the following properties:
 (i) Strength of forces between constituent elements.
 (ii) Solubility of compounds in water.
 (iii) Electrical conduction in substances.
 (b) Explain how the following metals are obtained from their compounds by the reduction process:
 (i) Metal M which is in the middle of the reactivity series.
 (ii) Metal N which is high up in the reactivity series.
 Give one example of each type. [CBSE 2009]
- Q.3** State reasons for the following:
 (i) Electric wires are covered with rubber like material.
 (ii) From dilute hydrochloric acid, zinc can liberate hydrogen gas but copper cannot.
 (iii) Sulphide ore of a metal is first converted to its oxide to extract the metal from it. [CBSE 2009]
- Q.4** State reasons for the following observations:
 (i) The shining surface of some metals becomes dull when exposed to air for a long time.
 (ii) Zinc fails to evolve hydrogen gas on reacting with dilute nitric acid.
 (iii) Metal sulphides occur mainly in rocks but metal halides occur mostly in sea and lake waters. [CBSE 2009]
- Q.5** Give reasons for the following observations:
 (i) Ionic compounds in general have high melting and boiling points.
 (ii) Highly reactive metals cannot be obtained from their oxides by heating them with carbon.
 (iii) Copper vessels get a green coat when left exposed to air in the rainy season. [CBSE 2009]
- Q.6** An ore on heating in air produces sulphur dioxide. Which process would you suggest for its concentration? Describe briefly any two steps involved in the conversion of this concentrated ore into related metal. [CBSE 2009]
- Q.7** Arrange the following metals in the decreasing order of reactivity: Na, K, Cu, Ag. [CBSE 2009]
- Q.8** Elements magnesium and oxygen respectively belong to group 2 and group 16 of the Modern Periodic Table. If the atomic numbers of magnesium and oxygen are 12 and 8 respectively, draw their electronic configurations and show the process of formation of their compound by transfer of electrons. [CBSE 2010]
- Q.9** No reaction takes place when granules of a solid 'A' are mixed with a powder of solid 'B'. However when the mixture is heated, a reaction starts with evolution of much heat. Product 'C' of the reaction settles down as a liquid metal and solid product 'D' keeps floating over the liquid 'C'. This reaction is sometimes used for making metals for ready use in odd places.
 (i) Based on this information, make assumptions about 'A' and 'B' and corresponding deductions about 'C' and 'D' and write a balanced chemical equation for the reaction. Include in the chemical equation about physical states of the reactants and products, need of heating for starting the reaction and the reaction being exothermic.
 (ii) Name two types of chemical reactions to which this reaction can belong. [CBSE 2010]
- Q.10** What is the valency of an element with atomic number 35? [CBSE 2010]
- Q.11** What is the valency of phosphorus with atomic number 15? [CBSE 2010]

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- Q.12** What is the valency of silicon with atomic number 14? [CBSE 2011]
- Q.13** (a) Name the main ore of mercury. How is mercury obtained from its ore? Give balanced chemical equation.
 (b) What is thermite reaction? How is it used to join the railway tracks or cracked machine parts?
 (c) Name the method used to extract metals of high reactivity. [CBSE 2011]
- Q.14** (a) Explain with an example how the metal (X) which is low in reactivity series and metal (Y) which is high in the reactivity series are obtained from their compounds by reduction process.
 (b) Write the electronic configurations of sodium and chlorine. Show the formation of sodium chloride from sodium and chlorine by the transfer of electrons.
 (c) List any two observations when a highly reactive metal is dropped in water. [CBSE 2011]
- Q.15** With the help of a suitable example, explain how ionic compounds are formed. State any three general properties of ionic compounds. [CBSE 2011]
- Q.16** (a) Give two methods to prevent the rusting of iron.
 (b) Name the ores of the following metals:
 (i) mercury, and (ii) zinc
 (c) Explain with the help of a diagram, how copper metal can be refined? Label the important arrangements in the experimental set up. [CBSE 2011]
- Q.17** (a) How can the metals at the top of the reactivity series be extracted from their ores? Explain with an example.
 (b) Name any one alloy made from
 (i) a metal and a non-metal, and
 (ii) two metals. [CBSE 2011]
- Q.18** Write chemical equations that shows aluminium oxide reacts with acid as well as base. [CBSE 2011]
- Q.19** The way, metals like sodium, magnesium and iron react with air and water is an indication of their relative positions in the 'reactivity series'. Is this statement true? Justify your answer with examples. [CBSE 2011]
- Q.20** Name two metals which are found in nature in the free state. [CBSE 2011]
- Q.21** Name the metal which reacts with a very dilute HNO₃ to evolve hydrogen gas. [CBSE 2011]
- Q.22** Which gas is liberated when a metal reacts with an acid? How will you test the presence of this gas? [CBSE 2011]
- Q.23** Name a non-metal which is lustrous and a metal which is non-lustrous. Iodine is a non-metal which is lustrous, [CBSE 2011]
- Q.24** Why does calcium float in water? [CBSE 2011]

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- Q.25** A non-metal X exists in two different forms Y and Z. Y is the hardest natural substance, whereas Z is a good conductor of electricity. Identify X, Y and Z.
[CBSE 2011]
- Q.26** Write two differences between calcination and roasting.
[CBSE 2012]
- Q.27** A metal (E) is stored under kerosene. When a small piece of it is left open in the air, it catches fire. When the product formed is dissolved in water, it turns red litmus to blue.
- Name the metal (E).
 - Write the chemical equation for the reaction when it is exposed to air and when the product is dissolved in water.
 - Explain the process by which the metal is obtained from its molten chloride. [CBSE 2012]
- Q.28** What are alloys? How are they made? Name the constituents and uses of brass, bronze and solder.
[CBSE 2012]
- Q.29** (a) Write the electron dot structures of sodium, oxygen and magnesium.
(b) Show the formation of Na_2O and MgO by transfer of electrons. Name the ions present in these compound.
(c) List three properties of ionic compounds.
[CBSE 2012]
- Q.30** Give reasons for the following:
- Silver and copper lose their shine when they are exposed to air. Name the substance formed on their surface in each case.
 - Tarnished copper vessels are cleaned with tamarind juice.
 - Aluminium is more reactive than iron yet there is less corrosion of aluminium as compared to iron when both are exposed to air. [CBSE 2012]
- Q.31** A metal 'M' which is one of the best conductor of heat and electricity used in making electric wires is found in nature as sulphide ore M_2S ?
- Name the metal 'M'
 - Which process will be suitable for extraction of this metal M from its ore M_2S ? Write the balanced chemical reactions involved in the process of ' extraction.
 - With the help of a labelled diagram, explain the process of electrolytic refining of the metal. [CBSE 2012]
- Q.32** Write the names and symbols of two most reactive metals. Explain by drawing electronic structure how any one of the two metals react with a halogen. State any four physical properties of the compound formed.
[CBSE 2012]
- Q.33** How is the method of extraction of metals high up in the reactivity series different from that for metals in the middle ? Why the same process cannot be applied for them? Explain giving equations, the extraction of sodium. [CBSE 2012]
- Q.34** (a) Carbon cannot be used as reducing agent to obtain Mg from MgO . Why?
(b) How is sodium obtained from molten sodium chloride? Give equation of the reactions.
(c) How is copper obtained from its sulphide ore? Give equations of the reactions. [CBSE 2012]
- Q.35** (a) In the formation of compound between two atoms A and B, A loses two electrons and B gains one electron.
- What is the nature of bond between A and B?
 - Suggest the formula of the compound formed between A and B.
 - On similar lines explain the formation of MgCl_2 molecule.
 - Common salt conducts electricity only in the molten state. Why?
 - Why is melting point of NaCl high? [CBSE 2012]

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- Q.36** (a) Differentiate between roasting and calcination. Explain the two with the help of suitable chemical equations. How is zinc extracted from its ore?
(b) Name two metals that can be used to reduce metal oxides to metals. [CBSE 2012]
- Q.37** (a) Write the chemical name of the coating that forms on silver and copper articles when these are left exposed to moist air.
(b) Explain what is galvanisation. What purpose is served by it ?
(c) Define an alloy. How are alloys prepared? How do the properties of iron change when:
(i) small quantity of carbon,
(ii) nickel and chromium are mixed with it. [CBSE 2012]
- Q.38** Define the terms:
(i) mineral (ii) ore, and (iii) gangue. [CBSE 2012]
- Q.39** What are amphoteric oxides? Choose the amphoteric oxides from amongst the following oxides:
 Na_2O , ZnO , Al_2O_3 , CO_2 , H_2O [CBSE 2012]
- Q.40** (a) Show on a diagram the transfer of electrons between the atoms in the formation of MgO . Write symbols of cation and anion present in MgO .
(b) Name the solvent in which ionic compounds are generally soluble.
(c) Why are aqueous solutions of ionic compounds able to conduct electricity? [CBSE 2012]
- Q.41** (a) Show the formation of Na_2O by the transfer of electrons between the combining atoms.
(b) Why are ionic compounds usually hard?
(c) How is it that ionic compounds in the solid state do not conduct electricity but they do so when in molten state? [CBSE 2012]
- Q.42** What is meant by 'rusting'? With labelled diagrams, describe an activity to find out the conditions under which iron rusts. [CBSE 2012]
- Q.43** Write balanced chemical equations for the following reactions: [CBSE 2012]
(a) Dilute sulphuric acid reacts with aluminium powder.
(b) Dilute hydrochloric acid reacts with sodium carbonate.
(c) Carbon dioxide is passed through lime water.
- Q.44** Write balanced equations for the reaction of:
(i) aluminium when heated in air. Write the name of the product.
(ii) iron with steam. Name the product obtained.
(iii) calcium with water. Why does calcium start floating in water ? [CBSE 2012]
- Q.45** A metal 'X' acquires a green colour coating on its surface on exposure to air. [CBSE 2012]
(i) Identify the metal 'X' and name the process responsible for this change.
(ii) Name and write chemical formula of the green coating formed on the metal.
(iii) List two important methods to prevent the process.
- Q.46** Give reason for the following: [CBSE 2012]
(a) Aluminium oxide is considered as an amphoteric oxide.
(b) Ionic compounds conduct electricity in molten state.
- Q.47** Explain why calcium metal after reacting with water starts floating on its surface. Write the chemical equation for the reaction. Name one more metal that starts floating after some time when immersed in water. [CBSE 2012]

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- Q.48** Name the following:
- A metal, which is preserved in kerosene.
 - A lustrous coloured non-metal.
 - A metal, which can melt while kept on palm.
 - A metal, which is a poor conductor of heat.
- [CBSE 2012]
- Q.49** A green layer is gradually formed on a copper plate left exposed to air for a week in a bathroom. What could this green substance be?
- [CBSE 2012]
- Q.50** (a) Define activity series of metals. Arrange the metals gold, copper, iron and magnesium in order of their increase in reactivity.
- (b) What will you observe when:
- Some zinc pieces are put in copper sulphate solution.
 - Some silver pieces are put into green coloured ferrous sulphate solution.
- [CBSE 2012]
- Q.51** Suggest a method of reduction for the following metals during their metallurgical processes:
- metal 'A' which is one of the last, second or third position in the reactivity.
 - metal 'B' which gives vigorous reaction even with water and air.
 - metal 'C' which is kept in the middle of activity series.
- [CBSE 2012]
- Q.52** Give reason for the following:
- School bells are made up of metals.
 - Electric wires are made up of copper.
- [CBSE 2012]
- Q.53** (a) An ore on treatment with dilute hydrochloric acid produces brisk effervescence. What type of ore is this? What steps will be required to obtain metal from the enriched ore.
- (b) Copper coin is kept immersed in silver nitrate solution for some time. What change will take place in coin and colour of the solution? Write balanced chemical equation of the reaction involved.
- [CBSE 2014]
- Q.54** You are provided with magnesium ribbon and sulphur powder. Explain with the help of an activity that metal oxides are basic and non-metal oxide are acidic in nature.
- [CBSE 2014]
- Q.55** You are given samples of three metals. Sodium, magnesium and copper. Suggest any two activities to arrange them in order of decreasing activity.
- [CBSE 2014]
- Q.56** (a) Write electron dot diagram for chlorine (At No. 17) and calcium (At No. 20). Show the formation of calcium chloride by transfer of electrons.
- (b) Identify the nature of above compound and explain three physical properties of such compound.
- [CBSE 2015]
- Q.57** (a) State the electron-dot structure for calcium and sulphur.
- (b) Show the formation of CaS by the transfer of electrons.
- (c) Name the ions present in this compound CaS. Atomic number of Ca = 20, O = 16.
- [CBSE 2015]
- Q.58** (a) Write the electron dot structures for potassium and chlorine.
- (b) Show the formation of KCl by the transfer of electrons.
- (c) Name the ions present in the compound, KCl.
- [CBSE 2015]
- Q.59** What is cinnabar? How is metal extracted from cinnabar? Explain briefly.
- [CBSE 2015]
- Q.60** State three reasons for the following facts
- Sulphur is a non-metal
 - Magnesium is a metal One of the reasons must be supported with a chemical equation.
- [CBSE 2015]
- Q.61** Mention the names of the metals for the following:
- Two metals which are alloyed with iron to make stainless steel.
 - Two metals which are used to make jewellery.
- [CBSE 2015]
- Q.62** Write one example of each of
- a metal which is so soft that, it can be cut with knife and a non-metal which is the hardest substance.
 - a metal and a non-metal which exist as liquid at room temperature.
- [CBSE 2015]
- Q.63** How is copper obtained from sulphide ore? Give equation of the reactions.
- [CBSE 2017,2018]
- Q.64** How can the pure iron which is very soft be made useful?
- [CBSE 2019]
- Q.65** Out of three metals P, Q and R, P is less reactive than Q and R is more reactive than P and Q both. Suggest an activity to arrange P, Q and R in order of their decreasing reactivity.
- [CBSE 2019]
- Q.66** Silver articles become black when kept in open for some time, whereas copper vessels lose their shiny brown surfaces and gain a green coat when kept in open. Name the substances present in air with which these metals react and write the name of the products formed.
- [CBSE 2019]

- Q.67** A metal that exists as a liquid at room temperature is obtained by heating its sulphide in the presence of air. Identify the metal and its ore and give the reaction involved. [CBSE 2019]
- Q.68** How is the method of extraction of metals high up in the reactivity series different from that for the metals in the middle? Why can the same process not be applied for them? Name the process used for the extraction of these metals. [CBSE 2019]
- Q.69** What are ionic or electrovalent compounds? Give an example of ionic compound. Explain with reason four properties of these compounds. [CBSE 2019]
- Q.70** A metal A, which is used in thermite process, when heated with oxygen gives an oxide B, which is amphoteric in nature. Identify A and B. Write down the reactions of oxide B with HCl and NaOH. [CBSE 2019]
- Q.71** Give reasons :
- Platinum, gold and silver are used to make jewellery.
 - Sodium, potassium and lithium are stored under oil
- (c) Aluminium is a highly reactive metal, yet it is used to make utensils for cooking.
- (d) Carbonate and sulphide ores are usually converted into oxides during the process of extraction. [CBSE 2019]
- Q.72** Differentiate between metals and non-metals on the basis of their chemical properties. [CBSE 2019]
- Q.73** Given below are the steps for the extractions of copper from its ore. Write the chemical equation of the reactions involved in each case.
- Roasting of copper (I) sulphide
 - Reduction of copper (I) oxide from copper (I) sulphide
 - Electrolytic refining. [CBSE 2019]
- Q.74** What is 'rusting'? Describe with a labelled diagram an activity to investigate the conditions under which iron rusts. [CBSE 2020]

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- Q.1** Give the names of the following functional groups:
(i) –OH (ii) –COOH [CBSE 2007]
- Q.2** What is the difference in the molecular formula of any two consecutive members of a homologous series of organic compounds? [CBSE 2008]
- Q.3** (a) Give a chemical test to distinguish between saturated and unsaturated hydrocarbons.
(b) (i) Name the products formed when ethanol burns in air.
(ii) What two forms of energy are liberated on burning alcohol?
(c) Why is the reaction between methane and chlorine considered a substitution reaction? [CBSE 2008]
- Q.4** (a) Why are covalent compounds generally poor conductors of electricity?
(b) Name the following compound:
(c) Name the gas evolved when ethanoic acid is added to sodium carbonate. How would you prove the presence of this gas? [CBSE 2008]
- Q.5** Name the carbon compound which on heating with excess of concentrated sulphuric acid at 443 K gives ethene. [CBSE 2009]
- Q.6** What is meant by a saturated hydrocarbon? [CBSE 2009]
- Q.7** Name the compound formed when ethanol is warmed with ethanoic acid in the presence of a few drops of conc. H_2SO_4 [CBSE 2009]
- Q.8** Draw the structure of CH_3COOH molecule. [CBSE 2009]
- Q.9** Draw the structure of ethanol molecule. [CBSE 2009]
- Q.10** What happens when a small piece of sodium is dropped into ethanol? [CBSE 2009]
- Q.11** What is meant by a functional group in an organic compound? [CBSE 2009]
- Q.12** Give reasons for the following observations:
(a) The element carbon forms a very large number of compounds.
(b) Air holes of a gas burner have to be adjusted when the heated vessels get blackened by the flame.
(c) Use of synthetic detergents causes pollution of water. [CBSE 2009]
- Q.13** What is ethanoic acid? Write the formula of the functional group present in this acid. What special name is given to its 5 - 8% solution in water? How does ethanoic acid react with sodium carbonate? Write a chemical equation of the reaction and common name of the salt produced. [CBSE 2009]
- Q.14** State two characteristic features of carbon which when put together give rise to large number of carbon compounds. [CBSE 2010]
- Q.15** Write the structural formula of chloroethane. [CBSE 2010]
- Q.16** Write the name and molecular formula of an organic compound having its name suffixed with '-ol' and having two carbon atoms in the molecule. With the help of a balanced chemical equation indicate what happens when it is heated with excess of conc. H_2SO_4 . [CBSE 2010]
- Q.17** Write the names and molecular formula of two organic compounds having functional group suffixed as '-oic acid'. With the help of a balanced chemical equation and explain what happens when any one of them reacts with sodium hydroxide. [CBSE 2010]
- Q.18** What is a homologous series? Which two of the following organic compounds belong to the same homologous?
 $CH_3, C_2H_6, C_2H_6O, C_2H_6O_2, CH_4O$ [CBSE 2010]
- Q.19** Name the functional group of organic compounds that can be hydrogenated. With the help of suitable example explain the process of hydrogenation mentioning the conditions of the reaction and any one change in physical property with the formation of the product. Name any one natural source of organic compounds that are hydrogenated. [CBSE 2010]
- Q.20** An ester has the molecular formula $C_4H_8O_2$. Write its structural formula. What happens when this ester is heated in the presence of sodium hydroxide solution? Write the balanced chemical equation for the reaction and name the products. What is a saponification reaction? [CBSE 2010]
- Q.21** An organic compound 'A' is an essential constituent of wine and beer. Oxidation of 'A' yields an organic acid 'B' which is present in vinegar. Name the compounds 'A' and 'B' and write their structural formula. What happens when 'A' and 'B' react in the presence of an acid catalyst? Write the chemical equation for the reaction. [CBSE 2010]
- Q.22** What is ethanol? State its two properties. What happens when it is heated with excess of conc. H_2SO_4 at 443 K? What role does conc. H_2SO_4 play in this reaction? Write chemical equation of the reaction involved and the structural formula of the main product formed. [CBSE 2010]
- Q.23** With the help of balanced chemical equations explain what happens when ethanol is heated with (i) alkaline solution of potassium permanganate, (ii) excess concentrated sulphuric acid at 443 K. Mention any two uses of ethanol. [CBSE 2010]
- Q.24** How many covalent bonds are there in a molecule of ethane (C_2H_6)? [CBSE 2011]

- Q.25** Write the electron dot structure of ethene molecule (C_2H_4). [CBSE 2011]
- Q.26** Write the electron dot structure of ethane molecule (C_2H_6). [CBSE 2011]
- Q.27** Draw the structure of butanone molecule, $CH_3COC_2H_5$. [CBSE 2011]
- Q.28** Draw the structure of the hexanal molecule, $C_5H_{11}CHO$. [CBSE 2011]
- Q.29** Butanone is a four carbon per molecule compound. Name the functional group present in it. [CBSE 2011]
- Q.30** What is an 'esterification' reaction? Describe an activity to show esterification. [CBSE 2011]
- Q.31** Out of HCl and CH_3COOH , which one is a weak acid and why? Describe an activity to support your answer. [CBSE 2011]
- Q.32** Write chemical equations for what happens when
(i) sodium metal is added to ethanoic acid.
(ii) solid sodium carbonate is added to ethanoic acid.
(iii) ethanoic acid reacts with a dilute solution of sodium hydroxide. [CBSE 2011]
- Q.33** Describe two examples of different oxidations of ethanol. Name the products obtained in each case. [CBSE 2011]
- Q.34** Write a chemical equation in each case to represent the following types of chemical reactions of organic compounds: [CBSE 2011]
- Q.35** In tabular form, differentiate between ethanol and ethanoic acid under the following heads. [CBSE 2011]
- Q.36** (a) State two properties of carbon which lead to a very large number of carbon compounds.
(b) Why does micelle formation take place when soap is added to water? Why are micelles not formed when soap is added to ethanol?
- Q.37** Write the number of covalent bonds in the molecule of propane, C_3H_8 . [CBSE(AI) 2015]
- Q.38** Write the molecular formula
(i) Methane and (ii) Ethanol. [CBSE 2015]
- Q.39** Write the name and formula of the 2nd member of homologous series having general formula C_nH_{2n} . [CBSE 2015]
- Q.40** Write the name and formula of the 2nd member of homologous series having general formula C_nH_{2n-2} . [CBSE 2015]
- Q.41** Write the name and molecular formula of the first member of the homologous series of alkynes. [CBSE 2015]
- Q.42** Name the process by which unsaturated fats are changed to saturated fats. [CBSE 2015]
- Q.43** Ethene is formed when ethanol at 443 K is heated with excess of concentrated sulphuric acid. What is the role of sulphuric acid in this reaction? Write the balanced chemical equation of this reaction. [CBSE 2015]
- Q.44** What is meant by functional group in carbon compounds? Write in tabular form the structural formula and the functional group present in the following compounds :
(i) Ethanol (ii) Ethanoic acid [CBSE 2015]
- Q.45** Draw the electron-dot structure for ethyne. A mixture of ethyne and oxygen is burnt for welding. In your opinion, why cannot we use a mixture of ethyne and air for this purpose? [CBSE 2015]
- Q.46** What is meant by isomers? Draw the structures of two isomers of butane, C_4H_{10} . Explain why we cannot have isomers of first three members of alkane series. [CBSE 2015]
- Q.47** What is meant by homologous series of carbon compounds? Classify the following carbon compounds into two homologous series and name them. [CBSE (AI) 2015]
- Q.48** Explain why carbon forms compounds mainly by covalent bond. Explain in brief two main reasons for carbon forming a large number of compounds. Why does carbon form strong bonds with most other elements? [CBSE 2015]
- Q.49** Which element exhibits the property of catenation to maximum extent any why? [CBSE 2016]
- Q.50** Write the name and molecular formula of the fourth member of alkane series. [CBSE 2016]
- Q.51** Write the next homologue of each of the following
(i) C_2H_4 (ii) C_4H_6 [CBSE 2016]

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- Q.52** Write the name and structure of an alcohol with four carbon atoms in its molecule. [CBSE (AI)2016]
- Q.53** Write the name and molecular formula of an organic compound having its name suffixed with '-ol' and having two carbon atoms in the molecule. With the help of a balanced equation indicate what happens when it is heated with excess of conc. H_2SO_4 . [CBSE 2016]
- Q.54** Write chemical equation of the reaction of ethanoic acid with the following
(i) Sodium (ii) Sodium hydroxide (iii) Ethanol.
Write the name of one main product of each reaction. [CBSE 2016]
- Q.55** When ethanol reacts with ethanoic acid in the presence of conc. H_2SO_4 , a substance with fruity smell is produced. Answer the following :
(i) State the class of compounds to which the fruity smelling compounds belong. Write the chemical equation for the reaction and write the chemical name of the product formed.
(ii) State the role of conc. H_2SO_4 in this reaction. [CBSE 2016]
- Q.56** (i) Give a chemical test to distinguish between saturated and unsaturated hydrocarbons.
(ii) Name the products formed when ethane burns in air. Write the balanced chemical equation for the reaction showing the types of energies liberated.
(iii) Why is reaction between methane and chlorine in the presence of sunlight considered a substitution reaction ? [CBSE 2016]
- Q.57** Write the molecular formula of first two members of homologous series having functional group $-\text{Cl}$. [CBSE 2017]
- Q.58** Write the molecular formula of the 2nd and the 3rd member of the homologous series whose first member is methane. [CBSE(AI) 2017]
- Q.59** Two carbon compounds X and Y have the molecular formula C_4H_8 and C_5H_{12} respectively. Which one of these is most likely to show addition reaction ? Justify your answer. Also give the chemical equation to explain the process of addition reaction in this case. [CBSE 2017]
- Q.60** Name two oxidising agents that are used for the conversion of alcohols to acids. Distinguish between ethanol and ethanoic acid on the basis of
(i) litmus test and (ii) reaction with sodium hydrogen carbonate. [CBSE 2017]
- Q.61** Why are certain compounds called hydrocarbons ? Write the general formula for homologous series of alkanes, alkenes and alkynes and also draw the structure of the first member of each series. Write the name of the reaction that converts alkenes into alkanes and also write a chemical equation to show the necessary conditions for the reaction to occur. [CBSE (AI)2017]
- Q.62** What are esters ? How are esters prepared ? Write the chemical equation for the reaction involved. What happens when an ester reacts with sodium hydroxide? Write the chemical equation for the reaction and also state the name and use of this reaction. [CBSE 2017]
- Q.63** Write a chemical equation of each of the following types of chemical reactions of organic compounds.
(a) Oxidation reaction (b) Addition reaction
(c) Substitution reaction [CBSE 2017]
- Q.64** Write the structural formula of ethanol. What happens when it is heated with excess of conc. H_2SO_4 at 443K? Write the chemical equation for the reaction stating the role of conc. H_2SO_4 in this reaction. [CBSE 2017]
- Q.65** What is a homologous series of carbon compounds? List its any two characteristics. Write the name and formula of next higher homologous of HCOOH . [CBSE 2017, 2019]
- Q.66** Distinguish between esterification and saponification reactions with the help of the chemical equations for each. State one use of each (i) esters, and (ii) saponification process. [CBSE(AI) 2017, 2019]
- Q.67** How would you bring about the following conversions? Name the process and write the reaction involved.
(i) Ethanol to ethene
(ii) Propanol to propanoic acid. [CBSE 2019]
- Q.68** What is the difference between soaps and detergents? State in brief the cleansing action of soaps in removing an oils spot from a fabric. Why are soaps not very effective when a fabric is washed in hard water ? How is this problem resolved ? [CBSE 2019]
- Q.69** Write the chemical formula and name of the compound which is the active ingredient of all alcoholic drinks. List its two uses. Write chemical equation and name of product formed when this compound reacts with
(i) sodium metal
(ii) hot concentrated sulphuric acid [CBSE 2019]
- Q.70** What is methane ? Draw its electron dot structure. Name the type of bonds formed in this compound. Why are such compounds :
(i) Poor conductors of electricity ? and
(ii) Have low melting and boiling points ? What happens when this compound burns in oxygen ? [CBSE 2019]
- Q.71** (i) State the reason why carbon can neither form C^{4+} cation nor C^{4-} anions, but forms covalent bonds. Also state reasons to explain why covalent compounds
(a) are bad conductors of electricity.

(b) have low melting and boiling points.

[CBSE 2019]

Q.72 Two compounds have same molecular formula C_3H_6O . Write the name of these compounds and their structural formula. [CBSE 2019]

Q.73 What would be the electron dot structure of carbon dioxide which has the formula CO_2 ? [CBSE 2019]

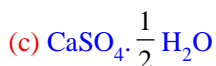
Q.74 What would be the electron dot structure of a molecule of sulphur which is made up of eight atoms of sulphur? [CBSE 2019]

Q.75 What are the two properties of carbon which lead to the huge number of carbon compounds we see around us? [CBSE 2019]

Q.76 How can ethanol and ethanoic acid be differentiated on the basis of their physical and chemical properties? [CBSE 2019]

Q.77 Name a cyclic unsaturated carbon compound. [CBSE 2020]

Q.78 The chemical formula for plaster of Paris is



[CBSE 2020]

Q.79 Name the functional group in propanone.

[CBSE 2020]

Q.80 For question two statements are given one labelled Assertion (A) and the other labelled Reason (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below. [CBSE 2020]

(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

Assertion (A) : In a homologous series of alcohols, the formula for the second member is C_2H_5OH and the third member is C_3H_7OH .

Reason (R) : The difference between the molecular masses of the two consecutive members of a homologous series is 144.

Q.81 Draw the structure for (i) ethanol, (ii) ethanoic acid.

(b) Why is the conversion of ethanol to ethanoic acid considered an oxidation reaction? Write the oxidising agent used in the reaction involved. [CBSE 2020]

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- Q.1** The elements of the second period of the Periodic Table are given below: Li Be B C N O F
- (a) Give reason to explain why atomic radii decrease from Li to F.
- (b) Identify the most
- (i) metallic and
- (ii) non-metallic element. [CBSE 2008]
- Q.2** The position of three elements A, B and C in the Periodic Table is shown below:
Giving reasons, explain the following:
- (a) Element A is non-metal.
- (b) Atom of element C has a larger size ' than atom of element A.
- (c) Element B has a valency of 1. [CBSE 2008]
- Q.3** What physical and chemical properties of elements were used by Mendeleev in creating his periodic table? List two observations which posed a challenge to Mendeleev's Periodic Law. [CBSE 2008]
- Q.4** Table given below shows a part of the Periodic Table.
- (a) Atomic size of Mg is less than that of Na.
- (b) Fluorine is more reactive than Chlorine. [CBSE 2008]
- Q.5** (a) Why do we classify elements?
- (b) What were the two criteria used by Mendeleev in creating his Periodic Table?
- (c) Why did Mendeleev leave some gaps in his Periodic Table?
- (d) In Mendeleev's Periodic Table, why was there no mention of Noble gases like Helium, Neon and Argon?
- (e) Would you place the two isotopes ' of chlorine, Cl-35 and Cl-37 in different slots because of their different atomic masses or in the same slot because their chemical properties are the same? Justify your answer. [CBSE 2008]
- Q.6** Lithium, sodium and potassium form a Dobereiner's triad. The atomic masses of lithium and potassium are 7 and 39 respectively. Predict the atomic mass of sodium. [CBSE 2009]
- Q.7** Chlorine, bromine and iodine form a Dobereiner's triad. The atomic masses of chlorine and iodine are 35.5 and 126.9 respectively. Predict the atomic mass of bromine. [CBSE 2009]
- Q.8** Why was the system of classification of elements into triads not found suitable? [CBSE 2009]
- Q.9** State Mendeleev's periodic law. Write two achievements of Mendeleev's periodic table [CBSE 2009]
- Q.10** (a) What is meant by periodicity in properties of elements with reference to the periodic table?
- (b) Why do all the elements of the same group have similar properties?
- (c) How will the tendency to gain electrons change as we go from left to right across a period? Why? [CBSE 2009]
- Q.11** (a) What are 'groups' and 'periods' in the 'periodic table'?
- (b) Two elements M and N belong to group I and II respectively and are in the same period of the periodic table. How do the following properties of M and N vary? [CBSE 2009]
- Sizes of their atoms
 - Their metallic characters
 - Their valencies in forming oxides
 - Molecular formulae of their chlorides
- Q.12** (a) did Mendeleev have gaps in his periodic table?
- (b) any three limitations of Mendeleev's classification.
- (c) does electronic configurations of atoms change in a period with increase in atomic number? [CBSE 2009]
- Q.13** 16 Atoms of seven elements A, B, C, D, E, F and G have a different number of electronic shells but have the same number of electrons in their outermost shells.

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The elements A and C combine with chlorine to form an acid and common salt respectively. The oxide of element A is liquid at room temperature and is a neutral substance, while the oxides of the remaining six elements are basic in nature. Based on the above information, answer the following questions: What could the element A be?

- (i) Will elements A to G belong to the same period or same group of the periodic table?
- (iii) Write the formula of the compound formed by the reaction of the element A with oxygen,
- (iv) Show the formation of the compound by a combination of element C with chlorine with the help of electronic structure.
- (v) What would be the ratio of number of combining atoms in a compound formed by the combination of element A with carbon?
- (vi) Which one of the given elements is likely to have the smallest atomic radius? [CBSE 2010]

Q.14 In the following table, six elements A, B, C, D, E and F (here letters are not the usual symbols of the elements) of the Modern Periodic Table with atomic numbers 3 to 18 are given:

- (a) Which of these halogen is
 - (i) a noble gas,
 - (ii) a halogen
- (b) If B combines with F, what would be the formula of the compound formed?
- (c) Write the electronic configurations of C and E. [CBSE 2010]

Q.15 In the following table, are given eight elements A, B, C, D, E, F, G and H (here letters are not the usual symbols of the elements) of the Modern Periodic Table with the atomic numbers of the elements in parenthesis.

1. What is the electronic configuration of F?
2. What is the number of valence electrons in the atom of F?
3. What is the number of shells in the atom of F?
4. Write the size of the atoms of E, F, G and H in decreasing order,
5. State whether F is a metal or a non-metal.
6. Out of the three elements B, E and F, which one has the biggest atomic size? [CBSE 2010]

Q.16 Atoms of eight elements A, B, C, D, E, F, G and H have the same number of electronic shells but different number of electrons in their outermost shell. It was found that elements A and G combine to form an ionic compound. This compound is added in a small amount to almost all vegetable dishes during cooking. Oxides of elements A and B are basic in nature while those of E and F are acidic. The oxide of D is almost neutral. Based on the above information answer the following questions:

1. To which group or period of the Periodic Table do the listed elements belong?
2. What would be the nature of compound formed by a combination of elements B and F?
3. Which two of these elements could definitely be metals?

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4. Which one of the eight elements is most likely to be found in gaseous state at room temperature?
5. If the number of electrons in the outermost shell of elements C and G be 3 and 7 respectively, write the formula of the compound formed by the combination of C and G [CBSE 2010]
- Q.17** Atoms of eight elements A, B, C, D, E, F, G and H have the same number of electronic shells but different number of electrons in their outermost shells. It was found that elements A and G combine to form an ionic compound which can also be extracted from sea water. Oxides of the elements A and B are basic in nature while those of E and F are acidic. The oxide of element D is almost neutral. Answer the following questions based on the information given herein :
- To which group or period of the periodic table do the listed elements belong?
 - Which one of the eight elements is likely to be a noble gas?
 - Which one of the eight elements would have the largest atomic radius?
 - Which two elements amongst these are likely to be nonmetals?
 - Which one of these eight elements is likely to be a semi-metal or metalloid? [CBSE 2010]
- Q.18** How can the valency of an element be determined if its electronic configuration is known? What will be the valency of an element of atomic number 9 (nine)? [CBSE 2010]
- Q.19** How does the electronic configuration of an atom of an element relate to its position in the modern periodic table? Explain with one example. [CBSE 2010]
- Q.20** The atomic numbers of three elements, X, Y and Z are 9, 11 and 17 respectively. Which two of these elements will show similar chemical properties? Why? [CBSE 2010]
- Q.21** On the basis of electronic configuration, how will you identify the first and the last element of a period? [CBSE 2010]
- Q.22** In the modern periodic table, the element Calcium (atomic number = 20) is surrounded by elements with atomic numbers 12, 19, 21 and 38. Which of these elements has physical and chemical properties resembling those of Calcium and why? [CBSE 2010]
- Q.23** How does the metallic character of elements change along a period of the periodic table from the left to the right and why? [CBSE 2010]
- Q.24** How does the valency of elements vary
- in going down a group, and
 - in going from left to right in a period of the periodic table? [CBSE 2010]
- Q.25** In the periodic table, how does the tendency of atoms to lose electrons change on going from
- left to right across a period?
 - top to bottom in a group? [CBSE 2010]
- Q.26** Give reasons:
- Elements in a group have similar chemical properties.
 - Elements of Group I form ions with a charge of +1. [CBSE 2010]
- Q.27** Two elements X and Y belong to group 1 and 2 respectively in the same period of periodic table. Compare them with respect to periodic table from the left to the right and why? [CBSE 2010]
- the number of valence electrons in their atoms
 - their valencies
 - metallic character
 - the sizes of their atoms
 - formulae of their oxides
 - formulae of their chlorides [CBSE 2010]
- Q.28** The atomic number of an element is 16. Predict
- the number of valence electrons in its atom
 - its valency
 - its group number
 - whether it is a metal or a non-metal
 - the nature of oxide formed by it
 - the formula of its chloride [CBSE 2010]
- Q.29** The positions of three elements A, B and C in the periodic table are indicated below:
- | | |
|----------|-------------------|
| Group 16 | Group 17 |
| - | - (First Period) |
| - | A (Second Period) |
| - | - (Third Period) |
| B | C (Fourth Period) |
- State whether element C would be a metal or a non-metal. Why?
 - Which is the more active element, A or C? Why?
 - Which type of ion (cation or anion) will be formed by the element C? Why? [CBSE 2010]
- Q.30** An element 'X' has atomic number 13.
- Write its electronic configuration.
 - State the group to which 'X' belongs.
 - Is 'X' a metal or a non-metal?
 - Write the formula of its bromide. [CBSE 2012]

- Q.31** State the Modern Periodic Law for classification of elements. How many
(a) groups and (b) periods are there in the Modern Periodic Table?. [CBSE 2012]
- Q.32** An element 'M' has atomic number 11.
(a) Write its electronic configuration.
(b) State the group to which 'M' belongs.
(c) Is 'M' a metal or a non-metal?
(d) Write the formula of its chloride [CBSE 2012]
- Q.33** the formula of its oxide An element 'M' has atomic number 12.
(a) Write its electronic configuration.
(b) State the group to which 'M' belongs.
(c) Is 'M' a metal or a non-metal?
(d) Write. [CBSE 2012]
- Q.34** Choose from the following:
6C, 8O, 10Ne, 11Na, 14Si
(a) Elements that should be in the same period.
(b) Elements that should be in the same group.
State reason for your selection in each case. [CBSE 2012]
- Q.35** An element 'X' belongs to 3rd period and group 17 of the periodic table. State its
(a) electronic configuration
(b) valency. Justify your answer with reasoning. [CBSE 2012]
- Q.36** The formula of magnesium oxide is MgO. State the formula of barium nitrate and barium sulphate, if barium belongs to the same group as magnesium. [CBSE 2012]
- Q.37** Choose from the following:
20Ca, 3Li, 11Na, 10Ne
(a) An element having two shells completely filled with electrons.
(b) Two elements belonging to the same group of the periodic table. [CBSE 2012]
- Q.38** Why do all the elements of the (a) same group have similar properties, (b) same period have different properties? [CBSE 2012]
- Q.39** An element 'E' has following electronic configuration:
(a) To which group of the periodic table does element 'E' belong?
(b) To which period of the periodic table does element 'E' belong?
(c) State the number of valence electrons present in element 'E'.
(d) State the valency of the element 'E'. [CBSE 2012]
- Q.40** Choose from the following:
4Be, 9F, 19K, 20Ca
(a) The element having one electron in the outermost shell.
(b) Two elements of the same group. [CBSE 2012]
- Q.41** An element has atomic number 13.
(a) What is the group and period number to which this element belongs?
(b) Is this element a metal or a non-metal? Justify your answer. [CBSE 2012]
- Q.42** The electronic configuration of two elements 'A' and 'B' are 2, 8, 3 and 2, 8, 7 respectively. Find the atomic number of these elements. State the nature and formula of the compound formed by the union of these two elements. [CBSE 2012]

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- Q.43** The atomic number of three elements are given below: Write the symbol of the element which belongs to (a) group 13, (b) group 15, of the periodic table. State the period of the periodic table to which these elements belong. Give reason for your answer. [CBSE 2012]
- Q.44** Write the atomic number of these elements. What will be formula of the compound formed and the nature of bond between them when these two elements chemically combine together? [CBSE 2012]
- Q.45** The atomic numbers of three elements are given below: Write the symbol of the element which belongs to (a) group 1, (b) group 14, of the periodic table. State the period of the periodic table to which these elements belong. State reason to support your answer. [CBSE 2012]
- Q.46** F, Cl and Br are the elements each having seven valence electrons. Which of these (a) has the largest atomic radius, (b) is most reactive? Justify your answer stating reason for each. [CBSE 2012]
- Q.47** Na, Mg and Al are the elements having one, two and three valence electrons respectively. Which of these elements (a) has the largest atomic radius, (b) is least reactive? Justify your answer stating reason for each. [CBSE 2012]
- Q.48** (a) How are the following related?
 1. Number of valence electrons of different elements in the same group.
 2. Number of shells of elements in the same period.
 (b) How do the following change?
 1. Number of shells of elements as we go down a group.
 2. Number of valence electrons of elements on moving from , left to right in a period.
 3. Atomic radius in moving from left to right along a period.
 4. Atomic size down a group. [CBSE 2012]
- Q.49** (a) How many periods are there in the Modern Periodic Table of elements?
 (b) How do atomic radius, valency and metallic character vary down a group?
 (c) How do the atomic size and metallic character of elements vary as we move from left to right in a period? [CBSE 2012]
- Q.50** Write two reasons responsible for late discovery of noble gases. [CBSE 2013]
- Q.51** How many groups and periods are there in the Modern Periodic Table? How do the atomic size and metallic character of elements vary as we move (i) down a group and (ii) from left to right in a period. [CBSE 2015]
- Q.52** Na, Mg and Al are the elements of the same period of Modern Periodic Table having one, two and three valence electrons respectively. Which of these elements (i) has the largest atomic radius (ii) is least reactive? Justify your answer stating reason for each case. [CBSE 2015]
- Q.53** Two elements 'P' and 'Q' belong to the same period of the Modern Periodic Table and are in Group-I and Group -2 respectively. Compare their following characteristics in tabular form :
 (i) The number of electrons in their atoms
 (ii) The sizes of their atoms
 (iii) Their metallic characters
 (iv) Their tendencies to lose electrons
 (v) The formula of their oxides
 (vi) The formula of their chlorides [CBSE 2015]
- Q.54** The atomic number of an element 'X' is 20.
 (i) Determine the position of the element 'X' in the periodic table.
 (ii) Write the formula of the compound formed when 'X' reacts / combines with another element 'Y' (atomic number 8).
 (iii) What would be the nature (acidic or basic) of the compound formed? Justify your answer. [CBSE 2015]

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- Q.55** Write the main aim of classifying elements. Name the basic property of elements used in the development of Modern Periodic. State the Modern Periodic Law. On which side (part) of the Modern periodic table do you find metals, metalloids and non-metals ?
[CBSE 2015, 2016]
- Q.56** Name any two elements of group one and write their electronic configurations. What similarity do you observe in their electronic configurations ? Write the formula of oxide of any of the aforesaid element.
[CBSE 2016]
- Q.57** The atomic number of an element 'X' is 19.
(i) Write its electronic configuration
(ii) To which period of the Modern Periodic Table does it belong and what is its valency ?
(iii) If 'X' burns in oxygen to form its oxide, what will be its nature - acidic, basic or neutral ?
(iv) Write balanced chemical equation for the reaction when this oxide is dissolved in water.
[CBSE 2016]
- Q.58** An element 'X' has mass number 35 and number of neutrons 18. Write atomic number and electronic configuration of 'X'. Also write group number, period number and valency of 'X'.
[CBSE 2016, 2019]
- Q.59** State Modern Periodic Law. What is number of groups and periods in the Modern Periodic Table ?
[CBSE 2017]
- Q.60** The atomic number of an element is 17. To which group and period does this element belong ? Determine its valency.
[CBSE 2017]
- Q.61** What is periodicity in properties of elements with reference to the Modern periodic Table ? Why do all the elements of the same group have similar properties? How does the tendency of elements to gain electrons change as we move from left to right in a period ? State the reason of this change.
[CBSE 2017]
- Q.62** Write the names given to the vertical columns and horizontal rows in the Modern Periodic Table. How does the metallic character of elements vary on moving down a vertical column ? How does the size of atomic radius vary on moving left to right in a horizontal row? Give reason in support of your answer in the above two cases.
[CBSE 2017]
- Q.63** How does the atomic radius of the elements change on going.
(i) from left to right in a period, and
(ii) down a group
in the Modern Periodic Table ? Give reason in support of your answer.
[CBSE 2017, 2019]
- Q.64** What was Doberiner's basis of classifying elements?
[CBSE 2019]
- Q.65** If an element X is placed in group 14, what will be formula and the nature of bonding of its chloride ?
[CBSE 2019]

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- Q.66** (i) How it can be proved that the basic structure of the Modern Periodic Table is based on the electronic configuration of atoms of different elements ?
(ii) The electronic configuration of an element is 2,8,4. State its :
(a) group and period in the Modern Periodic table.
(b) name and write its one physical property.
[CBSE 2019]
- Q.67** Write the electronic configuration of two elements A and B whose atomic numbers are 20 and 17 respectively. Write the molecular formula of the compound formed when element A reacts with element B. State whether this compound is acidic, basic or neutral. Give reason to justify your answer.
[CBSE 2019]
- Q.68** Based on the group valency of elements write the molecular formula of the following compounds giving justification for each :
(i) Oxide of first group elements.
(ii) Halide of the elements of group thirteen, and
(iii) Compound formed when an elements, A group 2 combines with an element, B of group seventeen.
[CBSE 2019]
- Q.69** The electrons in the atoms of four elements A, B, C and D are distributed in three shells having 1, 3, 5 and 7 electrons respectively in their outermost shells. Write the group numbers in which these elements are placed in the Modern Periodic Table. Write the electronic configuration of the atoms of B and D and the molecular formula of the compound formed when B and D combine.
[CBSE 2019]
- Q.70** (i) List any three observations which posed a challenge to Mendeleev's Periodic Law.
(ii) How does the metallic character of elements vary on moving from
(a) Left to right in a period
(b) from top to bottom in a group of the Modern Periodic Table ? Give reason for your answer.
[CBSE 2019]
- Q.71** Besides gallium, which other elements have since been discovered that were left by Mendeleev in his Periodic Table ?
[CBSE 2019]
- Q.72** What were the limitations of Newlands' Law of Octaves?
[CBSE 2019]
- Q.73** "Atomic number of an element is considered to be a more appropriate parameter than its atomic mass for a chemist." Take the example of the element X (atomic number 13) to Justify this statement.
[CBSE 2019]
- Q.74** Carbon cannot reduce the oxide of sodium, magnesium and aluminum to their respective metals. Why ? Where are these metals placed in the reactivity series ? How are these metals obtained from their ores ? Take an example to explain the process of extraction along with chemical equations.
[CBSE 2020]
- Q.75** Define atomic size. Give its unit of measurement. In the modern periodic dtable what trend is observed in the atomic radius in a group and a period and why is it so ?
[CBSE 2020]

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- Q.1** (a) What is meant by breathing? What happens to the rate of breathing during vigorous exercise and why?
(b) Define translocation with respect to transport in plants. Why is it essential for plants? Where in plants are the following synthesised?
(i) Sugar (ii) Hormone [CBSE 2009]
- Q.2** What is the mode of nutrition in human beings? [CBSE 2009]
- Q.3** Where does digestion of fat take place in our body? [CBSE 2009]
- Q.4** What will happen to a plant if its xylem is removed? [CBSE 2009]
- Q.5** (a) List the three events that occur during the process of photosynthesis. Explain the role of stomata in this process.
(b) Describe an experiment to show that "sunlight is essential for photosynthesis." [CBSE 2010]
- Q.6** Explain the process of breakdown of glucose in a cell (ii) in the absence of oxygen. [CBSE 2010]
- Q.7** Describe in brief the function of kidneys, ureters, urinary bladder and urethra. [CBSE 2010]
- Q.8** Mention how organisms like bread moulds and mushrooms obtain their food. [CBSE 2010]
- Q.9** Name the component of blood that helps in the formation of blood clot in the event of a cut. [CBSE 2010]
- Q.10** In the experiment "Light is essential for photosynthesis", why does the uncovered part of the leaf turn blue-black after putting iodine solution? [CBSE 2010]
- Q.11** Name the intermediate and the end products of glucose breakdown in aerobic respiration. [CBSE 2010]
- Q.12** State the basic difference between the process of respiration and photosynthesis. [CBSE 2010]
- Q.13** What is 'translocation' in plants? [CBSE 2010]
- Q.14** Give one reason why multicellular organisms require special organs for exchange of gases between their body and their environment. [CBSE 2010]
- Q.15** State any one difference between autotrophic and heterotrophic modes of nutrition. [CBSE 2010]
- Q.16** Name the green dot like structures in some cells observed by a student when a leaf peel was viewed under a microscope. What is this green colour due to? [CBSE 2010]
- Q.17** Leaves of a healthy potted plant were coated with vaseline to block the stomata. Will this plant remain healthy for long? State three reasons for your answer. [CBSE 2011]
- Q.18** (a) Draw a labelled diagram of stomata. List two functions of stomata.
(b) What are the raw materials used during photosynthesis? Write chemical equation for photosynthesis. [CBSE 2011]
- Q.19** (a) Draw a diagram to show the nutrition in Amoeba and label the parts used for this purpose. Mention any other purpose served by this part other than nutrition.
(b) Name the glands associated with digestion of starch in human digestive tract and mention their role.
(c) How is required pH maintained in the stomach and small intestine? [CBSE 2011]
- Q.20** (a) Draw a labelled diagram of the respiratory system of human beings with diaphragm at the end of expiration.
(b) List four conditions required for efficient gas exchange in an organism. [CBSE 2011]
- Q.21** (a) Draw a sectional view of the human heart and label on it - Aorta, Right ventricle and Pulmonary veins.
(b) State the functions of the following components of transport system :
(i) Blood (ii) Lymph [CBSE 2011]

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Fully Solved Books for 10, +1 & +2

Also Previous Years Solved Question Papers

- Q.22** (a) Draw a diagram depicting Human Alimentary Canal and label on it: Gall bladder, Liver and Pancreas.
 (b) State the roles of Liver and Pancreas.
 (c) Name the organ which performs the following functions in humans:
 (i) Absorption of digested food
 (ii) Absorption of water. [CBSE 2011]
- Q.23** (a) Draw a schematic representation of transport and exchange of oxygen and carbon dioxide during transportation of blood in human beings and label on it: Lung capillaries, Pulmonary artery to lungs, Aorta to body, Pulmonary veins from lungs.
 (b) What is the advantage of separate channels in mammals and birds for oxygenated and deoxygenated blood? [CBSE 2011]
- Q.24** Draw a diagram of the front view of human heart and label any six parts including at least two, that are concerned with arterial blood supply to the heart muscles. [CBSE 2011]
- Q.25** (a) "The breathing cycle is rhythmic whereas exchange of gases is a continuous process". Justify this statement.
 (b) What happens if conducting tubes of circulatory system develops a leak? State in brief, how could this be avoided?
 (c) How opening and closing of stomata takes place? [CBSE 2011]
- Q.26** Name two excretory products other than O_2 and CO_2 in plants. [CBSE 2011]
- Q.27** How are the alveoli designed to maximise the exchange of gases? [CBSE 2011]
- Q.28** State two differences between arteries and veins. [CBSE 2011]
- Q.29** Explain the process of nutrition in Amoeba. [CBSE 2011]
- Q.30** What is saliva? State its role in the digestion of food. [CBSE 2011]
- Q.31** What are the final products after digestion of carbohydrates and proteins? [CBSE 2011]
- Q.32** Draw a neat diagram of excretory system of human beings and label the following:
 (i) Kidney
 (ii) Ureter
 (iii) Urinary Bladder
 (iv) Urethra [CBSE 2012]
- Q.33** (a) Draw a diagram of human respiratory system and label the following:
 (i) part where air is filtered by fine hair and mucus
 (ii) part which terminates in balloon-like structures
 (iii) balloon-like structures where exchange of gases takes place.
 (iv) part which separates chest cavity from abdominal cavity.
 (b) Why is the rate of breathing in aquatic organisms much faster than in terrestrial organisms? [CBSE 2012]
- Q.34** (a) Draw a diagram to show open stomatal pore and label on it:
 (i) guard cells
 (ii) chloroplast
 (b) State two functions of stomata.
 (c) How do guard cells regulate the opening and closing of stomatal pore? [CBSE 2012]
- Q.35** List the three kinds of blood vessels of human circulatory system and write their functions in tabular form. [CBSE 2012]

for 9th, 10th, +1 & +2 students

SUMMER VACATION COURSE

Simultaneous Preparation For Engineering/Medical Entrance Exams along with Board Exams

• PHYSICS • CHEMISTRY • BIOLOGY • MATHS

KV (Kendriya Vidyalaya Students)

w.e.f. 2nd week of May **40 Days**

JNV (Jawahar Navodaya Vidyalaya)

w.e.f. 1st week of June **50 Days**

CBSE/HP-Board

During Summer Vacation **40 Days**

HIM ACADEMY

HAMIRPUR (HP)
98160 21400

- Q.36** In human alimentary canal, name the site of complete digestion of various components of food. Explain the process of digestion. [CBSE 2012]
- Q.37** Why do the walls of the trachea not collapse when there is less air in it? [CBSE 2012]
- Q.38** (a) Draw a diagram of excretory system in human beings and label the following parts. Aorta, kidney, urinary bladder and urethra.
(b) How is urine produced and eliminated? [CBSE 2013]
- Q.39** Draw a diagram of human excretory system and label renal artery and urethra. State in brief the function of : [CBSE 2013]
- Q.40** List in tabular form three differences between arteries and veins. [CBSE 2013]
- Q.41** (a) What is the role of HCl in our stomach ?
(b) What is emulsification of fats ?
(c) Which protein digesting enzyme is present in pancreatic juice ? [CBSE 2013]
- Q.42** List three characteristics of lungs which make it an efficient respiratory surface. [CBSE 2013]
- Q.43** What would be the consequences of deficiency of hemoglobin in your body? [CBSE 2013]
- Q.44** (a) Name the site of exchange of material between the blood and surrounding cells.
(b) Draw a schematic representation of transport and exchange of oxygen and carbon dioxide in human body. [CBSE 2013]
- Q.45** Draw a diagram of human respiratory system and label on it :
(i) Diaphragm (ii) Larynx [CBSE 2013]
- Q.46** Draw a neat diagram of excretory system of human beings and label on it:
(i) Left kidney (ii) Urinary bladder [CBSE 2013]
- Q.47** In mammals and birds why is it necessary to separate oxygenated and de-oxygenated blood ? [CBSE 2014]
- Q.48** Write correct sequence of four steps of method for the preparation of temporary mount of a stained leaf peel. [CBSE 2014]
- Q.49** Why do herbivores have longer, small intestine than carnivores ? [CBSE 2014]
- Q.50** Mention the raw materials required for photosynthesis. [CBSE 2014]
- Q.51** (a) Explain how does the exchange of gases occur in plants across the surface of stems, roots and leaves.
(b) How are water and minerals transported in plants ? [CBSE 2015]
- Q.52** State the role of the following in human digestive system:
(i) Digestive enzymes (ii) Hydrochloric acid (iii) Villi [CBSE 2015]
- Q.53** Name the acid presents in the following:
(i) Tomato (ii) Vinegar (iii) Tamarind [CBSE 2015]
- Q.54** Draw a diagram of human excretory system and label kidneys, ureters on it. [CBSE 2015]
- Q.55** In single celled organisms diffusion is sufficient to meet all their requirements of food, exchange of gases or removal of wastes but it is not in case of multicellular organisms. Explain the reason for this difference. [CBSE 2015]
- Q.56** (i) Write the balanced chemical equation for the process of photosynthesis,
(ii) When do the desert plants take up carbon dioxide and perform photosynthesis ? [CBSE 2015]
- Q.57** What are enzymes? Name any one enzyme of our digestive system and write its function. [CBSE 2015]
- Q.58** (i) Mention any two components of blood.
(ii) Trace the movement of oxygenated blood in the body.
(iii) Write the function of valves present in between atria and ventricles.
(iv) Write one structural difference between the composition of artery and veins. [CBSE 2018]
- Q.59** (i) Define excretion
(ii) Name the basic filtration unit present in the kidney.

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Fully Solved Books for 10, +1 & +2

Also Previous Years Solved Question Papers

- (iii) Draw excretory system in human beings and label the following organs of excretory system which perform following functions :
- (a) Form urine
 (b) Is a long tube which collects urine from kidney.
 (c) Store urine until it is passed out. [CBSE 2018]
- Q.60** (i) What is peptic ulcer ? How is peptic ulcer caused ?
 (ii) List two different functions performed by pancreas in our body. [CBSE 2019]
- Q.61** What is transpiration ? List its two functions. [CBSE 2019]
- Q.62** (i) What is translocation ? Why is it essential for plants?
 (ii) Where do the substances in plants reach as a result to translocation ? [CBSE 2019]
- Q.63** Draw and label the parts of the human excretory system. [CBSE 2019]
- Q.64** What are the differences between autotrophic nutrition and heterotrophic nutrition ? [CBSE 2019]
- Q.65** How is oxygen and carbon dioxide transported in human beings ? [CBSE 2019]
- Q.66** What would be the consequence of a deficiency of haemoglobin in our body ? [CBSE 2019]
- Q.67** (i) Write two water conducting tissues present in plants. How does water enter continuously into the root xylem ?

- (ii) Explain why plants have low energy needs as compared to animals. [CBSE 2019]
- Q.68** (a) Why is there a difference in the rate of breathing between aquatic organisms and terrestrial organisms? Explain.
 (b) Draw a diagram of human respiratory system and label- pharynx, trachea, lungs, diaphragm and alveolar sac on it. [CBSE 2020]
- Or*
- (a) Name the organs that form the excretory system in human beings.
 (b) Describe in brief how urine is produced in human body. [CBSE 2020]
- Q.69** (a) A gas is released during photosynthesis. Name the gas and also state the way by which the gas is evolved.
 (b) What are stomata ? What governs the opening and closing of stomata ?
- Or*
- (a) Draw a diagram of human alimentary canal and label-gall bladder, pancreas, liver and small intestine on it.
 (b) Give two reasons to explain why absorption of digested food occurs mainly in the small intestine. [CBSE 2020]

9th 10th +1 +2

पहले बोर्ड परीक्षाओं (CBSE/HP-Board) की बारी
साथ-साथ **Competition** (NEET/JEE/NDA/NTSE) की तैयारी

TARGET BATCH

Tuition + Competition

PHYSICS

CHEMISTRY

BIOLOGY

MATHS

ONE-YEAR PROGRAMME

FOR **+2 Students**

TWO-YEAR PROGRAMME

FOR **+1 Students**

FOUNDATION PROGRAMME

FOR **9th & 10th Students**

Also regular **TUITION** in individual subjects in **PCMB** for **+1 & +2**

HIM ACADEMY

HAMIRPUR (HP)
98160 21400

- Q.1** (a) Name the two main constituents of the Central Nervous System in human beings.
(b) What is the need for a system of control and coordination in human beings? [CBSE 2009]
- Q.2** What are plant hormones? Write two important functions of auxin. [CBSE 2009]
- Q.3** Write the name and functions of any two parts of the human hind-brain. [CBSE 2009]
- Q.4** What are 'nastic' and 'curvature' movements? Give one example of each. [CBSE 2009]
- Q.5** Which one of the following actions on touch is an example of chemical control?
(i) Movement on the touch-sensitive plant.
(ii) Movement in human leg. [CBSE 2009]
- Q.6** Name two tissues that provide control and coordination in multicellular animals. [CBSE 2009]
- Q.7** What is the function of thyroxine hormone in our body?
- Q.8** Name the plant hormones which help/promote
(i) cell division
(ii) growth of the stem and roots? [CBSE 2009]
- Q.9** A young green plant receives sunlight from one direction only. What will happen to its shoots? [CBSE 2009]
- Q.10** List the components of reflex arc in correct sequence. State in brief the role of brain in reflex action. [CBSE 2010]
- Q.11** What is a reflex action? Describe the steps involved in a reflex action. [CBSE 2010]
- Q.12** Name and explain the function of the hormone secreted by the pituitary gland in humans. [CBSE 2010]
- Q.13** Name the hormone secreted by human testes. State its functions. [CBSE 2010]
- Q.14** Name the two main organs of our central nervous system. Which one of them plays a major role in sending command to muscles to act without involving thinking process? Name the phenomenon involved. [CBSE 2010]
- Q.15** Mention the function of adrenaline hormone. [CBSE 2010]
- Q.16** Mention the function of the hind-brain in humans. [CBSE 2010]
- Q.17** A potted plant is made to lie horizontally on the ground. Which part of the plant will show
(i) positive geotropism?
(ii) negative geotropism? [CBSE 2010]
- Q.18** How is the spinal cord protected in the human body? [CBSE 2010]
- Q.19** What is the function of receptors in our body? Think of situation where receptors do not work properly. What problems are likely to arise? [CBSE 2011]
- Q.20** What are 'hormones'? State one function of each of the following hormones:
(i) Thyroxine (ii) Insulin [CBSE 2011]
- Q.21** What is 'hydrotropism'? Describe an experiment to demonstrate 'hydrotropism'. [CBSE 2011]
- Q.22** State the functions of any three of the structural and functional unit of nervous system. [CBSE 2011]
- Q.23** What is chemotropism? Give one example. Name any two plant hormones and mention their functions. [CBSE 2011]
- Q.24** Which part of the brain controls involuntary actions? Write the function of any two regions of it. [CBSE 2011]
- Q.25** Name any three endocrine glands in human body and briefly write the function of each of them. [CBSE 2011]
- Q.26** What causes a tendril to encircle or coil around the object in contact with it is? Explain the process involved. [CBSE 2011]
- Q.27** Explain how auxins help in bending of plant stem towards light. [CBSE 2011]
- Q.28** State the objective of the experiment for which experimental set-up is shown in the given diagram. [CBSE 2011]

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Fully Solved Books for 10, +1 & +2

Also Previous Years Solved Question Papers

- Q.29** Which organ secretes a hormone when blood sugar rises in our body? Name the hormone and name one enzyme released by this organ. [CBSE 2011]
- Q.30** (a) Which plant hormone is present in greater concentration in the areas of rapid cell division?
(b) Give one example of a plant growth promoter and a plant growth inhibitor. [CBSE 2012]
- Q.31** (a) Draw the structure of neuron and label cell body and axon.
(b) Name the part of neuron:
(i) where information is acquired
(ii) through which information travels as an electrical impulse. [CBSE 2012]
- Q.32** (a) How is brain protected from injury and shock?
(b) Name two main parts of hind brain and state the functions of each. [CBSE 2012]
- Q.33** State the functions of plant hormones. Name four different types of plant hormones. [CBSE 2012]
- Q.34** Smita's father has been advised by a doctor to reduce his sugar intake. [CBSE 2012]
- Q.35** Name the disease he is suffering from and name the hormone whose deficiency is ? [CBSE 2012]
- Q.36** Identify the gland that secretes it and mention the function of this hormone. [CBSE 2012]
- Q.37** Explain how the time and amount of secretion of this hormone is regulated in human system. [CBSE 2012]
- Q.38** Mention the part of the body where gustatory and olfactory receptors are located. [CBSE 2012]
- Q.39** Name the part of the brain which controls posture and balance of the body. [CBSE 2012]
- Q.40** List in tabular form three differences between nervous control and chemical control. [CBSE 2013]
- Q.41** (a) Explain any three directional movements in plants.
(b) How brain and spinal cord are protected in human?
- (c) Name the master gland present in the brain. [CBSE 2013]
- Q.42** State the function of:
(i) gustatory receptors, and
(ii) olfactory receptors. [CBSE 2013]
- Q.43** State the structural and the functional unit of the nervous system. Draw its neat labelled diagram and write two functions. [CBSE 2014]
- Q.44** (a) Name the hormone which is released into the blood when its sugar level rises. Explain the need of Chemical communication in multicellular organisms the organ which produces this hormone and its effect on blood sugar level. Also mention the digestive enzymes secreted by this organ with one function of each.
(b) Explain the need of Chemical communication in multicellular organisms. [CBSE 2014]
- Q.45** Write one example each of the following tropic movements :
(i) Positive phototropism (ii) Negative phototropism
(iii) Positive geotropism (iv) Negative geotropism
(v) Hydrotropism (vi) Chemotropism [CBSE 2014]
- Q.46** Draw neat diagram of human brain and label on it the following parts :
(i) Midbrain (ii) Pituitary gland [CBSE 2014]
- Q.47** (i) Name the hormones that are released in human males and females when they reach puberty.
(ii) Name a gland associated with brain. Which problem is caused due to the deficiency of the hormone released by this gland ? [CBSE 2014]
- Q.48** Give an example of a plant hormone that promotes its growth. Where it is synthesized ? [CBSE 2014]

for 9th, 10th, +1 & +2 students

SUMMER VACATION COURSE

Simultaneous Preparation For Engineering/Medical Entrance Exams along with Board Exams

• PHYSICS • CHEMISTRY • BIOLOGY • MATHS

KV (Kendriya Vidyalaya Students) w.e.f. 2nd week of May 40 Days

JNV (Jawahar Navodaya Vidyalaya) w.e.f. 1st week of June 50 Days

CBSE/HP-Board During Summer Vacation 40 Days

HIM ACADEMY HAMIRPUR (HP)
98160 21400

- Q.49** What is meant by reflex-action ? With the help of a labelled diagram trace the sequence of events which occur when we touch a hot object. [CBSE 2015]
- Q.50** What is synapse ? In a neuron cell how is an electrical impulse created and what is the role of synapse in this context ? [CBSE 2015]
- Q.51** State how concentration of auxin stimulates the cells to grow longer on the side of the shoot which is away from light ? [CBSE 2015]
- Q.52** Why is it advised to use iodised salt in our diet ? [CBSE 2015]
- Q.53** Nervous and hormonal system together perform the function of control and coordination in human beings. Justify the statement. [CBSE 2017]
- Q.54** Name the hormones secreted by the following endocrine glands and specify one function of each.
 (i) Thyroid
 (ii) Pituitary
 (iii) Pancreas [CBSE 2018]
- Q.55** What is hydrotropism ? [CBSE 2019]
- Q.56** Trace the sequence of events which occur when a bright light is focused on your eyes. [CBSE 2019]
- Q.57** (i) Plants do not have any nervous system but yet, if we touch a sensitive plant, some observable changes take place in its leaves. Explain how could this plant respond to the external stimuli and how it is communicated.
 (ii) Name the hormone that needs to be administered to
 (a) increase the height of a dwarf plant.
 (b) cause rapid cell division in fruits and seeds. [CBSE 2019]
- Q.58** What is feedback mechanism of hormonal regulation? Take the example of insulin to explain this phenomenon. [CBSE 2019]
- Q.59** Nervous and hormonal system together perform the function of control and coordination in human beings. Justify the statement. [CBSE 2019]
- Q.60** List in tabular form three distinguishing features between cerebrum and cerebellum. [CBSE 2019]
- Q.61** What are the differences between a reflex action and walking ? [CBSE 2019]
- Q.62** What are plant hormones? [CBSE 2019]
- Q.63** How is the movement of leaves of a sensitive plant different from the movement of a shoot towards light? [CBSE 2019]
- Q.64** How do auxins promote the growth of a tendril around a support ? [CBSE 2019]
- Q.65** Design an experiment to demonstrate hydrotropism. [CBSE 2019]
- Q.66** Why is the use of iodised salt advisable ? [CBSE 2019]
- Q.67** Why are some diabetes patients treated by giving insulin injections ? [CBSE 2019]
- Q.68** Why does the flow of signals in a synapse from axonal end of the one neuron to dendritic end of another neuron take place but not in the reverse direction ? Explain. [CBSE 2019]
- Q.69** (i) Why is the use of iodised salt advisable ? Name the disease caused due to deficiency of iodine in our diet and state its one symptom.
 (ii) How do nerve impulses travel in the body ? Explain. [CBSE 2019]
- Q.70** A squirrel is in a scary situation. Its body has to prepare for either fighting or running away. State the immediate changes that take place in its body so that squirrel is able to either fight or run ? [CBSE 2020]
- Q.71** Why is chemical communication better than electrical impulses as a means of communication between cells in a multi-cellular organism ? [CBSE 2020]
- Q.72** What are homologous structures ? Give an example. Is it necessary that homologous structures always have a common ancestor. Justify your answer. [CBSE 2020]

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OMEGA
OMEGA PARKASHAN

Fully Solved Books

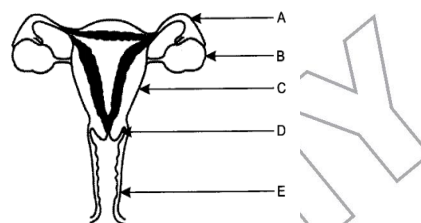
for 10, +1 & +2

Also

Previous Years Solved Question Papers

- Q.1** (i) What is fertilisation? Distinguish between external fertilisation and internal fertilisation.
(ii) What is the site of fertilisation in human beings?
[CBSE 2007]
- Q.2** Define the terms unisexual and bisexual giving one example of each.
[CBSE 2007]
- Q.3** Differentiate between 'self-pollination' and 'cross-pollination'. Describe double fertilisation in plants.
[CBSE 2007]
- Q.4** What is the effect of DNA copying which is not perfectly accurate on the reproduction process?
[CBSE 2008]
- Q.5** What is 'reproduction'? Mention the importance of DNA copying in reproduction.
[CBSE 2008]
- Q.6** "Variations that confer an advantage to an individual organism only will survive in a population." Justify.
[CBSE 2008]
- Q.7** Name one sexually transmitted disease each caused due to bacterial infection and viral infection. How can these be prevented ?
[CBSE 2008]
- Q.8** (a) In the human body what is the role of
(i) seminal vesicles, and (ii) prostate gland?
(b) List two functions performed by testis in human beings.
[CBSE 2008]
- Q.9** Illustrate the following with the help of suitable diagrams:
(i) Regeneration in Planaria.
(ii) Budding in Hydra.
[CBSE 2008]

- Q.10** Illustrate the following with the help of suitable diagrams:
(i) Binary Fission in Amoeba.
(ii) Leaf of Bryophyllum with buds. [CBSE 2008]
- Q.11** Illustrate the following with the help of suitable diagrams:
(i) Spore formation in Rhizopus.
(ii) Multiple fission in Plasmodium. [CBSE 2008]
- Q.12** (a) Name the parts labelled A, B, C, D and E.



- (b) Where do the following functions occur?
(i) Production of an egg
(ii) Fertilisation
(iii) Implantation of zygote.
(c) What happens to the lining of uterus:
(i) before release of a fertilised egg?
(ii) if no fertilisation occurs? [CBSE 2008]
- Q.13** (a) Draw a diagram showing germination of pollen on stigma of a flower.
(b) Label pollen grain, male germ-cells, pollen tube and female germ-cell in the above diagram.
(c) How is zygote formed? [CBSE 2008]

9th 10th +1 +2

पहले बोर्ड परीक्षाओं (CBSE/HP-Board) की बारी
साथ-साथ Competition (NEET/JEE/NDA/NTSE) की तैयारी

TARGET BATCH

Tuition + Competition

PHYSICS

CHEMISTRY

BIOLOGY

MATHS

ONE-YEAR PROGRAMME

TWO-YEAR PROGRAMME

FOUNDATION PROGRAMME

FOR +2 Students

FOR +1 Students

FOR 9th & 10th Students

Also regular TUTORING in individual subjects in PCMB for +1 & +2

HIM ACADEMY

HAMIRPUR (HP)
98160 21400

- Q.14** Mention the mode of reproduction used by
(a) Amoeba (b) Planaria. [CBSE 2009]
- Q.15** Name the information source of making proteins in the cell. State two basic events in reproduction. [CBSE 2009]
- Q.16** State the method used for growing rose plants. [CBSE 2009]
- Q.17** State what type of method is used for growing jasmine plant. [CBSE 2009]
- Q.18** Name the largest cell present in the human body. [CBSE 2009]
- Q.19** What is regeneration? State a reason why a more complex organism cannot give rise to new individuals through this method. [CBSE 2009]
- Q.20** What is reproduction? What are its two types? Which one of the two confers new characteristics on the offsprings and how? [CBSE 2009]
- Q.21** (a) Explain the terms:
(i) Implantation (ii) Placenta
(b) What is the average duration of human pregnancy? [CBSE 2009]
- Q.22** What are sexually transmitted diseases? Name four such diseases. Which one of them damages the immune system of human body? [CBSE 2009]
- Q.23** List any four reasons for vegetative propagation being practised in the growth of some type of plants. [CBSE 2010]
- Q.24** Write the full form of DNA. Name the part of the cell where it is located. Explain its role in the process of reproduction of the cell. [CBSE 2010]
- Q.25** Explain vegetative propagation with the help of two examples. List two advantages of vegetative propagation. [CBSE 2010]
- Q.26** List any three differences between pollination and fertilisation. [CBSE 2010]
- Q.27** Draw a longitudinal section of a flower and label the following parts:
(i) Part that produces pollen grain.
(ii) Part that transfers male gametes to the female gametes.
(iii) Part that is sticky to trap the pollen grain.
(iv) Part that develops into a fruit. [CBSE 2010]
- Q.28** (a) Explain the role of placenta in the development of human embryo.
(b) Give example of two bacterial and two viral sexually transmitted diseases. Name the most effective contraceptive which prevents spread of such diseases. [CBSE 2010]
- Q.29** Write any two differences between binary fission and multiple fission in a tabular form as observed in cells of organisms. [CBSE 2010]
- Q.30** List any four modes of asexual reproduction. [CBSE 2010]
- Q.31** Why is DNA copying an essential part of the process of reproduction? [CBSE 2010]
- Q.32** What does HIV stand for? Is AIDS an infectious disease? List any four modes of spreading AIDS. [CBSE 2011]
- Q.33** Expand AIDS. List any four methods of prevention (control) of AIDS.
- Q.34** (a) List any four reasons for adopting contraceptive methods.
(b) If a woman is using Copper-T, will it help in protecting her from sexually transmitted diseases? Why? [CBSE 2011]
- Q.35** Explain the following methods of contraception giving one example of each:
(i) Barrier method
(ii) Hormonal imbalance method
(iii) Surgical method. [CBSE 2011]
- Q.36** (a) What is fragmentation in organism? Name a multicellular organism which reproduces by this method.
(b) What is regeneration in organism? Describe regeneration in Planaria with the help of a suitable diagram. [CBSE 2011]
- Q.37** With the help of suitable diagrams, explain the various steps of budding in Hydra. [CBSE 2011]
- Q.38** (a) What is spore formation?
(b) Draw a diagram showing spore formation in Rhizopus.
(c) List two advantages for organisms to reproduce themselves through spores. [CBSE 2011]
- Q.39** State one genetically different feature between sperms and eggs of humans. What is its consequence? [CBSE 2012]
- Q.40** List two advantages of vegetative reproduction practised in case of an orange plant. [CBSE 2012]
- Q.41** How does growing embryo get nutrition from the mother's blood? [CBSE 2012]
- Q.42** Define the term puberty. List two changes observed in girls at the time of puberty. [CBSE 2012]
- Q.43** What is meant by asexual reproduction? List its any two different forms. [CBSE 2012]
- Q.44** Name an organism which reproduces by spore formation. List three conditions favourable for spores to germinate and grow. [CBSE 2012]

- Q.45** "DNA copies generated during reproduction will be similar but may not be identical to the original." Justify this statement. [CBSE 2012]
- Q.46** List two advantages of practising vegetative propagation in plants. Select two plants raised by this method from the list given below: Banana, Gram, Pea, Rose, Tomato, Wheat. [CBSE 2012]
- Q.47** List the parts of human male reproductive system which contribute fluid to the semen. State two advantages semen offers to the sperms. [CBSE 2012]
- Q.48** Name the two types of germ-cells present in human beings. How do they structurally differ from each other? Give two differences. [CBSE 2012]
- Q.49** List and explain in brief three methods of contraception. [CBSE 2012]
- Q.50** What is AIDS? Which microbe is responsible for AIDS infection? State one mode of transmission of this disease. Explain in brief one measure for the prevention of AIDS. [CBSE 2012]
- Q.51** Describe in brief the role of (i) testis (ii) seminal vesicle, (iii) vas deferens, (iv) ureter and (v) prostate gland in human male reproductive system. [CBSE 2012]
- Q.52** Draw a diagram of a human female reproductive system and label the part
 (i) that produces egg
 (ii) where fusion of egg and sperm take place
 (iii) where zygote is implanted What happens to human egg when it is not fertilised? [CBSE 2012]
- Q.53** State in brief the changes that take place in a fertilised egg (zygote) till birth of the child in the human female reproductive system. What happens to the egg when it is not fertilised? [CBSE 2012]
- Q.54** Give an example of a unisexual and bisexual flower. [CBSE 2014]
- Q.55** Name the causative agent of the disease 'Kala-azar' and its mode of asexual reproduction. [CBSE 2015]
- Q.56** Name the parts of a bisexual flower that are not directly involved in reproduction. [CBSE 2015]
- Q.57** List four points of significance of reproductive health in a society. Name any two areas related to reproductive health which have improved over the past 50 years in our country. [CBSE 2015]
- Q.58** Explain the process of regeneration in *Planaria*. How is this process different from reproduction ? [CBSE 2015]
- Q.59** List four categories of contraceptive methods. State in brief two advantages of adopting such preventive methods. [CBSE 2015]
- Q.60** Explain four advantages of vegetative propagation. [CBSE 2015]
- Q.61** How does binary fission differ from multiple fission? [CBSE 2015]
- Q.62** What is reproduction ? Explain two advantages of sexual reproduction over asexual reproduction. [CBSE 2015]

प्रदेश की सर्वश्रेष्ठ किताबें

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- Q.63** Write one main difference between asexual and sexual mode of reproduction. Which species is likely to have comparatively better chances of survival- the one reproducing asexually or the one reproducing sexually? Justify your answer. [CBSE 2015, 2018]
- Q.64** (i) Why are budding, fragmentation and regeneration all considered as asexual types of reproduction ?
(ii) With neat diagrams explain the process of regeneration in *Planaria*. [CBSE 2015,2019]
- Q.65** Why is fertilisation not possible without pollination? [CBSE 2016]
- Q.66** In the context of reproduction of species, state the main difference between fission and fragmentation. Also give one example of each. [CBSE 2016]
- Q.67** Explain the term 'Regeneration' as used in relation to reproduction of organisms. Describe briefly how regeneration is carried out in multicellular organisms like *Hydra*. [CBSE 2016]
- Q.68** Name the method by which *Hydra* reproduces. Is this method sexual or asexual ? [CBSE 2016]
- Q.69** List two unisexual flowers. [CBSE 2016]
- Q.70** What are those organisms called which bear both the sex organs in the same individual ? Give one example of such organism. [CBSE 2016]
- Q.71** Suggest three contraceptive methods to control the size of human population which is essential for the health and prosperity of a country. State the basic principle involved in each. [CBSE 2016]
- Q.72** How do organisms, whether reproduced asexually or sexually maintain a constant chromosome number through several generations ? Explain with the help of suitable example. [CBSE 2016]
- Q.73** What is multiple fission ? How does it occur in an organism ? Explain briefly. Name one organism which exhibits this type of reproduction. [CBSE 2016]
- Q.74** Name the reproductive parts of an angiosperm. Where are these parts located ? Explain in brief the structure of its female reproductive parts. [CBSE 2016]
- Q.75** Name the part of *Bryophyllum* where the buds are produced for vegetative propagation. [CBSE 2016]
- Q.76** What is fertilisation ? Where does it occur in a human female ? [CBSE 2017]
- Q.77** Name the method by which *Spirogyra* reproduces under favourable conditions. In this method sexual or asexual? [CBSE 2017]
- Q.78** How does *Plasmodium* reproduce ? Is this method sexual or asexual ? [CBSE 2017]
- Q.79** Reproduction is one of the most important characteristics of living beings. Give three reasons in support of the statement. [CBSE 2017]
- Q.80** List three techniques that have been developed to prevent pregnancy. Which one of these techniques is not meant for males ? How does the use of these techniques have a direct impact on the health and prosperity of a family. [CBSE 2017]
- Q.81** What is asexual reproduction ? Write the process of budding in *Hydra*. [CBSE 2017]
- Q.82** What is regeneration ? Give one example of an organism that shows this process and one organism that does not. Why does regeneration not occur in the latter ? [CBSE 2017]
- Q.83** (i) State the basic requirement for sexual reproduction. Write the importance of such reproductions in nature.
(ii) What are the benefits of using mechanical barriers during sexual act. [CBSE 2017]
- Q.84** Name the two types of mammalian gametes. How are these different from each other ? Name the type of reproduction they are involved in. Write the advantage of this type of reproduction. [CBSE 2017]
- Q.85** What is contraception ? Name any two methods. How does the use of these methods have a direct effect on the health and prosperity of a family ? State any three points. [CBSE 2017]
- Q.86** Give one example each of unisexual and bisexual flowers. Differentiate between the two types of pollination that occur in flowers. What happens when a pollen lands on a suitable stigma ? Write about the events that occur till the seed formation in the ovary. [CBSE 2017]
- Q.87** (i) State in brief the functions of the following organs in the human female reproductive system : Ovary, Fallopian tube, Uterus
(ii) What is menstruation ? Why does it occur ? [CBSE 2017]
- Q.88** What is reproduction ? List its two types. [CBSE 2019]
- Q.89** List two bacterial diseases which are transmitted sexually. [CBSE 2019]
- Q.90** What are sexually transmitted diseases (STD) ? List two viral and two bacterial STDs. [CBSE 2019]
- Q.91** What is carpel ? Write the function of its various parts. [CBSE 2019]
- Q.92** How is the process of pollination different from fertilisation ? [CBSE 2019]
- Q.93** How are the modes of reproduction different in unicellular and multicellular organisms ? [CBSE 2019]
- Q.94** Define the term pollination. Differentiate between self pollination and cross pollination. What is the significance of pollination ? [CBSE 2020]
- Q.95** (a) List in tabular form two differences between binary fission and multiple fission.
(b) What happens when a mature *Spirogyra* filament attains considerable length. [CBSE 2020]

- Q.1** What is a gene? [CBSE 2007]
- Q.2** What is meant by analogous organs? Taking a suitable example, explain how they support the theory of Organic Evolution. [CBSE 2007]
- Q.3** What is a sex chromosome? [CBSE 2007]
- Q.4** Define 'evolution'. Describe Darwin's theory of evolution. [CBSE 2007]
- Q.5** "The sex of the children is determined by what they inherit from their father and not their mother." Justify. [CBSE 2008]
- Q.6** Define variation in relation to a species. Why is variation beneficial to the species? [CBSE 2008]
- Q.7** Describe briefly four ways in which individuals with a particular trait may increase in a population. [CBSE 2008]
- Q.8** What are fossils? What do they tell us about the process of evolution? [CBSE 2008]
- Q.9** Distinguish between acquired and inherited traits by giving one example of each. Why are traits acquired during the lifetime of an individual not inherited? [CBSE 2009]
- Q.10** The human beings who look so different from each other in terms of colour, size and looks are said to belong to the same species. Why? Justify your answer. [CBSE 2009]
- Q.11** Give one example each of characters that are inherited and the ones that are acquired in humans. Mention the difference between the inherited and the acquired characters. [CBSE 2010]
- Q.12** Explain the mechanism of sex determination in humans.
- Or*
- With the help of a flow chart explain in brief how the sex of a newborn is genetically determined in human beings. Which of the two parents, the mother or the father, is responsible for determination of sex of a child? [CBSE 2010]
- Q.13** With the help of suitable examples explain natural selection. [CBSE 2010]
- Q.14** How is the equal genetic contribution of male and female parents ensured in the progeny? [CBSE 2011]
- Q.15** What evidence do we have for the origin of life from inanimate matter? [CBSE 2011]
- Q.16** Explain the terms: (i) Speciation (ii) Natural selection [CBSE 2011]
- Q.17** Explain with examples how the following are evidences in favour of evolution in organisms. (i) Homologous organs (ii) Analogous organs (iii) Fossils [CBSE 2011]
- Q.18** Give an example of body characteristics used to determine how close two species are in terms of evolution and explain it. [CBSE 2011]
- Q.19** What are homologous organs? Can the wing of a butterfly and the wing of a bat be regarded as homologous? Why? [CBSE 2011]
- Q.20** What is meant by the term speciation? List four factors which could lead to speciation. [CBSE 2012]
- Q.21** A blue colour flower plant denoted by BB is cross bred with that of white colour flower plant denoted by bb.
- (a) State the colour of flower you would expect in their F_1 generation plants.
- (b) What must be the percentage of white flower plants in F_2 generation if flowers of F_1 plants are self-pollinated?
- (c) State the expected ratio of the genotypes BB and Bb in the F_2 progeny. [CBSE 2012]
- Q.22** Distinguish between homologous organs and analogous organs. In which category ; would you place wings of a bird and wings of a bat? Justify your answer giving a suitable reason. [CBSE 2012]
- Q.23** Define the term 'evolution'. "Evolution cannot be equated with progress". Justify this statement. [CBSE 2012]

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- Q.24** If we cross pure-bred tall (dominant) pea plant with pure-bred dwarf (recessive) pea plant we will get pea plants of F_1 generation. If we now self-cross the pea plant of F_2 generation, then we obtain pea plants of F_2 generation.
- What do the plants of F_2 generation look like?
 - State the ratio of tall plants to dwarf plants in F_2 generation.
 - State the type of plants not found in F_2 generation but appeared in F_2 generation, mentioning the reason for the same. [CBSE 2012]
- Q.25** How are fossils formed? Describe, in brief, two methods of determining the age of fossils. [CBSE 2012]
- Q.26** State the meaning of inherited traits and acquired traits. Which of the two is not passed on to the next generation? Explain with the help of an example [CBSE 2012]
- Q.27** "An individual cannot pass on to its progeny the experiences of its lifetime." Justify the statement with the help of an example and also give reason for the same. [CBSE 2012]
- Q.28** Where is DNA found in a cell ? [CBSE 2015]
- Q.29** List two differences in tabular form between dominant trait and recessive trait. What percentage/proportion of the plants in the F_2 generation/progeny were round, in Mendel's cross between round and wrinkled pea plants? [CBSE 2015]
- Q.30** What is DNA copying ? State its importance. [CBSE 2015]
- Q.31** What is variation beneficial to the species but not necessary for the individual ? [CBSE 2015]
- Q.32** What is speciation ? List four factors responsible for speciation. [CBSE 2015]
- Q.33** (i) *Planaria*, insects, octopus and vertebrates all have eyes. Can we group eyes of these animals together to establish a common evolutionary origin? Justify your answer.
- (ii) "Birds have evolved from reptiles". State evidence to prove the statement. [CBSE 2015]
- Q.34** Explain Mendel's experiment with peas on inheritance of characters considering only one visible contrasting character. [CBSE 2015]
- Q.35** What is speciation ? List four factors that could lead to speciation. Which of these cannot be a major factor in the speciation of a self-pollinating plant species ? Explain give reason to justify your answer. [CBSE 2015, 2016]
- Q.36** What are chromosomes ? Explain how in sexually reproducing organisms the number of chromosomes in the progeny is maintained. [CBSE (AI) 2015, 2017]
- Q.37** "Two areas of study namely 'evolution' and 'classification' are interlinked". Justify this statements. [CBSE(AI) 2015]
- Or
- "Evolution areas of study classification of organisms are interlinked" Give reasons to justify this statement. [CBSE (AI) 2017]
- Q.38** "We cannot pass on to our progeny the experiences and qualifications earned during our life time". Justify the statement giving reason and examples. [CBSE 2015]
- Or

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With the help of two suitable examples, explain why certain experiences and traits earned by people during their lifetime are not passed on to their next generations. When can such traits be passed on ?

[CBSE (AI)2017]

Q.39 In one of his experiments with pea plants Mendel observed that when a pure tall pea plants is crossed with a pure dwarf pea plant, in the first generation, F_1 only tall plants appear.

(i) What happens to the traits of the dwarf plants in this case ?

(ii) When the F_1 generation plants were self-fertilised, he observed that in the plants of second generation F_2 both tall plants and dwarf plants were present. Why it happened ? Explain briefly. [CBSE 2016]

Q.40 List three factors that provide evidences in favour of evolution in organisms and state the role of each in brief. [CBSE 2016]

Q.41 Newly formed DNA copies may not be identical at times. Give one reason. [CBSE(AI)2017]

Q.42 (i) Why is variation important for a species ?

(ii) What are the causes of variations ?

[CBSE(AI) 2017]

Q.43 List the two types of reproduction. Which one of the two is responsible for bringing in more variation in its progeny and how ? [CBSE 2017]

Q.44 "Natural selection and speciation leads to evolution." Justify this statement. [CBSE 2017]

Q.45 Explain with the help of an example each, how the following provide evidences in favour of evolution:

(i) Homologous organs

(ii) Analogous organs

(iii) Fossils

[CBSE 2017]

Q.46 How did Mendel's experiments show that different traits are inherited independently ? Explain. [CBSE 2017]

Q.47 What is an organic evolution ? It cannot be equated with progress. Explain with the help of a suitable example. [CBSE (AI)2017]

Q.48 Name the plant Mendel used for his experiment. What type of progeny was obtained by Mendel in F_1 and F_2 generations when he crossed the tall and short plants ? Write the ratio he obtained in F_2 generation plants. [CBSE 2019]

Q.49 "The sex of a newborn child is a number matter of chance and none of the parents may be considered responsible for it." Justify this statement with the help of a flow chart showing sex-determination in human beings. [CBSE 2019]

Q.50 Mendel, in one of his experiments with pea plants, crossed a variety of pea plant having round seeds with one having wrinkled seeds. State Mendel's observations giving reasons of F_1 and F_2 progeny of this cross. Also, list any two contrasting characters, other than round seeds of pea plants that Mendel used in his experments. [CBSE 2019]

Q.51 How do Mendel's experiment show that traits may be dominant or recessive ? [CBSE 2019]

Q.52 Why are small number of surviving tigers a cause of worry from the point of view of genetics ? [CBSE 2019]

Q.53 Explain how sexual reproduction gives rise to more viable variations than asexual reproduction. How does this affect the evolution of those organisms that reproduce sexually ? [CBSE 2019]

Q.54 (i) How is equal genetic contribution of male and female parents ensured in the progeny ? Explain.

(ii) Does the occurrence of diversity of animals on Earth suggest their diverse ancestry also ? Discuss this point in the light of evolution. [CBSE 2019]

Q.55 The growing size of the human population is a cause of concern for all people. The rate of birth and death in a given population will determine its size. Reproduction is the process by which organisms increase their population. The process of sexual maturation for reproduction is gradual and takes place while general body growth is still going on. Some degree of sexual maturation does not necessarily mean that the mind or body is ready for sexual acts or for having and bringing up children. Various contraceptive devices are being used by human beings to control the size of population.

(a) List two common signs os sexual maturation in boys and girls.

(b) What is the result of reckless female foeticide ?

(c) Which contraceptive method changes the hormonal balance of the body ?

(d) Write two factors that determine the size of a population. [CBSE 2020]

Q.56 (a) What is the law of dominance of traits ? Explain with an examples.

(b) Why are traits acquired during the life time an individual not inherited ? Explain. [CBSE 2020]

Q.57 (a) What is genetics ?

(b) What are genes ? Where are the genes located ?

(c) State and define three factors responsible for the rise of a new species. [CBSE 2020]

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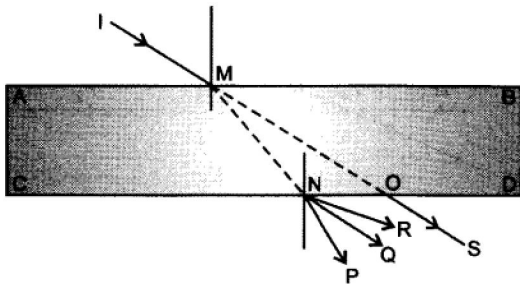
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10 CHAPTER

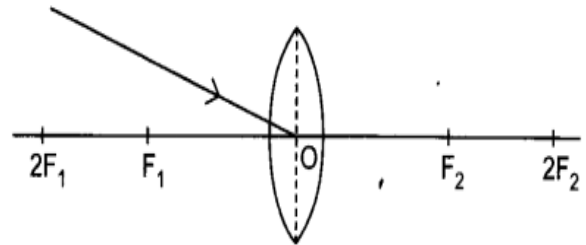
Light-Reflection and Refraction

- Q.1** A concave lens has focal length of 20 cm. At what distance from the lens a 5 cm tall object be placed so that it forms an image at 15 cm from the lens? Also calculate the size of the image formed. [CBSE 2007]
- Q.2** An object 50 cm tall is placed on the principal axis of a convex lens. Its 20 cm tall image is formed on the screen placed at a distance of 10 cm from the lens. Calculate the focal length of the lens. [CBSE 2007]
- Q.3** Draw the ray diagram in each case to show the position and nature of the image formed when the object is placed:
- at the centre of curvature of a concave mirror
 - between the pole P and focus F of a concave mirror
 - in front of a convex mirror
 - at $2F$ of a convex lens
 - in front of a concave lens
- [CBSE 2007]
- Q.4** If a light ray IM is incident on the surface AB as shown, identify the correct emergent ray. [CBSE 2008]

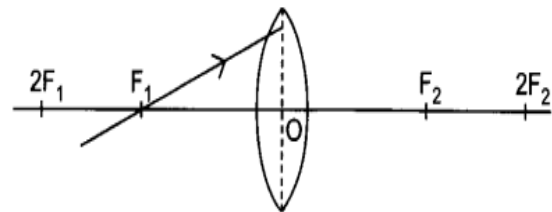


- Q.5** The refractive indices of four media A, B, C and D are given in the following table: If light travels from one medium to another, in which case the change in speed will be (i) minimum, (ii) maximum? [CBSE 2008]
- Q.6** "The refractive index of diamond is 2.42". What is the meaning of this statement in relation to speed of light?

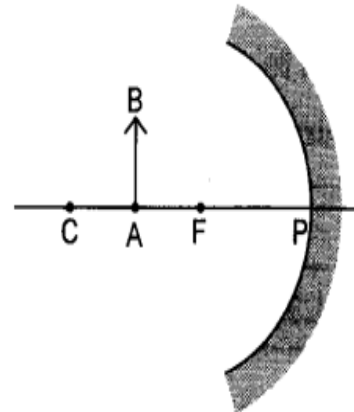
- Q.7** Redraw the given diagram and show the path of the refracted ray: [CBSE 2008]



- Q.8** Redraw the given diagram and show the path of the refracted ray: [CBSE 2008]



- Q.9** Draw the following diagram in your answer book and show the formation of image of the object AB with the help of suitable rays. [CBSE 2008]



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Q.10 Which kind of mirrors are used in the headlights of a motor-car and why? [CBSE 2008]

Q.11 Explain with the help of a diagram, why a pencil partly immersed in water appears to be bent at the water surface. [CBSE 2008]

Q.12 Draw ray diagrams to represent the nature, position and relative size of the image formed by a convex lens for the object placed:

(a) at $2F_1$

(b) between F_1 and the optical centre O of lens

[CBSE 2008]

Q.13 A ray of light, incident obliquely on a face of a rectangular glass slab placed in air, emerges from the opposite face parallel to the incident ray. State two factors on which the lateral displacement of the emergent ray depends. [CBSE 2008]

Q.14 An object 2 cm in size is placed 30 cm in front of a concave mirror of focal length 15 cm. At what distance from the mirror should a screen be placed in order to obtain a sharp image? What will be the nature and the size of the image formed? Draw a ray diagram to show the formation of the image in this case. [CBSE 2008]

Q.15 An object 2 cm high is placed at a distance of 64 cm from a white screen. On placing a convex lens at a distance of 32 cm from the object it is found that a distinct image of the object is formed on the screen. What is the focal length of the convex lens and size of the image formed on the screen? Draw a ray diagram to show the formation of the image in this position of the object with respect to the lens. [CBSE 2008]

Q.16 A convex lens has a focal length of 10 cm. At what distance from the lens should the object be placed so that it forms a real and inverted image 20 cm away from the lens? What would be the size of the image formed if the object is 2 cm high? With the help of a ray diagram show the formation of the image by the lens in this case. [CBSE 2008]

Q.17 (a) It is desired to obtain an erect image of an object, using a concave mirror of focal length 20 cm.

(i) What should be the range of distance of the object from the mirror?

(ii) Will the image be bigger or smaller than the object?

(iii) Draw a ray diagram to show the image formation in this case.

(b) One half a convex lens of focal length 20 cm is covered with a black paper.

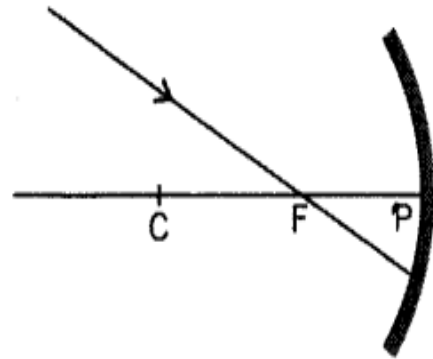
(i) Will the lens produce a complete image of the object?

(ii) Show the formation of image of an object placed at $2F_1$ of such covered lens with the help of a ray diagram.

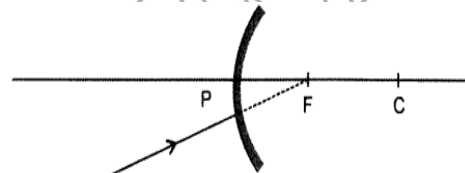
(iii) How will the intensity of the image formed by half-covered lens compare with non-covered lens?

[CBSE 2008]

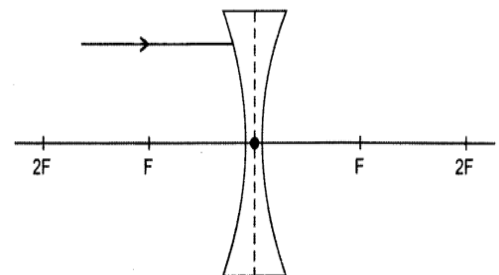
Q.18 Redraw the diagram given below in your answer book and show the direction of the light ray after reflection from the mirror. [CBSE 2009]



Q.19 Redraw the diagram given below in your answer book and show the direction of the light ray after reflection from the mirror. [CBSE 2009]

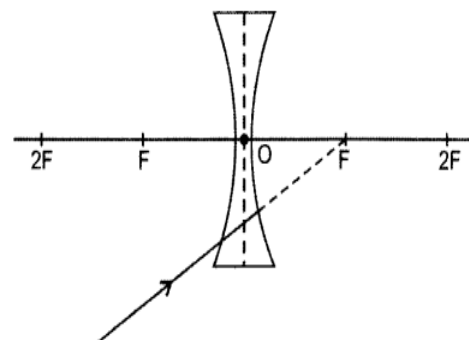


Q.20 Redraw the diagram given below in your answer book and show the direction of the light ray after refraction from the lens. [CBSE 2009]



Q.21 Why does a ray of light bend when it travels from one medium into another? [CBSE 2009]

Q.22 Redraw the diagram given below in your answer book and show the direction of the light ray after refraction from the lens. [CBSE 2009]



- Q.23** What is the minimum number of rays required for locating the image formed by a concave mirror for an object. Draw a ray diagram to show the formation of a virtual image by a concave mirror. [CBSE 2009]
- Q.24** The refractive index of water is 1.33 and the speed of light in air is 3×10^8 ms⁻¹. Calculate the speed of light in water. [CBSE 2009]
- Q.25** The refractive index of glass is 1.50 and the speed of light in air is 3×10^8 ms⁻¹. Calculate the speed of light in glass. [CBSE 2009]
- Q.26** For which position of the object does a convex lens form a virtual and erect image? Explain with the help of a ray diagram. [CBSE 2009]
- Q.27** Explain why a ray of light passing through the centre of curvature of a concave mirror, gets reflected along the same path. [CBSE 2010]
- Q.28** What is the nature of the image formed by a concave mirror if the magnification produced by the mirror is +3 ? [CBSE 2010]
- Q.29** Between which two points of a concave mirror should an object be placed to obtain a magnification of -3? [CBSE 2010]
- Q.30** "The refractive index of carbon disulphide is 1.63." What is the meaning of this statement in relation to speed of light? [CBSE 2010]
- Q.31** The outer surface of a hollow sphere of aluminium of radius 50 cm is to be used as a mirror. What will be the focal length of this mirror? Which type of spherical mirror will it provide? [CBSE 2010]
- Q.32** Between which two points related to a concave mirror should an object be placed to obtain on a screen an image twice the size of the object? [CBSE 2010]
- Q.33** How should a ray of light be incident on a rectangular glass slab so that it comes out from the opposite side of the slab without being displaced? [CBSE 2010]
- Q.34** A girl was playing with a thin beam of light from her laser torch by directing it from different directions on a convex lens held vertically. She was surprised to see that in a particular direction the beam of light continues to move along the same direction after passing through the lens. State the reason for this observation. [CBSE 2010]
- Q.35** A ray of light enters a rectangular glass slab of refractive index 1.5. It is found that the ray emerges from the opposite face of the slab without being displaced. If its speed in air is 3×10^8 ms⁻¹ then what is its speed in glass? [CBSE 2010]
- Q.36** The speed of light in a transparent medium is 0.6 times that of its speed in vacuum. What is the refractive index of the medium? [CBSE 2010]
- Q.37** In an experiment with a rectangular glass slab, a student observed that a ray of light incident at an angle of 55° with the normal on one face of the slab, after refraction strikes the opposite face of the slab before emerging out into air making an angle of 40° with the normal. Draw a labelled diagram to show the path of this ray. What value would you assign to the angle of refraction and angle of emergence? [CBSE 2010]

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- Q.38** At what distance should an object be placed from a convex lens of focal length 18 cm to obtain an image at 24 cm from it on the other side. What will be the magnification produced in this case? [CBSE 2010]
- Q.39** How far should an object be placed from a convex lens of focal length 20 cm to obtain its image at a distance of 30 cm from the lens? What will be the height of the image if the object is 6 cm tall? [CBSE 2010]
- Q.40** The image of an object placed at 60 cm in front of a lens is obtained on a screen at a distance of 120 cm from it. Find the focal length of the lens. What would be the height of the image if the object is 5 cm high? [CBSE 2010]
- Q.41** State the two laws of reflection of light. [CBSE 2011]
- Q.42** Define and show on a diagram, the following terms relating to a concave mirror:
 (i) Aperture
 (ii) Radius of curvature [CBSE 2011]
- Q.43** Define the focus of a concave mirror. If the radius of curvature of a convex mirror is 30 cm, what would be its focal length? [CBSE 2011]
- Q.44** Distinguish between a real and a virtual image of an object. What type of image is formed (i) by a plane mirror, (ii) on a cinema screen? [CBSE 2011]
- Q.45** Draw a ray diagram and also state the position, the relative size and the nature of image formed by a concave mirror when the object is placed at the centre of curvature of the mirror. [CBSE 2011]
- Q.46** Define 'refractive index of a transparent medium.' What is its unit? Which has a higher refractive index, glass or water? [CBSE 2011]
- Q.47** A ray of light travelling in air enters obliquely into water. Does the light ray bend towards or away from the normal? Why? Draw a ray diagram to show the refraction of light in this situation. [CBSE 2011]
- Q.48** (a) "The refractive index of diamond is 2.42". What is the meaning of this statement?
 (b) Name a liquid whose mass density is less than that of water but it is optically denser than water. [CBSE 2011]
- Q.49** An object is placed between infinity and the pole of a convex mirror. Draw a ray diagram and also state the position, the relative size and the nature of the image formed. [CBSE 2011]
- Q.50** What is the principle of reversibility of light? Show that the incident ray of light is parallel to the emergent ray of light when light falls obliquely on a side of a rectangular glass slab. [CBSE 2011]
- Q.51** With the help of a ray diagram explain why a convex mirror is preferred for rear view mirrors in motor cars. [CBSE 2011]
- Q.52** What is understood by lateral displacement of light? Illustrate it with the help of a diagram. List any two factors on which the lateral displacement of a particular substance depends. [CBSE 2011]
- Q.53** Draw the ray diagram and also state the position, relative size and nature of the image formed by a concave mirror when the object is placed between its centre of curvature, C and focus, F. [CBSE 2011]
- Q.54** (a) If the image formed by a lens is diminished in size and erect, for all positions of the object, what type of lens is it?
 (b) Name the point on the lens through which a ray of light passes undeviated.
 (c) An object is placed perpendicular to the principal axis of a convex lens of focal length 20 cm. The distance of the object from the lens is 30 cm. Find (i) the position (ii) the magnification and (iii) the nature of the image formed. [CBSE 2011]
- Q.55** (a) What is meant by 'power of a lens'?
 (b) State and define the S.I. unit of power of a lens.
 (c) A convex lens of focal length 25 cm and a concave lens of focal length 10 cm are placed in close contact with each other. Calculate the lens power of this combination. [CBSE 2011]
- Q.56** (a) Draw a ray diagram to show the formation of image of an object placed between infinity and the optical centre of a concave lens.
 (b) A concave lens of focal length 15 cm forms an image 10 cm from the lens. Calculate (i) the distance of the object from the lens. (ii) the magnification for the image formed. (iii) the nature of the image formed. [CBSE 2011]
- Q.57** (a) Under what condition will a glass lens placed in a transparent liquid become invisible?
 (b) Describe and illustrate with a diagram, how we should arrange two converging lenses so that a parallel beam of light entering one lens emerges as a parallel beam after passing through the second lens.
 (c) An object is placed at a distance of 3 cm from a concave lens of focal length 12 cm. Find the (i) position and (ii) nature of the image formed. [CBSE 2011]
- Q.58** (a) With the help of a ray diagram explain why a concave lens diverges the rays of a parallel beam of light.
 (b) A 2.0 cm tall object is placed perpendicular to the principal axis of a concave lens of focal length 15 cm. At what distance from the lens, should the object

be placed so that it forms an image 10 cm from the lens? Also find the nature and the size of image formed. [CBSE 2011]

Q.59 List four properties of the image formed by a plane mirror. [CBSE 2012]

Q.60 List four properties of the image formed by a convex mirror. [CBSE 2012]

Q.61 List four properties of the image formed by a concave mirror, when object is placed between focus and pole of the mirror. [CBSE 2012]

Q.62 To instruct a ray diagram, we use two light rays which are so chosen that it is easy to know their directions after refraction from the lens. List these two rays and state the path of these rays after refraction. Use these two rays to locate the image of an object placed between 'F' and '2F' of a convex lens. [CBSE 2012]

Q.63 State the type of mirror preferred as (i) rear view mirror in vehicles, (ii) shaving mirror. Justify your answer giving two reasons in each case. [CBSE 2012]

Q.64 The image of a candle flame placed at a distance of 45 cm from a spherical lens is formed on a screen placed at a distance of 90 cm from the lens. Identify the type of lens and calculate its focal length. If the height of the flame is 2 cm, find the height of its image. [CBSE 2012]

Q.65 A 4 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 24 cm. The distance of the object from the lens is 16 cm. Find the position, size and nature of the image formed, using the lens formula. [CBSE 2012]

Q.66 Name the type of mirror used in the following situations:
(i) Headlights of a car (ii) Rear-view mirror of vehicles
(iii) Solar furnace Support your answer with reason. [CBSE 2012]

Q.67 Name the type of mirror used in the following situations:
(i) Headlights of a car (ii) Rear-view mirror of vehicles
(iii) Solar furnace Support your answer with reason. [CBSE 2012]

Q.68 List the sign conventions for reflection of light by spherical mirrors. Draw a diagram and apply these conventions in the determination of focal length of a spherical mirror which forms a three times magnified real image of an object placed 16 cm in front of it. [CBSE 2012]

Q.69 State the law of refraction of light that defines the refractive index of a medium with respect to the other. Express it mathematically. How is refractive index of any medium 'A' with respect to a medium 'B' related to the speed of propagation of light in two media A and B? State the name of this constant when one medium is vacuum or air. [CBSE 2012]

Q.70 The refractive indices of glass and water with respect to vacuum are $\frac{3}{2}$ and $\frac{4}{3}$ respectively. If the speed of light in glass is 2×10^8 m/s, find the speed of light in (i) vacuum, (ii) water. [CBSE 2012]

Q.71 To construct a ray diagram, we use two light rays which are so chosen that it is easy to know their directions after reflection from the mirror. List these two rays and state the path of these rays after reflection. Use these rays to locate the image of an object placed between centre of curvature and focus of a concave mirror. [CBSE 2012]

Q.72 List the sign conventions that are followed in case of refraction of light through spherical lenses. Draw a diagram and apply these conventions in determining the nature and focal length of a spherical lens which forms three times magnified real image of an object placed 16 cm from the lens. [CBSE 2012]

Q.73 What is meant by power of a lens ? [CBSE 2015]

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- Q.74** (i) What possible phenomenon can happen when light falls on a surface ?
(ii) State the laws of refraction of light. If the speed of light in vacuum is 3×10^8 m/s, find the absolute refractive index of a medium in which light travels with a speed of 1.4×10^8 m/s. [CBSE 2015]
- Q.75** To construct a ray diagram we use two rays of light which are so chosen that it is easy to determine their directions after reflection from the mirror. Choose these two rays and state the path of these rays after reflection from a concave mirror. Use these two rays to find the nature and position of the image of an object placed at a distance of 15 cm from a concave mirror of focal length 10cm. [CBSE 2015]
- Q.76** Draw a ray diagram to show the path of the reflected ray in each of the following cases. A ray of light incident on a convex mirror
(i) strikes at its pole making an angle θ with the principal axis.
(ii) is directed towards its principal focus.
(iii) is parallel to its principal axis. [CBSE 2015]
- Q.77** A 4 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 20 cm. The distance of the object from the lens is 15 cm. Find the nature, position and size of the image. [CBSE (AI) 2015]
- Q.78** A student wants to project the image of a candle flame on a screen 80 cm in front of a mirror by keeping the candle flame at distance of 20 cm from its pole.
(i) Which type of mirror should the student use ?
(ii) Find the magnification of the image produced.
(iii) Find the distance between the object and its image.
(iv) Draw a ray diagram to show the image formation in this case and mark the distance between the object and its image. [CBSE 2015]
- Q.79** The image of a candle flame placed at a distance of 30 cm from a spherical lens is formed on a screen placed on the other side of the lens at distance of 60 cm from the optical centre of the lens. Identify the type of lens and calculate its focal length. If the height of the flame is 3 cm, find the height of its image. [CBSE 2015]
- Q.80** The absolute refractive indices of two media 'A' and 'B' are 2.0 and 1.5 respectively. If the speed of light in medium 'B' is 2×10^8 m/s, calculate the speed of light in
(i) vacuum (ii) medium 'A'. [CBSE 2015]
- Q.81** If the image formed by a mirror for all positions of the object placed in front of it is always erect and diminished, what type of mirror is it ? Draw a ray diagram to justify your answer. Where and why do we generally use this type of mirror ? [CBSE (AI) 2015, 2018]
- Q.82** The absolute refractive indices of glass and water are $3/2$ and $4/3$ respectively. If the speed of light in glass is 2×10^8 m/s, calculate the speed of light in
(i) vacuum, (ii) water. [CBSE 2015, 2016]
- Q.83** State two positions in which a concave mirror produces a magnified image of a given object. List two differences between the two images. [CBSE 2016]
- Q.84** The linear magnification produced by a spherical mirror is +3. Analyse this value and state the
(i) type of mirror and (ii) position of the object with respect to the pole of the mirror. Draw ray diagram to show the formation of image in this case. [CBSE 2016]
- Q.85** It is desired to obtain an erect image of an object, using concave mirror of focal length of 12 cm.
(i) What should be the range of distance of an object placed in front of the mirror ?

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- (ii) Will the image be smaller or larger than the object. Draw ray diagram to show the formation of image in this case.
- (iii) Where will the image of this object be, if it is placed 24 cm in front of the mirror? Draw ray diagram for this situation also to justify your answer. Show the positions of pole, principal focus and the centre of curvature in the above ray diagrams.
[CBSE (AI) 2016]
- Q.86** Suppose you have three concave mirrors A, B and C of focal lengths 10 cm, 15 cm and 20 cm. For each concave mirror you perform the experiment of image formation for three values of object distance of 10 cm, 20 cm and 30 cm. Giving reason answer the following:
- (i) For the three object distances, identify the mirror/mirrors which will form an image of magnification-1.
- (ii) Out of the three mirrors identify the mirror which would be preferred to be used for shaving purposes/makeup.
- (iii) For the mirror B draw ray diagram for image formation for object distances 10 cm and 20 cm.
[CBSE 2016]
- Q.87** The image of an object formed by a mirror is real, inverted and is of magnification-1. If the image is at a distance of 40 cm from the mirror, where is the object placed? Where would the image be if the object is moved 20 cm towards the mirror? State reason and also draw ray diagram for the new position of the object to justify your answer.
[CBSE (AI) 2016]
- Q.88** The image of an object formed by a lens of magnification-1. If the distance between the object and its image is 60 cm, what is the focal length of the lens? If the object is moved 20 cm towards the lens, where would the image be formed? State reason and also draw a ray diagram in support of your answer.
[CBSE (AI) 2016]
- Q.89** An object is placed at a distance of 30 cm from a concave lens of focal length 15 cm. List four characteristics (nature, position, etc.) of the image formed by the lens.
[CBSE (AI) 2017]
- Q.90** Which property of concave mirror is utilised for using them as shaving mirrors?
[CBSE 2017]
- Q.91** "A lens can form a magnified erect image as well as magnified inverted image of an object placed in front of it." State the nature of this lens and draw ray diagrams to justify the above statement. Mark the positions of O, F and 2F in the diagram.
[CBSE (AI) 2017]
- Q.92** If the image formed by a lens for all positions of an object placed in front of it is always erect and diminished,

what is the nature of this lens? Draw a ray diagram to justify your answer. If the numerical value of the power of this lens is 10 D, what is its focal length in the Cartesian system?
[CBSE (AI) 2017]

- Q.93** (i) Draw labelled ray diagrams for each of the following cases to show the position, nature and size of the image formed by a convex lens when the object is placed
- (a) between its optical centre (O) and principal focus (F)
- (b) between F and 2F
- (ii) How will the nature and size of the image formed in the above two cases, (a) and (b) change, if the convex lens is replaced by a concave lens of same focal length?
[CBSE 2017]
- Q.94** (i) To construct a ray diagram we use two rays which are so chosen that it is easy to know their directions after reflection from the mirror. List two such rays and state the path of these rays after reflection in case of concave mirrors. Use these two rays and draw ray diagram to locate the image of an object placed between pole and focus of a concave mirror.
- (ii) A concave mirror produces three times magnified image on a screen. If the object is placed 20 cm in front of the mirror, how far is the screen from the object?
[CBSE 2017]
- Q.95** An object 4 cm in height, is placed at 15 cm in front of a concave mirror of focal length 10 cm. At what distance from the mirror should a screen be placed to obtain a sharp image of the object. Calculate the height of the image.
[CBSE 2017]
- Q.96** An object is placed perpendicular to the principal axis of a convex lens of focal length 8 cm. The distance of the object from the lens is 12 cm. Find the position and nature of the image.
[CBSE 2017]
- Q.97** A 3 cm tall object is placed 10 cm in front of a concave mirror of focal length 12 cm. At what distance from the mirror should a screen be placed to see a sharp image of the object on the screen. Also calculate the height of the image formed.
[CBSE 2017]
- Q.98** The magnification of an image formed by a lens is -1. If the distance of the image from the optical centre of the lens is 25 cm, where is the object placed? Find the nature and focal length of the lens. If the object is displaced 15 cm towards the optical centre of the lens, where would the image be formed? Draw a ray diagram to justify your answer.
[CBSE 2017]
- Q.99** Draw ray diagrams to show the formation of three times magnified (i) real and (ii) virtual image of an object by a converging lens. Mark the positions of O, F and 2F
- Q.100** Define absolute refractive index.
[CBSE 2019]

Q.101 A student holding a mirror in his hand, directed the reflecting surface of the mirror towards the Sun. He then directed the reflected light on to a sheet of paper held close to the mirror.

- (i) What should he do to burn the paper ?
- (ii) Which type of mirror does he have ?
- (iii) Will he be able to determine the approximate value of focal length of this mirror from this activity? Give reason and draw ray diagram to justify your answer in this case. [CBSE 2019]

Q.102 Define refractive index of a transparent medium. The speed of light in a medium of absolute refractive index 1.5 is $2 \times 10^8 \text{ ms}^{-1}$. What is the speed of light in vacuum? [CBSE 2019]

Q.103 A 10 cm tall object is placed perpendicular to the principal axis of a convex lens of focal length 12 cm. The distance of the object from the lens is 18 cm. Find the nature, position and size of the image formed. [CBSE 2019]

Q.104 An object is placed at a distance of 60 cm from a concave lens of focal length 30 cm.

- (i) Use lens formula to find the distance of the image from the lens.
- (ii) List four characteristics of the image (nature, position, size, erect/inverted) formed by the lens in this case.
- (iii) Draw ray diagram to justify your answer of part(ii). [CBSE 2019]

Q.105 The image of an object formed by a lens is of magnification -1. If the distance between the object and its image is 60 cm, what is the focal length of the lens? If the object is moved 20 cm towards the lens, where would the image be formed? State reason and also draw a ray diagram in support of your answer. [CBSE (AI) 2019]

Q.106 The laws of reflection hold true for
(a) plane mirrors only (b) concave mirrors only
(c) convex mirrors only (d) all reflecting surfaces [CBSE 2020]

Or

When object is kept within the focus of a concave mirror, an enlarged image is formed behind the mirror. This image is :

- (a) real (b) inverted
- (c) virtual and inverted (d) virtual and erect [CBSE 2020]

Q.107 Why is Tyndall effect shown by colloidal particles? State four instances of observing the Tyndall effect.

Or

Differentiate between a glass slab and a glass prism. What happens when a narrow beam of (i) a monochromatic light, and (ii) white light passes through (a) glass slab and (b) glass prism? [CBSE 2020]

Q.108 Draw labelled diagram to show (i) reddish appearance of the sunrise or the sunset and (ii) white appearance of the sun at noon when it is overhead. [CBSE 2020]

Q.109 Draw a ray diagram in each of the following cases to show the formation of image, when the object is placed:
(a) between optical centre and principal focus of a convex lens.
(b) anywhere in front of a concave lens.
(c) at 2 F of a convex lens.

State the signs and values of magnifications in the above mentioned cases (a) and (b). [CBSE 2020]

Or

An object 4.0 cm in size, is placed 25.0 cm in front of a concave lens of focal length 15.0 cm.

- (a) At what distance from the lens should a screen be placed in order to obtain a sharp image?
- (b) Find the size of the image.
- (c) Draw a ray diagram to show the formation of image in this case. [CBSE 2020]

Q.110 A real image is formed by the light rays after reflection or refraction when they :

- I. actually meet or intersect with each other.
- II. actually converge at a point
- III. appear to meet when they are produced in the backward direction.
- IV. appear to diverge from a point.

Which of the above statements are correct ?

- (a) I and IV (b) II and IV
- (c) I and II (d) II and III [CBSE 2020]

Or

Consider the following properties of virtual images

- I. cannot be projected on the screen
- II. are formed by both concave and convex lens
- III. are always erect
- IV. are always inverted

The correct properties are

- (a) I and IV (b) I and II
- (c) I, II and III (d) I, II and IV [CBSE 2020]

Q.111 The near point of the eye of a person is 50 cm. Find the nature and power of the corrective lens required by the person to enable him to see clearly the objects placed at 25 cm from the eye. [CBSE 2020]

- Q.1** A 14-year old student is not able to see clearly the questions written on the blackboard placed at a distance of 5 m from him.
 (a) Name the defect of vision he is suffering from.
 (b) With the help of labelled ray diagrams show how this defect can be corrected.
 (c) Name the type of lens used to correct this defect.
 [CBSE 2007]
- Q.2** Why is red colour selected for danger signal lights?
 [CBSE 2007]
- Q.3** Study the diagram given below and answer the questions that follow it:
 (a) Which defect of vision is represented in this case? Give reason for your answer.
 (b) What could be the two causes of this defect?
 (c) With the help of a diagram show how this defect can be corrected by the use of a suitable lens.
 [CBSE 2007]
- Q.4** Student sitting at the back bench in a class is not able to see what is written on the blackboard. He however, sees it clearly when sitting on the front seat at an approximate distance of 1.5 m from the blackboard. Draw ray diagrams to illustrate the image formation of the blackboard when he is seated at the
 (i) back seat (ii) front seat. [CBSE 2009]
- Q.5** What is meant by spectrum of white light? How can we recombine the components of white light after a prism has separated them? Draw a diagram to illustrate it. [CBSE 2009]
- Q.6** Explain why do the planets not twinkle but the stars twinkle. [CBSE 2009]
- Q.7** (a) What is dispersion of white light? What is the cause of such dispersion? Draw a diagram to show the dispersion of white light by a glass prism.
 (b) A glass prism is able to produce a spectrum when white light passes through it but a glass slab does not produce any spectrum. Explain why is it so?
 [CBSE 2009]
- Q.8** (a) Explain the following terms used in relation to defects in vision and correction provided by them:
 (i) Myopia (ii) Astigmatism
 (iii) Bifocal lenses (iv) Far-sightedness.
 (b) Why is the normal eye unable to focus on an object placed within 10 cm from the eye? [CBSE 2009]
- Q.9** Name the part of our eyes that helps us to focus near and distant objects in quick succession. [CBSE 2010]
- Q.10** A person is advised to wear spectacles with concave lenses. What type of defect of vision is he suffering from? [CBSE 2010]
- Q.11** A person is advised to wear spectacles with convex lenses. What type of defect of vision is he suffering from? [CBSE 2010]
- Q.12** Why do different components of white light deviate through different angles when passing through a triangular glass prism? [CBSE 2010]
- Q.13** A person can comfortably read a book but finds it difficult to read the number on a bus parked 5 m away from him. Name the type of defect of vision he is suffering from. Which type of lens should he use in his spectacles to correct his vision? [CBSE 2010]
- Q.14** What will be the colour of the sky, when it is observed from a place in the absence of any atmosphere? Why?
- Q.15** The sky appears dark instead of blue to an astronaut. State its reason. [CBSE 2010]
- Q.16** What is myopia (near-sightedness)? Draw a ray diagram to show how it can be corrected using a lens. [CBSE 2010]
- Q.17** What is hypermetropia (far-sighted-ness)? Draw a ray diagram to show how this defect can be corrected using a lens. [CBSE 2010]
- Q.18** Define the term dispersion of white light. State the colour which bends (i) the least and (ii) the most while passing through a glass prism. [CBSE 2010]
- Q.19** What is Tyndall effect? [CBSE 2011]
- Q.20** Give an example of optical phenomena which occurs in nature due to atmospheric refraction. [CBSE 2011]

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- Q.21** Give an example of a phenomenon where Tyndall effect can be observed. [CBSE 2011]
- Q.22** Name the type of particles which acts as a prism in the formation of rainbow in the sky. [CBSE 2011]
- Q.23** What is the cause of dispersion of white light on passing through a prism? [CBSE 2011]
- Q.24** Name the atmospheric phenomenon due to which the sun can be seen above the horizon about two minutes before actual sunrise. [CBSE 2011]
- Q.25** Give reasons:
- The extent of deviation of a ray of light on passing through a glass prism depends on its colour.
 - Lights of red colour are used for danger signals. [CBSE 2011]
- Q.26** A star appears slightly higher (above) than its actual position in the sky. Illustrate it with the help of a labelled diagram. [CBSE 2011]
- Q.27** Draw a ray diagram to show the refraction of light through a glass prism. Mark on it
- the incident ray.
 - the emergent ray and
 - the angle of deviation. [CBSE 2011]
- Q.28** (a) What is meant by the power of accommodation of an eye?
 (b) A person with a myopic eye cannot see objects beyond 1.2 m directly. What should be the type of the corrective lens used? What would be its power? [CBSE 2011]
- Q.29** (a) What are the values of (i) near point and (ii) far point of vision of a normal adult person?
 (b) A student has difficulty in reading the blackboard while sitting in the last row. What could be his defect of vision? Draw a ray diagram to illustrate this defect of vision. [CBSE 2011]
- Q.30** Name the three common defects of vision. What are their causes? Name the type of lens used to correct each of them. [CBSE 2011]
- Q.31** Which phenomenon is responsible for making the path of light visible? [CBSE 2012]
- Q.32** State one function of iris in human eye. [CBSE 2012]
- Q.33** State one function of pupil in human eye. [CBSE 2012]
- Q.34** State one role of ciliary muscles in the human eye. [CBSE 2012]
- Q.35** State one function of the crystalline lens in the human eye. [CBSE 2012]
- Q.36** State two properties of the image formed by the eye lens on the retina. [CBSE 2012]
- Q.37** State one function of cornea in human eye. [CBSE 2012]
- Q.38** Why does the sun appear reddish at sunrise? [CBSE 2012]
- Q.39** A star sometimes appears brighter and some other times fainter. What is this effect called? State the reason for this effect. [CBSE 2012]
- Q.40** What is the colour of the clear sky during day time? Give reason for it. [CBSE 2012]
- Q.41** What is a spectrum? Why do different coloured rays deviate differently on passing through a glass prism? [CBSE 2012]
- Q.42** What is meant by the term 'power of accommodation' of human eye? How does it help a person to see nearby as well as distant objects clearly. [CBSE 2012]
- Q.43** (a) A student cannot see clearly a chart hanging on a wall placed at a distance 3 m from his eye. Name the defect of vision he is suffering from. Draw a ray diagram to illustrate this defect. List its two possible causes.
 (b) Draw a ray diagram to show how this defect may be corrected using a lens of appropriate focal length.
 (c) An eye donation camp is being organised by social workers in your locality. How and why would you help in this cause? [CBSE 2012]
- Q.44** Explain giving reason why the sky appears blue to an observer from the surface of the Earth. What should the appearance of the sky be during the day for an astronaut staying in the international space station orbiting the Earth? State reason to justify your answer. [CBSE 2015]
- Q.45** State the function of each of the following parts of the human eye :
- | | |
|-------------|-------------|
| (i) Cornea | (ii) Iris |
| (iii) Pupil | (iv) Retina |
- Millions of people of the developing countries are suffering from corneal blindness. This disease can be cured by replacing the defective cornea with the cornea of a donated eye. Your school has organised a campaign in the school and its neighbourhood in order to create awareness about this fact and motivate people to donate their eyes after death. How can you along with your classmates contribute in this noble cause? State the objectives of organising such campaigns in school. [CBSE 2015]
- Q.46** Explain why the planets do not twinkle. [CBSE 2015]
- Q.47** Why does the Sun appear reddish early in the morning? [CBSE 2015]
- Q.48** How does atmospheric refraction affect sunrise and sunset ?
- Or**
- What is meant by advance sunrise and delayed sunset. Draw a labelled diagram to explain. [CBSE 2015,2017]

- Q.49** What is meant by scattering of light ? Use this phenomenon to explain why the clear sky appears blue or the sun appears reddish at sunrise.
[CBSE 2015,2017,2019]
- Q.50** How does refraction of light take place in the atmosphere? Explain the reason why stars appear to twinkle and the planets do not twinkle. [CBSE 2017]
- Q.51** Write about power of accommodation of human eye. Explain why the image distance in the eye does not change when we change the distance of an object from the eye ? [CBSE 2017]
- Q.52** Due to gradual weakening of ciliary muscles and diminishing flexibility of the eye lens a certain defect of vision arise. Write the name of this defect. Name the type of lens required by such persons to improve the vision. Explain the structure and function of such a lens. [CBSE 2017]
- Q.53** With the help of ciliary muscles the human eye can change its curvature and thus alter the focal length of its lens. State the changes that occur in the curvature and focal length of the eye lens while viewing
(i) a distance object, (ii) nearby objects.
Explain, why a normal eye is not able to see distinctly the objects placed closer than 25 cm, without putting any strain on the eye. [CBSE 2017]
- Q.54** (i) Draw a ray diagram to explain the term angle of deviation.
(ii) Why do the component colours of incident white light split into a spectrum while passing through a glass prism, explain.
(iii) Draw a labelled ray diagram to show the formation of a rainbow. [CBSE 2017]
- Q.55** What is “dispersion of white light ? Draw a labelled diagram to illustrate the recombination of the spectrum of white light ? Why is it essential that the two prisms used for the purpose should be identical and placed in an inverted position with respect to each other ? [CBSE(AI)2017]
- Q.56** A person is unable to see distinctly the objects closer than 1 m. Name the defect of vision he is suffering from. Draw ray diagrams to illustrate the cause of the defect and its correction by suitable lens. [CBSE 2017]
- Q.57** Using the phenomenon of scattering of light, explain why there is a difference in the colour of the Sun as it appears during sunrise and at noon. [CBSE 2017,2019]
- Q.58** Why do stars twinkle ? [CBSE 2018]
- Q.59** Write the functions of each of the following parts of the human eye :
(a) Cornea
(b) Iris
(c) Crystalline (Eye) lens

9th 10th +1 +2

पहले बोर्ड परीक्षाओं (CBSE/HP-Board) की बारी
साथ-साथ **Competition** (NEET/JEE/NDA/NTSE) की तैयारी

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- (d) Ciliary muscles
(e) Retina [CBSE 2018]
- Q.60** What happens to the image distance in the normal human eye when we decrease the distance of an object, say 10 m to 1 m ? Justify your answer. [CBSE 2019]
- Q.61** Write the structure of eye lens and state the role of ciliary muscles in the human eye. [CBSE 2019]
- Q.62** List two causes of presbyopia. Draw labelled diagram of a lens used for the correction of this defect of vision. [CBSE 2019]
- Q.63** Why is the colour of the clear sky blue ? [CBSE 2019]
- Q.64** What is rainbow ? Draw a labelled diagram to show the formation of a rainbow. [CBSE 2019]
- Q.65** What is atmospheric refraction? List two phenomena which can be explained on the basis of atmospheric refraction. [CBSE 2019]
- Q.66** A person is unable to see objects distinctly placed within 50 cm from his eyes.
(i) Name the defect of vision the person is suffering from and list its two possible causes.
(ii) Draw a ray diagram to show the defect in the above case.
(iii) Mention the type of lens used by him for the

- correction of the defect and calculate its power. Assume that the near point for the normal eye is 25 cm.
- (iv) Draw labelled diagram for the correction of the defect in the above case. [CBSE 2019]
- Q.67** (i) When do we consider a student sitting in the class to be myopic ? List two causes of the defect. Explain using a ray diagram how this defect of eye can be corrected.
(ii) Why is the normal eye unable to focus on an object placed within 10 cm from the eye ? [CBSE 2019]
- Q.68** What is the cause of dispersion of white light through a glass prism ? Draw a ray diagram to show the path of light when two identical glass prisms are arranged together in inverted position with respect to each other and a narrow beam of white light is allowed to fall obliquely on one of the faces of the prisms. [CBSE 2019]
- Q.69** (i) What is the least distance of distinct vision for a normal eye ?
(ii) Define the term power of accommodation. Write the modification in the curvature of the eye lens which enables us to see the nearby objects clearly? [CBSE 2019]

for 9th, 10th, +1 & +2 students

SUMMER VACATION COURSE

Simultaneous Preparation For Engineering/Medical Entrance Exams along with Board Exams

• PHYSICS • CHEMISTRY • BIOLOGY • MATHS

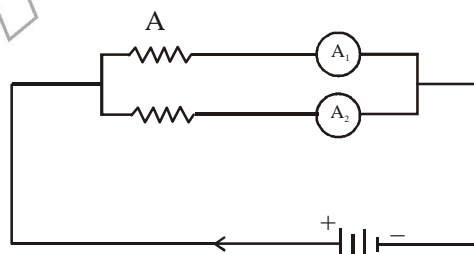
KV (Kendriya Vidyalaya Students) w.e.f. 2nd week of May **40 Days**

JNV (Jawahar Navodaya Vidyalaya) w.e.f. 1st week of June **50 Days**

CBSE/HP-Board During Summer Vacation **40 Days**

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- Q.1** (a) Two resistors R_1 and R_2 may form
 (i) a series combination or
 (ii) a parallel combination, and the combination may be connected to a battery of 6 volts. In which combination, will the potential difference across R_1 and across R_2 be the same and in which combination, will the current through R_1 and through R_2 be the same?
- (b) For the circuit shown in this diagram, calculate
 (i) the resultant resistance.
 (ii) the total current.
 (iii) the voltage across 7 Ω resistor. [CBSE 2009]
- Q.2** (a) Define the term 'coulomb'.
 (b) State the relationship between the electric current, the charge moving through a conductor and the time of flow. Calculate the charge passing through an electric bulb in 20 minutes if the value of current is 200 mA. [CBSE 2009]
- Q.3** (a) Define the term 'volt'.
 (b) State the relation between work, charge and potential difference for an electric circuit. Calculate the potential difference between the two terminals of a battery if 100 J of work is required to transfer 20 C of charge from one terminal of the battery to the other. [CBSE 2009]
- Q.4** Two lamps, one rated 100 W at 220 V, and the other 60 W at 220 V, are connected in parallel to electric mains supply. What current is drawn from the line if the supply voltage is 220 V? [CBSE 2018]
- Q.5** Define current. Give its SI unit. [CBSE 2019]
- Q.6** Define the term electrical resistivity of a material. [CBSE 2019]
- Q.7** Define resistance. Give its SI unit. [CBSE 2019]
- Q.8** Mention the condition under which a current can flow in a conductor. [CBSE 2019]
- Q.9** When do we say that the potential difference between two points of a circuit is 1 volt? [CBSE 2019]
- Q.10** Why does the cord of an electric oven not glow while its heating element does? [CBSE 2019]
- Q.11** Write the function of voltmeter in an electric circuit. [CBSE 2019]
- Q.12** Should the resistance of a voltmeter be low or high? Give reason. [CBSE 2019]
- Q.13** Define electric power. [CBSE 2019]
- Q.14** An electrical device of resistance R is connected across a source of voltage V and draws a current I . Derive an expression for power in terms of current and resistance. [CBSE 2019]
- Q.15** (i) What is electrical resistivity? In a series electrical circuit comprising of a resistor having a metallic wire, the ammeter reads 5 A. The reading of the ammeter decreases to half when the length of the wire is doubled. Why?
 (ii) In the given circuit dig. two resistance wires A and B are of same area of cross section and same material, but A is longer than B. Which ammeter A_1 or A_2 will indicate higher reading for current? Give reason.



[CBSE 2019]

- Q.16** (i) Write the relation between resistance and electrical resistivity of the material of a conductor in the shape of a cylinder of length ' l ' and area of cross-section ' A '. Hence derive the S.I. unit of electrical resistivity.

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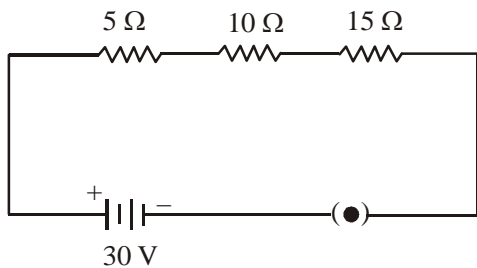
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(ii) Resistance of a metal wire of length 5 m is 100Ω . If the area of cross-section of the wire is $3 \times 10^{-7} \text{ m}^2$, calculate the resistivity of the metal.

[CBSE 2019]

Q.17 (i) Three resistors R_1 , R_2 and R_3 are connected in series and the combination is connected to a battery, ammeter, voltmeter and key. Draw suitable circuit diagram and obtain an expression for the equivalent resistance of the combination of the resistors.

(ii) Consider the given circuit and find the current flowing in the circuit and potential difference across the 15Ω resistor when the circuit is closed.



[CBSE 2019]

Q.18 Two electric bulbs rated 100 W; 220 V and 60 W; 220V are connected in parallel to an electric mains of 220 V. Find the current drawn by the bulbs from the mains.

[CBSE 2019]

Q.19 Why are coils of electric toasters and electric irons made of an alloy rather than a pure metal ?

[CBSE 2019]

Q.20 At the time of short circuit, the electric current in the circuit :

- (a) vary continuously (B) does not change
(c) reduces substantially (D) increases heavily

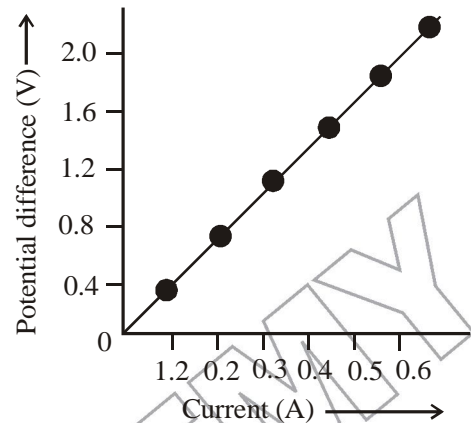
[CBSE 2020]

Q.21 Two bulbs of 100 W and 40 W are connected in series. The current the 100 W bulb is 1 A. The current through

the 40W bulb will be :

- (a) 0.4 A (b) 0.6 A
(c) 0.8 A (d) 1 A [CBSE 2020]

Q.22 A V-I graph for a nichrome wire is given below. What do you infer from this graph ? Draw a labelled circuit diagram to obtain such a graph. [CBSE 2020]



Q.23 (a) Write the mathematical expression for Joule's law of heating .

(b) Compute the heat generated while transferring 96000 coulomb of charge in two hours through a potential difference of 40 V. [CBSE 2020]

Q.34 (a) State the relation correlating the electric current flowing in a conductor and the voltage applied across it. Also draw a graph to show this relationship.

(b) Find the resistance of a conductor if the electric current flowing through it is 0.35 A when the potential difference across it is 1.4 V. [CBSE 2020]

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- Q.1** State Fleming's left hand rule. [CBSE 2018]
- Q.2** What is the principle of an electric motor ? [CBSE 2018]
- Q.3** What is the function of a galvanometer in a circuit ? [CBSE 2019]
- Q.4** It is established that an electric current through a conductor produces a magnetic field around it. Is there a similar magnetic field produced around a thin beam of moving (i) alpha particles, (ii) neutrons ? Justify your answer in each case. [CBSE 2019]
- Q.5** What is a solenoid ? Draw the pattern of magnetic field lines of (i) a current carrying solenoid and (ii) a bar magnet. List two distinguishing features between the two fields. [CBSE 2019]
- Q.6** Draw a labelled circuit diagram of a simple electric motor and explain its working. In what way these simple electric motor are different from commercial motors? [CBSE 2019]
- Q.7** A coil of insulated copper wire is connected to a galvanometer. What will happen if a bar magnet is
- (i) pushed into the coil.
- (ii) withdrawn from inside the coil.
- (iii) held stationary inside of coil ? [CBSE 2019]
- Q.8** The change in magnetic field lines in a coil is the cause of induced electric current in it. Name the underlying phenomenon. [CBSE 2020]
- Q.9** (a) What is an electromagnet ? List any two uses.
(b) Draw a labelled diagram to show how an electromagnet is made.
(c) State the purpose of soft iron core used in making an electromagnet.
(d) List two ways of increasing the strength of an electromagnet if the material of the electromagnet is fixed. [CBSE 2020]
- Q.10** (a) Explain with the help of the pattern of magnetic field lines the distribution of magnetic field due to a current carrying a circular loop.
(b) Why is it that magnetic field of a current carrying coil having n turns, is ' n ' times as large as that produced by a single turn (loop) ? [CBSE 2020]

for 9th, 10th, +1 & +2 students

SUMMER VACATION COURSE

Simultaneous Preparation For Engineering/Medical Entrance Exams along with Board Exams

• PHYSICS • CHEMISTRY • BIOLOGY • MATHS

KV (Kendriya Vidyalaya Students) **w.e.f. 2nd week of May** **40 Days**

JNV (Jawahar Navodaya Vidyalaya) **w.e.f. 1st week of June** **50 Days**

CBSE/HP-Board **During Summer Vacation** **40 Days**

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- Q.1** Write the name of main constituent of biogas. Also state its percentage. [CBSE 2019]
- Q.2** Why is biogas considered an excellent fuel ? [CBSE 2019]
- Q.3** Although coal and petroleum are produced by the degradation of biomass, yet we need to conserve these resources. Why ? [CBSE 2019]
- Q.4** Name the process used to harness nuclear energy these days. Explain it briefly. List two advantages of using nuclear energy in place of fossil fuels. [CBSE 2019]
- Q.5** "Biogas is an excellent fuel." List four reasons to justify this statement. Write the main constituent of this gas and state its percentage. [CBSE 2019]
- Q.6** What are solar cells ? Explain the structure of solar panel. List two principal advantages associated with solar cells. [CBSE 2019]
- Q.7** If you could use any source of energy for heating your food, which one would you use and why ? [CBSE 2019]
- Q.8** Name two energy sources that you would consider to be renewable. Give justification for your choices. Can these energy sources be pollution free ? List two reasons in support of your answer. [CBSE 2019]

- Q.9** For question statements are given - one labelled Assertion (A) and the other labelled Reaction (R). Select the correct answer to these questions from the codes (a), (b), (c) and (d) as given below :
- (a) Both A and R are true and R is the correct explanation of the Assertion.
- (b) Both A and R are true but R is not the correct explanation of the Assertion.
- (c) A is true but R is false.
- (d) A is false but R is true
- Assertion (A) : In the process of nuclear fission, the amount of nuclear energy generated by the fission of an atom of uranium is so tremendous that it produces 10 million times the energy produced by the combustion of an atom of carbon from coal.
- Reason (R) : The nucleus of a heavy atom such as uranium, when bombarded with low energy neutrons, splits apart into lighter nuclei. The mass difference between the original nucleus and the product gets converted to tremendous energy. [CBSE 2020]
- Q.10** State an important advantage of using alternating current (a.c.) over direct (d.c.). [CBSE 2020]

9th	10th	+1	+2
<p>पहले बोर्ड परीक्षाओं (CBSE/HP-Board) की बारी साथ-साथ Competition (NEET/JEE/NDA/NTSE) की तैयारी</p>			
TARGET BATCH			
Tuition + Competition			
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FOR +2 Students	FOR +1 Students	FOR 9th & 10th Students	
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- Q.1** What is the function of ozone in the upper atmosphere?
[CBSE 2015]
- Q.2** Why should biodegradable and non-biodegradable wastes be discarded in two separate dustbins ?
[CBSE 2015]
- Q.3** Which of the following are always at the second trophic level of food chains ?
Carnivores, Autotrophs, Herbivores [CBSE 2015]
- Q.4** The following organisms form a food chain. Which of these will have the highest concentration of non-biodegradable chemicals ? Name of phenomenon associated with it.
Insects, Hawk, Grass, Snake, Frog [CBSE 2015]
- Q.5** What will be the amount of energy available to the organisms of the 2nd trophic level of a food chain, if the energy available at the first trophic level is 10,000 joules ?
[CBSE (AI)2015]
- Q.6** Write the full name of the group of compounds mainly responsible for the depletion of ozone layer.
[CBSE 2015]
- Q.7** Differentiate between biodegradable and non-biodegradable substances with the help of one example each. List two changes in habit that people must adopt to dispose non-biodegradable waste, for saving the environment.
[CBSE (AI)2015]
- Q.8** What is an ecosystem ? List its two main components. We do not clean natural ponds or lakes but an aquarium needs to be cleaned regularly. Why is it so ? Explain.
[CBSE (AI) 2015]
- Q.9** What is ozone and how does it affect any ecosystem?
[CBSE 2015]
- Q.10** The first trophic level in a food chain is always a green plant. Why ?
[CBSE (AI)2015]
Or
Why do producers always occupy the first trophic level on every food chains ?
[CBSE 2016]
- Q.11** We often use the word environment. What does it mean?
[CBSE 2016]
- Q.12** List two biotic components of a biosphere.
[CBSE 2016]
- Q.13** Why are green plants called producers ? [CBSE 2016]
- Q.14** Write one negative effect, on the environment, of affluent lifestyle of few persons of a society. [CBSE (AI)2016]
- Q.15** (i) The depletion of ozone layer is a cause of concern. Why ?
(ii) What destructive effect do chlorofluorocarbons bring about in the atmosphere ? [CBSE 2016]
- Q.16** State the essential function performed by ozone at the higher levels of the atmosphere. [CBSE 2017]
- Q.17** What is an ecosystem ? [CBSE 2017]
- Q.18** Why is forest considered a natural ecosystem ?
[CBSE 2017]
- Q.19** In the following food chain, plants provide 500 J of energy to rats. How much energy will be available to hawks from snakes ?
Plants → Rats → Snakes → Hawks [CBSE (AI) 2017]
- Q.20** Name any two man-made ecosystem. [CBSE 2017]
- Q.21** Mention three harmful effects of using polythene bags on the environment. Suggest an effective alternative to these bags. [CBSE 2017]
- Q.22** Suggest any two ways by which the balance between the environment and industrial development is maintained so as to help undisturbed survival of the organisms on the Earth. [CBSE 2017]
- Q.23** What is a biodegradable substance ? [CBSE 2019]
- Q.24** List the two main components of an ecosystem. [CBSE 2019]
- Q.25** What are decomposers ? What will be the consequences of their absence in an ecosystem ? [CBSE 2019]
- Q.26** What is a food chain ? Why is the flow of energy in an ecosystem unidirectional ? Explain briefly. [CBSE 2019]
- Q.27** Define a food chain. Design a terrestrial food chain of four trophic levels. If a pollutant enters at the producers level, the organisms of which trophic level will have the maximum concentration of the pollutant in their bodies ? What is this phenomenon called ? [CBSE 2019]
- Q.28** Write the essential function performed by ozone at the higher levels of the Earth's atmosphere. How is it produced ? Name the synthetic chemicals mainly responsible for the drop of amount of ozone in the atmosphere. How can the use of these chemicals be reduced ? [CBSE 2019]
- Q.29** How can we help in reducing the problem of waste disposal ? Suggest any three methods. [CBSE 2019]
- Q.30** Define an ecosystem. Draw a block diagram to show the flow of energy in an ecosystem. [CBSE 2019]
- Q.31** (i) Why should National Parks be allowed to remain in their pristine form ?
(ii) Why is reuse of material better than recycling ? [CBSE 2019]

Q.32 Human body is made up of five important components, of which water is the main components. Food as well as potable water are essential for every human being. The food is obtained from plant through agriculture. Pesticides are being used extensively for a high yield in the fields. These pesticides are absorbed by the plants from the soil along with water and minerals and from the water bodies these pesticides are taken up by the aquatic animals and plants. As these chemicals are not biodegradable, they get accumulated progressively at each trophic level. The maximum concentration of these chemicals gets accumulated in our bodies and greatly affects the health of our mind and body.

- (a) Why is the maximum concentration of pesticides found in human beings ?
- (b) Give one method which could be applied to reduce our intake of pesticides through food to some extent.
- (c) Various steps in food chain represents:
- (i) Food web (ii) Trophic level
- (iii) Ecosystem (iii) Biomagnification
- (d) With regard to various food chains operating in an ecosystem, man is a :
- (i) Consumer (ii) Producer
- (iii) Producer and consumer
- (iv) Producer and decomposer [CBSE 2020]

Q.33 Which one of the following is responsible for the sustenance of underground water ? [CBSE 2020]

- (A) Loss of vegetation cover
- (B) Diversion for high water demanding crops
- (C) Pollution from urban wastes
- (D) Afforestation.

Q.34 Incomplete combustion of coal and petroleum

- (A) increases air pollution
- (B) increases efficiency of machines
- (C) reduces global warming
- (D) produce poisonous gases

The correct option is

- (a) (A) and (B) (b) (A) and (D)
- (c) (B) and (c) (d) (C) and (D)

[CBSE 2020]

Q.35 In an ecosystem, 10% of energy available for transfer from one trophic level to the next is in the form of

- (a) heat energy (b) chemical energy
- (c) nechanical energy (d) light energy

[CBSE 2020]

Q.36 (a) What is tropism ?

- (b) How do auxins promote the growth of a tendril around a support ? [CBSE 2020]

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- Q.1** Write two advantages of sustainable management of natural resources. Out of the two-reuse and recycle - which is better and why ? [CBSE(AI) 2015]
- Q.2** Building of big dams gives rise to some problem. List three main problems that may arise. Suggest a solution to any one of these problems. [CBSE 2015]
- Q.3** (i) Why do we need to manage our resources carefully?
(ii) Why management of natural resources requires a long term perspective ? [CBSE 2015]
- Q.4** List two problems that may arise by planting trees of single variety over vast tracts of a forest. [CBSE 2015]
- Q.5** List any two advantages associated with water stored in the ground. [CBSE (AI)2015]
- Q.6** List two main causes of the pollution of water of the river Ganga. State how pollution and contamination of river water prove harmful for the health of the people of neighbouring areas. [CBSE(AI) 2015]
- Q.7** List four measures that can be taken to conserve forests. [CBSE 2015]
- Q.8** We often observe domestic waste decomposing in the bylanes of our homes. List four ways to make the residents aware that the improper disposal of wastes is harmful to the environment and also for their own health. [CBSE(AI) 2015]
- Q.9** What is biodiversity ? What will happen if biodiversity of an area is not preserved ? Mention one effect of it. [CBSE(AI) 2015]
- Q.10** What is meant by “sustainable management” ? Why is reuse considered better than recycling ? [CBSE 2015]
- Or**
- What is sustainable management ? Why is reuse considered better in comparison to recycle ? [CBSE 2017]
- Q.11** Why are forests considered ‘biodiversity hotspots’? List two ways in which an individual can contribute effectively to the managements of forests and wildlife. [CBSE 2015, 2017, 2019]
- Q.12** Explain giving example where active involvement of local people lead to efficient management of forest. [CBSE 2016]
- Q.13** List four stakeholders which may be helpful in the conservation of forests. [CBSE(AI)2016]
- Q.14** “Reuse is better than recycling of materials”. Give reason to justify this statement. [CBSE 2016]
- Q.15** List four advantages of properly managed watershed management. [CBSE 2016]
- Q.16** What was *Chipko Andolan*? How did this *Andolan* ultimately benefit the local people and the environment? [CBSE 2016, 2017]
- Q.17** How do advantages of exploiting natural resources with short term gains in mind differ from the advantages of managing our resources with a long-term perspective? [CBSE 2017]
- Q.18** What is meant of wildlife ? How is it important for us? [CBSE 2017]
- Q.19** Why are coal and petroleum categorised as natural resources ? Give a reason as to why they should be used judiciously. [CBSE (AI)2017]
- Q.20** Why must we conserve our forests ? List two factors responsible for causing deforestation. [CBSE (AI)2017]
- Q.21** Management of forest and wild life resources is a very challenging task. Why ? Give any two reasons. [CBSE 2017]
- Q.22** State two advantages of conserving
(i) forests and (ii) wildlife. [CBSE (AI)2017]
- Q.23** You being an environmentalist are interested in contributing towards the conservation of natural resources. List four activities that you can do on your own. [CBSE (AI)2017]
- Q.24** (i) What is sustainable development ? Why is it necessary ?
(ii) What is water harvesting ? List its four benefits. [CBSE 2017]
- Q.25** Why is an equitable distribution of resources essential in a society ? List three forces which are against such distribution. [CBSE (AI) 2017, 2019]
- Q.26** What is a dam ? Why do we seek to build large dams? While building large dams, which three main problems should particularly be addressed to maintain peace among local people ? Mention them. [CBSE 2018]
- Q.27** List any two industries based on forest produce. [CBSE 2019]

Q.28 Although coal and petroleum are produced by degradation of biomass, yet we need to conserve them. Why ?
[CBSE 2019]

Q.29 List two advantages associated with water harvesting at the community level.
[CBSE 2019]

Q.30 Explain the role of forests in conserving the environment. How do the forests get depleted ? State two consequences of deforestation on the environment?
[CBSE 2019]

Q.31 List three advantages each of
(i) exploiting resources with short term aims, and
(ii) using a long term perspective in managing our natural resources.
[CBSE 2019]

Q.32 Suggest some approaches towards the conservation of forests.
[CBSE 2019]

Q.34 Soil fertility is determined by its ability to
(a) Decay organic matter
(c) Hold organic matter
(c) Hold water
(d) Support life

[CBSE 2020]

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