

Class XI

SUBJECT:CHEMISTRY

Class 11 Important Questions for Chemistry – The s-Block Elements

NCERT Exemplar Class 11 Chemistry is a very important resource for students preparing for XI Board Examination. Here we have provided **NCERT Exemplar Problems Solutions** along with **NCERT Exemplar Problems Class 11**.

Questions from very important topics are covered by **NCERT Exemplar Class 11**. You also get an idea about the type of questions and method to answer in your Class 11th examination. Here you can get **Class 11 Important Questions Chemistry** based on NCERT Textbook for Class XI. **Chemistry Class 11 Important Questions** are very helpful to score high marks in board exams. Here we have covered Important Questions on **The s-Block Elements** for Class 11 Chemistry subject.

Chemistry Important Questions Class 11 are given below.

Multiple Choice Questions (Type-I)

1. The alkali metals are low melting. Which of the following alkali metals is expected to melt if the room temperature rises to 30°C?
 - (i) Na
 - (ii) K
 - (iii) Rb
 - (iv) Cs
2. Alkali metals react with water vigorously to form hydroxides and dihydrogen. Which of the following alkali metals reacts with water least vigorously?
 - (i) Li

- (ii) Na
 - (iii) K
 - (iv) Cs
3. The reducing power of a metal depends on various factors. Suggest the factor which makes Li, the strongest reducing agent in aqueous solution.
- (i) Sublimation enthalpy
 - (ii) Ionisation enthalpy
 - (iii) Hydration enthalpy
 - (iv) Electron-gain enthalpy
4. Metal carbonates decompose on heating to give metal oxide and carbon dioxide. Which of the metal carbonates is most stable thermally?
- (i) MgCO_3
 - (ii) CaCO_3
 - (iii) SrCO_3
 - (iv) BaCO_3
5. Which of the carbonates given below is unstable in air and is kept in CO_2 atmosphere to avoid decomposition.
- (i) BeCO_3
 - (ii) MgCO_3
 - (iii) CaCO_3
 - (iv) BaCO_3
6. Metals form basic hydroxides. Which of the following metal hydroxide is the least basic?
- (i) Mg(OH)_2
 - (ii) Ca(OH)_2
 - (iii) Sr(OH)_2
 - (iv) Ba(OH)_2
7. Some of the Group 2 metal halides are covalent and soluble in organic solvents. Among the following metal halides, the one which is soluble in ethanol is
- (i) BeCl_2
 - (ii) MgCl_2
 - (iii) CaCl_2
 - (iv) SrCl_2

8. The order of decreasing ionisation enthalpy in alkali metals is

- (i) $\text{Na} > \text{Li} > \text{K} > \text{Rb}$
- (ii) $\text{Rb} < \text{Na} < \text{K} < \text{Li}$
- (iii) $\text{Li} > \text{Na} > \text{K} > \text{Rb}$
- (iv) $\text{K} < \text{Li} < \text{Na} < \text{Rb}$

9. The solubility of metal halides depends on their nature, lattice enthalpy and hydration enthalpy of the individual ions. Amongst fluorides of alkali metals, the lowest solubility of LiF in water is due to

- (i) Ionic nature of lithium fluoride
- (ii) High lattice enthalpy
- (iii) High hydration enthalpy for lithium ion.
- (iv) Low ionisation enthalpy of lithium atom

10. Amphoteric hydroxides react with both alkalis and acids. Which of the following Group 2 metal hydroxides is soluble in sodium hydroxide?

- (i) $\text{Be}(\text{OH})_2$
- (ii) $\text{Mg}(\text{OH})_2$
- (iii) $\text{Ca}(\text{OH})_2$
- (iv) $\text{Ba}(\text{OH})_2$

11. In the synthesis of sodium carbonate, the recovery of ammonia is done by treating NH_4Cl with $\text{Ca}(\text{OH})_2$. The by-product obtained in this process is

- (i) CaCl_2
- (ii) NaCl
- (iii) NaOH
- (iv) NaHCO_3

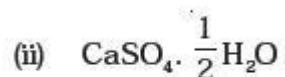
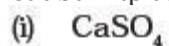
12. When sodium is dissolved in liquid ammonia, a solution of deep blue colour is obtained. The colour of the solution is due to

- (i) ammoniated electron
- (ii) sodium ion
- (iii) sodium amide
- (iv) ammoniated sodium ion

13. By adding gypsum to cement

- (i) setting time of cement becomes less.
- (ii) setting time of cement increases.
- (iii) colour of cement becomes light.
- (iv) shining surface is obtained.

14. Dead burnt plaster is



15. Suspension of slaked lime in water is known as

- (i) lime water
- (ii) quicklime
- (iii) milk of lime
- (iv) aqueous solution of slaked lime

16. Which of the following elements does not form hydride by direct heating with dihydrogen?

- (i) Be
- (ii) Mg
- (iii) Sr
- (iv) Ba

17. The formula of soda ash is

- (i) $\text{Na}_2\text{CO}_3 \cdot 10\text{H}_2\text{O}$
- (ii) $\text{Na}_2\text{CO}_3 \cdot \text{H}_2\text{O}$
- (iii) $\text{Na}_2\text{CO}_3 \cdot 2\text{H}_2\text{O}$
- (iv) Na_2CO_3

18. A substance which gives brick red flame and breaks down on heating to give oxygen and a brown gas is

- (i) Magnesium nitrate

- (ii) Calcium nitrate
- (iii) Barium nitrate
- (iv) Strontium nitrate

19. Which of the following statements is true about $\text{Ca}(\text{OH})_2$?

- (i) It is used in the preparation of bleaching powder
- (ii) It is a light blue solid
- (iii) It does not possess disinfectant property.
- (iv) It is used in the manufacture of cement.

20. A chemical A is used for the preparation of washing soda to recover ammonia. When CO_2 is bubbled through an aqueous solution of A, the solution turns milky. It is used in white washing due to its disinfectant nature. What is the chemical formula of A?

- (i) $\text{Ca}(\text{HCO}_3)_2$
- (ii) CaO
- (iii) $\text{Ca}(\text{OH})_2$
- (iv) CaCO_3

21. Dehydration of hydrates of halides of calcium, barium and strontium i.e., $\text{CaCl}_2 \cdot 6\text{H}_2\text{O}$, $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$, $\text{SrCl}_2 \cdot 2\text{H}_2\text{O}$, can be achieved by heating. These become wet on keeping in air. Which of the following statements is correct about these halides?

- (i) acts as a dehydrating agent
- (ii) can absorb moisture from air
- (iii) Tendency to form hydrate decreases from calcium to barium
- (iv) All of the above

Multiple Choice Questions (Type-II)

In the following questions two or more options may be correct.

1. Metallic elements are described by their standard electrode potential, fusion enthalpy, atomic size, etc. The alkali metals are characterised by which of the following properties?
 - (i) High boiling point
 - (ii) High negative standard electrode potential
 - (iii) High density

- (iv) Large atomic size
2. Several sodium compounds find use in industries. Which of the following compounds are used for textile industry?
- (i) Na_2CO_3
 - (ii) NaHCO_3
 - (iii) NaOH
 - (iv) NaCl
3. Which of the following compounds are readily soluble in water?
- (i) BeSO_4
 - (ii) MgSO_4
 - (iii) BaSO_4
 - (iv) SrSO_4
4. When Zeolite, which is hydrated sodium aluminium silicate is treated with hard water, the sodium ions are exchanged with which of the following ion(s)?
- (i) H^+ ions
 - (ii) Mg^{2+} ions
 - (iii) Ca^{2+} ions
 - (iv) SO_4^{2-} ions
5. Identify the correct formula of halides of alkaline earth metals from the following.
- (i) $\text{BaCl}_2 \cdot 2\text{H}_2\text{O}$
 - (ii) $\text{BaCl}_2 \cdot 4\text{H}_2\text{O}$
 - (iii) $\text{CaCl}_2 \cdot 6\text{H}_2\text{O}$
 - (iv) $\text{SrCl}_2 \cdot 4\text{H}_2\text{O}$
6. Choose the correct statements from the following.
- (i) Beryllium is not readily attacked by acids because of the presence of an oxide film on the surface of the metal.
 - (ii) Beryllium sulphate is readily soluble in water as the greater hydration enthalpy of Be^{2+} overcomes the lattice enthalpy factor.
 - (iii) Beryllium exhibits coordination number more than four.
 - (iv) Beryllium oxide is purely acidic in nature.
7. Which of the following are the correct reasons for an anomalous behaviour of lithium?

- (i) Exceptionally small size of its atom
- (ii) Its high polarising power
- (iii) It has high degree of hydration
- (iv) Exceptionally low ionisation enthalpy

Short Answer Type Questions

1. How do you account for the strong reducing power of lithium in aqueous solution?
2. When heated in air, the alkali metals form various oxides. Mention the oxides formed by Li, Na and K.
3. Complete the following reactions
 (i) $\text{O}_2^{2-} + \text{H}_2\text{O} \longrightarrow$ (ii) $\text{O}_2^- + \text{H}_2\text{O} \longrightarrow$
4. Lithium resembles magnesium in some of its properties. Mention two such properties and give reasons for this resemblance.
5. Name an element from Group 2 which forms an amphoteric oxide and a water-soluble sulphate.
6. Discuss the trend of the following:
 - (i) Thermal stability of carbonates of Group 2 elements.
 - (ii) The solubility and the nature of oxides of Group 2 elements.
7. Why are BeSO_4 and MgSO_4 readily soluble in water while CaSO_4 , SrSO_4 and BaSO_4 are insoluble?
8. All compounds of alkali metals are easily soluble in water but lithium compounds are more soluble in organic solvents. Explain.
9. In the Solvay process, can we obtain sodium carbonate directly by treating the solution containing $(\text{NH}_4)_2\text{CO}_3$ with sodium chloride? Explain.
10. Write the Lewis structure of O_2^- ion and find out the oxidation state of each oxygen atom? What is the average oxidation state of oxygen in this ion?
11. Why do beryllium and magnesium not impart colour to the flame in the flame test?
12. What is the structure of BeCl_2 molecule in gaseous and solid state?

Matching Type Questions

In the following questions more than one option of column I and II may be correlated.

1. Match the elements given in Column I with the properties mentioned in Column II.

Column I

- (i) Li
- (ii) Na
- (iii) Ca
- (iv) Ba

Column II

- (a) Insoluble sulphate
- (b) Strongest monoacidic base
- (c) Most negative E^\ominus value among alkali metals.
- (d) Insoluble oxalate
- (e) $6s^2$ outer electronic configuration

2. Match the compounds given in Column I with their uses mentioned in Column II.

Column I

- (i) CaCO_3
- (ii) Ca(OH)_2
- (iii) CaO
- (iv) CaSO_4

Column II

- (a) Dentistry, ornamental work
- (b) Manufacture of sodium carbonate from caustic soda
- (c) Manufacture of high quality paper
- (d) Used in white washing

3. Match the elements given in Column I with the colour they impart to the flame given in Column II.

Column I

- (i) Cs
- (ii) Na
- (iii) K
- (iv) Ca
- (v) Sr
- (vi) Ba

Column II

- (a) Apple green
- (b) Violet
- (c) Brick red
- (d) Yellow
- (e) Crimson red
- (f) Blue

Assertion and Reason Type Questions

In the following questions a statement of Assertion (A) followed by a statement of Reason (R) is given. Choose the correct option out of the choices given below each question.

1. Assertion (A): The carbonate of lithium decomposes easily on heating to form lithium oxide and CO_2 .
Reason (R): Lithium being very small in size polarises large carbonate ion leading to the formation of more stable Li_2O and CO_2 .
 - (i) Both A and R are correct and R is the correct explanation of A.
 - (ii) Both A and R are correct but R is not the correct explanation of A.

- (iii) Both A and R are not correct
 - (iv) A is not correct but R is correct.
2. Assertion (A): Beryllium carbonate is kept in the atmosphere of carbon dioxide.
Reason (R): Beryllium carbonate is unstable and decomposes to give beryllium oxide and carbon dioxide.
- (i) Both A and R are correct and R is the correct explanation of A.
 - (ii) Both A and R are correct but R is not the correct explanation of A.
 - (iii) Both A and R are not correct.
 - (iv) A is not correct but R is correct.

Long Answer Type Questions

1. The s-block elements are characterised by their larger atomic sizes, lower ionisation enthalpies, invariable +1 oxidation state and solubilities of their oxosalts. In the light of these features describe the nature of their oxides, halides and oxosalts.
2. Present a comparative account of the alkali and alkaline earth metals with respect to the following characteristics:
 - (i) Tendency to form ionic/covalent compounds
 - (ii) Nature of oxides and their solubility in water
 - (iii) Formation of oxosalts
 - (iv) Solubility of oxosalts
 - (v) Thermal stability of oxosalts
3. When a metal of group 1 was dissolved in liquid ammonia, the following observations were obtained:
 - (i) Blue solution was obtained initially.
 - (ii) On concentrating the solution, blue colour changed to bronze colour.
4. How do you account for the blue colour of the solution? Give the name of the product formed on keeping the solution for some time.
5. The stability of peroxide and superoxide of alkali metals increases as we go down the group. Explain giving reason.

- When water is added to compound (A) of calcium, solution of compound (B) is formed. When carbon dioxide is passed into the solution, it turns milky due to the formation of compound (C). If excess of carbon dioxide is passed into the solution, milkiness disappears due to the formation of compound (D). Identify the compounds A, B, C and D. Explain why the milkiness disappears in the last step.
- Lithium hydride can be used to prepare other useful hydrides. Beryllium hydride is one of them. Suggest a route for the preparation of beryllium hydride starting from lithium hydride. Write chemical equations involved in the process.
- An element of group 2 forms covalent oxide which is amphoteric in nature and dissolves in water to give an amphoteric hydroxide. Identify the element and write chemical reactions of the hydroxide of the element with an alkali and an acid.
- Ions of an element of group 1 participate in the transmission of nerve signals and transport of sugars and amino acids into cells. This element imparts yellow colour to the flame in flame test and forms an oxide and a peroxide with oxygen. Identify the element and write chemical reaction to show the formation of its peroxide. Why does the element impart colour to the flame?

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Answers to Multiple Choice Questions

MCQ (Type-I)

Q . No .	Answer	Q . No .	Answer	Q . No .	Answer	Q . No .	Answer	Q . No .	Answer	Q . No .	Answer
1	(i v)	2	(i)	3	(i ii)	4	(i v)	5	(i)	6	(i)
7	(i)	8	(i ii)	9	(i i)	10	(i)	11	(i)	12	(i)

1 3	(i i)	1 4	(i)	1 5	(i ii)	1 6	(i)	1 7	(i v)	1 8	(i i)
1 9	(i)	2 0	(i ii)	2 1	(i v)						

MCQ(Type-II)

Q.No.	Answer	Q.No.	Answer	Q.No.	Answer
1	(ii), (iv)	2	(i),(iii)	3	(i),(ii)
4	(ii), (iii)	5	(i),(iii)	6	(i),(ii)
7	(i),(ii)				

Class 11 Important Questions for Chemistry – Organic Chemistry Some Basic Principles and Techniques

Class 11 Important Questions for Chemistry – Organic Chemistry

Multiple Choice Questions (Type-I)

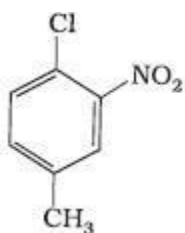
22. Which of the following is the correct IUPAC name?

- (i) 3-Ethyl-4,4-dimethylheptane
- (ii) 4,4-Dimethyl-3-ethylheptane
- (iii) 5-Ethyl-4,4-dimethylheptane
- (iv) 4,4-Bis(methyl)-3-ethylheptane

23. The IUPAC name for $\text{CH}_3-\overset{\text{O}}{\parallel}{\text{C}}-\text{CH}_2-\text{CH}_2-\overset{\text{O}}{\parallel}{\text{C}}-\text{OH}$ is _____.

- (i) 1-hydroxypentane-1,4-dione
- (ii) 1,4-dioxopentanol
- (iii) 1-carboxybutan-3-one
- (iv) 4-oxopentanoic acid

24. The IUPAC name for



- (i) 1-Chloro-2-nitro-4-methylbenzene

- (ii) 1-Chloro-4-methyl-2-nitrobenzene
- (iii) 2-Chloro-1-nitro-5-methylbenzene
- (iv) m-Nitro-p-chlorotoluene

25. Electronegativity of carbon atoms depends upon their state of hybridisation. In which of the following compounds, the carbon marked with asterisk is most electronegative?

- (i) $\text{CH}_3\text{--CH}_2\text{--}^*\text{CH}_3\text{--CH}_3$
- (ii) $\text{CH}_3\text{--}^*\text{CH}=\text{CH--CH}_3$
- (iii) $\text{CH}_3\text{--CH}_2\text{--C}\equiv^*\text{CH}$
- (iv) $\text{CH}_3\text{--CH}_2\text{--CH}=\text{}^*\text{CH}_2$

26. In which of the following, functional group isomerism is not possible?

- (i) Alcohols
- (ii) Aldehydes
- (iii) Alkyl halides
- (iv) Cyanides

27. The fragrance of flowers is due to the presence of some steam volatile organic compounds called essential oils. These are generally insoluble in water at room temperature but are miscible with water vapour in vapour phase. A suitable method for the extraction of these oils from the flowers is:

- (i) Distillation
- (ii) Crystallisation
- (iii) Distillation under reduced pressure
- (iv) Steam distillation

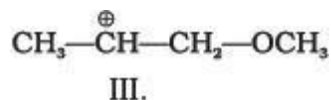
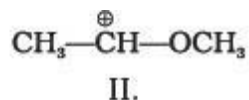
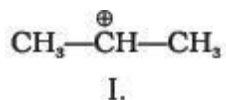
28. During hearing of a court case, the judge suspected that some changes in the documents had been carried out. He asked the forensic department to check the ink used at two different places. According to you which technique can give the best results?

- (i) Column chromatography
- (ii) Solvent extraction
- (iii) Distillation
- (iv) Thin layer chromatography

29. The principle involved in paper chromatography is

- (i) Adsorption
- (ii) Partition
- (iii) Solubility
- (iv) Volatility

30. What is the correct order of decreasing stability of the following cations.



- (i) II > I > III
- (ii) II > III > I
- (iii) III > I > II
- (iv) I > II > III

Correct IUPAC name for $\text{H}_3\text{C}-\underset{\text{C}_2\text{H}_5}{\text{CH}}-\underset{\text{C}_2\text{H}_5}{\text{CH}}-\text{CH}_3$ is _____.

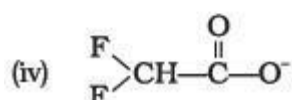
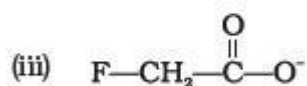
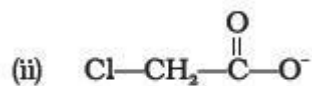
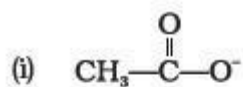
31.

- (i) 2-ethyl-3-methylpentane
- (ii) 3,4-dimethylhexane
- (iii) 2-sec-butylbutane
- (iv) 2, 3-dimethylbutane

32. In which of the following compounds the carbon marked with an asterisk is expected to have greatest positive charge?

- (i) $\text{*CH}_3-\text{CH}_2-\text{Cl}$
- (ii) $\text{*CH}_3-\text{CH}_2-\text{Mg}^+\text{Cl}^-$
- (iii) $\text{*CH}_3-\text{CH}_2-\text{Br}$
- (iv) $\text{*CH}_3-\text{CH}_2-\text{CH}_3$

33. Ionic species are stabilised by the dispersal of charge. Which of the following carboxylate ions is the most stable?



34. Electrophilic addition reactions proceed in two steps. The first step involves the addition of an electrophile. Name the type of intermediate formed in the first step of the following addition reaction.

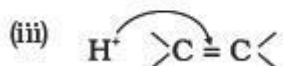
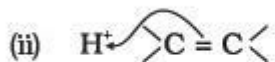
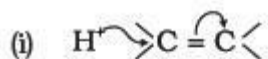


- (i) 2° Carbanion
- (ii) 1° Carbocation
- (iii) 2° Carbocation
- (iv) 1° Carbanion

35. Covalent bond can undergo fission in two different ways. The correct representation involving a heterolytic fission of CH_3-Br is



36. The addition of HCl to an alkene proceeds in two steps. The first step is the attack of H^+ ion to $>C = C<$ portion which can be shown as

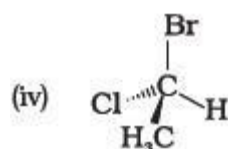
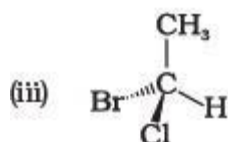
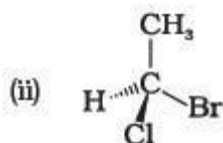
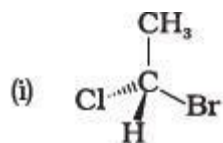
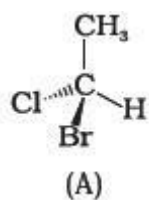


- (iv) All of these are possible

Multiple Choice Questions (Type-II)

In the following question two or more options may be correct.

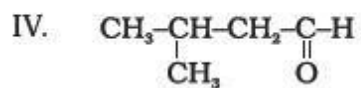
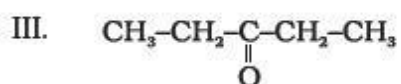
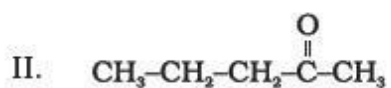
8. Which of the following compounds contain all the carbon atoms in the same hybridisation state?
- (i) $H-C \equiv C-C \equiv C-H$
 - (ii) $CH_3-C \equiv C-CH_3$
 - (iii) $CH_2=C=CH_2$
 - (iv) $CH_2=CH-CH=CH_2$
9. In which of the following representations given below spatial arrangement of group/atom different from that given in structure 'A'?



10. Electrophiles are electron seeking species. Which of the following groups contain only electrophiles?

- (i) BF_3 , NH_3 , H_2O
- (ii) AlCl_3 , SO_3 , NO_2^+
- (iii) NO_2^+ , CH_3^+ , $\text{CH}_3 - \dot{\text{C}} = \text{O}$
- (iv) C_2H_5^- , $\dot{\text{C}}_2\text{H}_5$, C_2H_5^+

Note: Consider the following four compounds for answering questions 19 and 20.



11. Which of the following pairs are position isomers?

- (i) I and II
- (ii) II and III
- (iii) II and IV
- (iv) III and IV

12. Which of the following pairs are not functional group isomers?

- (i) II and III
- (ii) II and IV
- (iii) I and IV
- (iv) I and II

13. Nucleophile is a species that should have

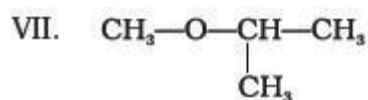
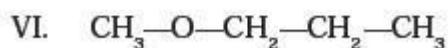
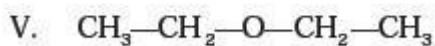
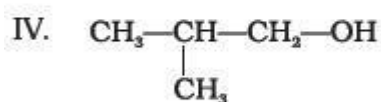
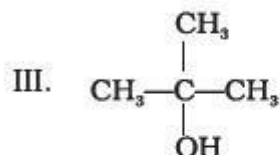
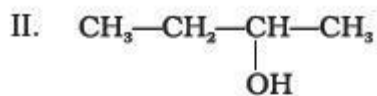
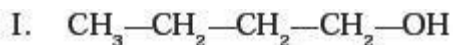
- (i) a pair of electrons to donate
- (ii) positive charge
- (iii) negative charge
- (iv) electron deficient species

14. Hyperconjugation involves delocalisation of _____.

- (i) electrons of carbon-hydrogen σ bond of an alkyl group directly attached to an atom of unsaturated system.
- (ii) electrons of carbon-hydrogen σ bond of an alkyl group directly attached to the positively charged carbon atom.
- (iii) π -electrons of carbon-carbon bond
- (iv) lone pair of electrons

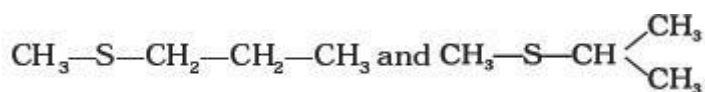
Short Answer Type Questions

Note: Consider structures I to VII and answer the questions 23–26.

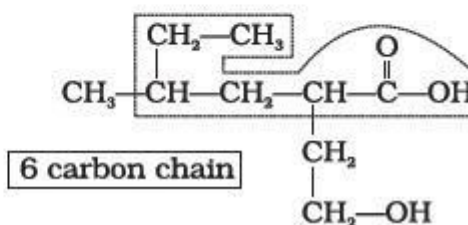
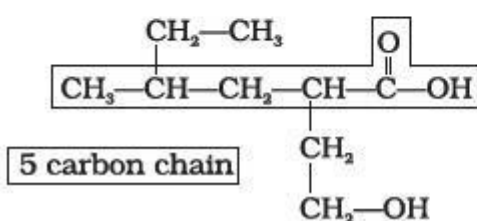
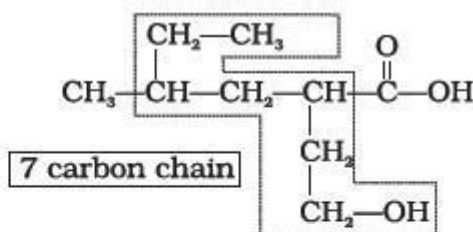
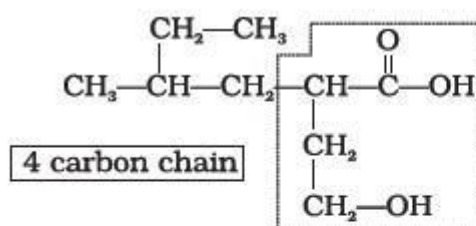


13. Which of the above compounds form pairs of metamers?
14. Identify the pair of compounds which are functional group isomers.
15. Identify the pair of compounds that represent position isomerism.
16. Identify the pair of compounds that represent chain isomerism.
17. For testing halogens in an organic compound with AgNO_3 solution, sodium extract (Lassaigne's test) is acidified with dilute HNO_3 . What will happen if a student acidifies the extract with dilute H_2SO_4 in place of dilute HNO_3 ?
18. What is the hybridisation of each carbon in $\text{H}_2\text{C}=\text{C}=\text{CH}_2$.
19. Explain, how is the electronegativity of carbon atoms related to their state of hybridisation in an organic compound?
20. Show the polarisation of carbon-magnesium bond in the following structure.
 $\text{CH}_3-\text{CH}_2-\text{CH}_2-\text{CH}_2-\text{Mg}-\text{X}$

21. Compounds with same molecular formula but differing in their structures are said to be structural isomers. What type of structural isomerism is shown by



22. Which of the following selected chains is correct to name the given compound according to IUPAC system.



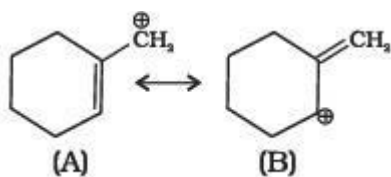
23. In DNA and RNA, nitrogen atom is present in the rings system. Can Kjeldahl method be used for the estimation of nitrogen present in these? Give reasons.
24. If a liquid compound decomposes at its boiling point, which method (s) can you choose for its purification. It is known that the compound is stable at low pressure, steam volatile and insoluble in water.

Note: Answer the questions 35 to 38 on the basis of information given below:

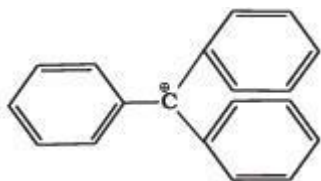
“Stability of carbocations depends upon the electron-releasing inductive effect of groups adjacent to positively charged carbon atom involvement of neighbouring groups in hyperconjugation and resonance.”

25. Draw the possible resonance structures for $\text{CH}_3-\text{O}^+-\text{CH}_2$ and predict which of the structures is more stable. Give reason for your answer.

26. Which of the following ions is more stable? Use resonance to explain your answer.



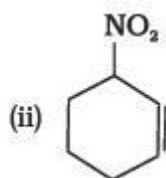
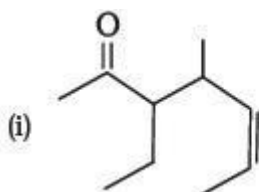
27. The structure of triphenylmethyl cation is given below. This is very stable and some of its salts can be stored for months. Explain the cause of high stability of this cation.



28. Write structures of various carbocations that can be obtained from 2-methylbutane. Arrange these carbocations in order of increasing stability.

29. Three students, Manish, Ramesh and Rajni were determining the extra elements present in an organic compound given by their teacher. They prepared the Lassaigne's extract (L.E.) independently by the fusion of the compound with sodium metal. Then they added solid FeSO_4 and dilute sulphuric acid to a part of Lassaigne's extract. Manish and Rajni obtained prussian blue colour but Ramesh got red colour. Ramesh repeated the test with the same Lassaigne's extract, but again got red colour only. They were surprised and went to their teacher and told him about their observation. Teacher asked them to think over the reason for this. Can you help them by giving the reason for this observation. Also, write the chemical equations to explain the formation of compounds of different colours.

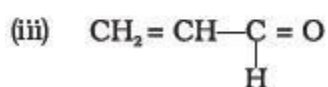
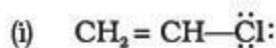
30. Name the compounds whose line formulae are given below:



31. Write structural formulae for compounds named as-

- (a) 1-Bromoheptane
- (b) 5-Bromoheptanoic acid

32. Draw the resonance structures of the following compounds;



(i) $\overset{+}{\text{C}}\text{H}_3$, $\overset{+}{\text{C}}\text{H}_2\text{Br}$, $\overset{+}{\text{C}}\text{HBr}_2$, $\overset{+}{\text{C}}\text{Br}_3$

34. Give three points of differences between inductive effect and resonance effect.

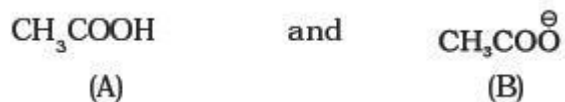
- (i) CH_3OH
- (ii) $\text{R}-\text{CONH}_2$
- (iii) $\text{CH}_3\text{CH}=\text{CHCH}_2\text{NH}_2$

36. Why does SO_3 act as an electrophile?

$$\text{CH}_2=\text{CH}-\text{CH}=\text{O} \longleftrightarrow \overset{\oplus}{\text{CH}_2}-\text{CH}=\text{CH}-\overset{\ominus}{\text{O}}$$

I
II

39. Which of the two structures (A) and (B) given below is more stabilised by resonance? Explain.



In the following questions more than one correlation is possible between options of Column I and Column II. Make as many correlations as you can.

4. Match the type of mixture of compounds in Column I with the technique of separation/purification given in Column II.

Column I	Column II
(i) Two solids which have different solubilities in a solvent and which do not undergo reaction when dissolved in it.	(a) Steam distillation
(ii) Liquid that decomposes at its boiling point	(b) Fractional distillation
(iii) Steam volatile liquid	(c) Simple distillation
(iv) Two liquids which have boiling points close to each other	(d) Distillation under reduced pressure
(v) Two liquids with large difference in boiling points.	(e) Crystallisation

5. Match the terms mentioned in Column I with the terms in Column II.

Column I	Column II
(i) Carbocation	(a) Cyclohexane and 1-hexene
(ii) Nucleophile	(b) Conjugation of electrons of C-H σ bond with empty p -orbital present at adjacent positively charged carbon.
(iii) Hyperconjugation	(c) sp^2 hybridised carbon with empty p -orbital
(iv) Isomers	(d) Ethyne
(v) sp hybridisation	(e) Species that can receive a pair of electrons
(vi) Electrophile	(f) Species that can supply a pair of electrons

6. Match Column I with Column II.

Column I	Column II
(i) Dumas method	(a) $AgNO_3$
(ii) Kjeldahl's method	(b) Silica gel
(iii) Carius method	(c) Nitrogen gas
(iv) Chromatography	(d) Free radicals
(v) Homolysis	(e) Ammonium sulphate

7. Match the intermediates given in Column I with their probable structure in Column II.

Column I

- (i) Free radical
- (ii) Carbocation
- (iii) Carbanion

Column II

- (a) Trigonal planar
- (b) Pyramidal
- (c) Linear

8. Match the ions given in Column I with their nature given in Column II.

Column I

- (i) $\text{CH}_3-\ddot{\text{O}}-\overset{\oplus}{\text{CH}}-\text{CH}_3$
- (ii) $\text{F}_3-\text{C}^{\oplus}$
- (iii) $\begin{array}{c} \text{CH}_3 \\ | \\ \text{CH}_3-\text{C}^{\ominus} \\ | \\ \text{CH}_3 \end{array}$
- (iv) $\text{CH}_3-\overset{\oplus}{\text{CH}}-\text{CH}_3$

Column II

- (a) Stable due to resonance
- (b) Destabilised due to inductive effect
- (c) Stabilised by hyperconjugation
- (d) A secondary carbocation

Assertion and Reason Type Questions

In the following questions a statement of Assertion (A) followed by a statement of Reason (R) is given. Choose the correct option out of the choices given below each question.

3. Assertion (A): Simple distillation can help in separating a mixture of propan-1-ol (boiling point 97°C) and propanone (boiling point 56°C).

Reason (R): Liquids with a difference of more than 20°C in their boiling points can be separated by simple distillation.

- (i) Both A and R are correct and R is the correct explanation of A.
- (ii) Both A and R are correct but R is not the correct explanation of A.
- (iii) Both A and R are not correct.
- (iv) A is not correct but R is correct.

4. Assertion (A): Energy of resonance hybrid is equal to the average of energies of all canonical forms.

Reason (R): Resonance hybrid cannot be represented by a single structure.

- (i) Both A and R are correct and R is the correct explanation of A.

- (ii) Both A and R are correct but R is not the correct explanation of A.
 - (iii) Both A and R are not correct.
 - (iv) A is not correct but R is correct.
5. Assertion(A): Pent-1-ene and pent-2-ene are position isomers.
Reason(R): Position isomers differ in the position of functional group or a substituent.
- (i) Both A and R are correct and R is the correct explanation of A.
 - (ii) Both A and R are correct but R is not the correct explanation of A.
 - (iii) Both A and R are not correct.
 - (iv) A is not correct but R is correct.
6. Assertion(A): All the carbon atoms in $\text{H}_2\text{C}=\text{C}=\text{CH}_2$ are sp^2 hybridised
Reason(R): In this molecule all the carbon atoms are attached to each other by double bonds.
- (i) Both A and R are correct and R is the correct explanation of A.
 - (ii) Both A and R are correct but R is not the correct explanation of A.
 - (iii) Both A and R are not correct.
 - (iv) A is not correct but R is correct.
7. Assertion(A): Sulphur present in an organic compound can be estimated quantitatively by Carius method.
Reason(R): Sulphur is separated easily from other atoms in the molecule and gets precipitated as light yellow solid.
- (i) Both A and R are correct and R is the correct explanation of A.
 - (ii) Both A and R are correct but R is not the correct explanation of A.
 - (iii) Both A and R are not correct.
 - (iv) A is not correct but R is correct.
8. Assertion(A): Components of a mixture of red and blue inks can be separated by distributing the components between stationary and mobile phases in paper chromatography.
Reason (R) : The coloured components of inks migrate at different rates because paper selectively retains different components according to the difference in their partition between the two phases.
- (i) Both A and R are correct and R is the correct explanation of A.

- (ii) Both A and R are correct but R is not the correct explanation of A.
- (iii) Both A and R are not correct.
- (iv) A is not correct but R is correct.

Long Answer Type Questions

10. What is meant by hybridisation? Compound $\text{CH}_2=\text{C}=\text{CH}_2$ contains sp^2 hybridised carbon atoms. Will it be a planar molecule?
11. Benzoic acid is an organic compound. Its crude sample can be purified by crystallisation from hot water. What characteristic differences in the properties of benzoic acid and the impurity make this process of purification suitable?
12. Two liquids (A) and (B) can be separated by the method of fractional distillation. The boiling point of liquid (A) is less than boiling point of liquid (B). Which of the liquids do you expect to come out first in the distillate? Explain.
13. You have a mixture of three liquids A, B and C. There is a large difference in the boiling points of A and those of the two liquids i.e., B and C. Boiling point of liquids B and C are quite close. Liquid A boils at a higher temperature than B and C and boiling point of B is lower than C. How will you separate the components of the mixture. Draw a diagram showing setup of the apparatus for the process.
14. Draw a diagram of bubble plate type fractionating column. When do we require such type of a column for separating two liquids. Explain the principle involved in the separation of components of a mixture of liquids by using fractionating column. What industrial applications does this process have?
15. A liquid with high boiling point decomposes on simple distillation but it can be steam distilled for its purification. Explain how is it possible?

[Next»](#)

Answers to Multiple Choice Questions

MCQ (Type-I)

Q 1	A n s	Q 2	A n s w	Q 3	A n s w	Q 4	A n s w	Q 5	A n s w	Q 6	A n s w
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PM SHRI KV PANISAGAR

HOLIDAY HOMEWORK

Class	xi
Subject	Mathematics

**(1) Complete your copy for the chapter
STRAIGHT LINES**

**(2) Complete your copy for the chapter
CONIC SECTION**

**(3) Solve the remaining questions of the
chapter 3D Geometry (exercise 11.1 & 11.2)**

PM SHRI KV PANISAGAR
HOLIDAY HOMEWORK(CLASS XI)
COMPUTER SCIENCE

- 1) What are the major strength and weaknesses of a computer ?
- 2) Why is binary language often termed as machine language ? Why is machine language needed?
- 3) What is the difference between OCR and OMR ?
- 4) What are the two categories of printers ? Which type of printer is more speedy
- 5) What is the difference between RAM and ROM ?
- 6) What are various categories of software ?
- 7) What are various types of Operating System ?
- 8) What is application software ? Why are its types?
- 9) How is compiler different from interpreter ?
- 10) What are the differences between hardware, software and firmware ?
- 11) Give examples of each system software and application software. Explain the function of each type.
- 12) What are the types of computers? How do they differ?
- 13) Write the full forms of the following terms VDU, LCD, DMP, CRT, CD-RW, DVD.
- 14) What functions are performed by the control unit ?can you call it the control centre of the computer system ? why ?
- 15) Distinguish between CPU and ALU .
- 16) What role dose memory play in the functioning of computer system ?
- 17) What is a bit ? What is binary cord ?
- 18) Define each of the following : (a) nibble (b) byte (c) kilobyte (d) megabyte (e) gigabyte (f) terabyte .
- 19) What is the meaning of the term volatile primary memory ? What can be done to over com the problems of volatility ?
- 20) Distinguish between internal and external memory .
- 21) What are the software classifications ? Discuss their functioning in brief .
- 22) What are the four different types of computers based on their working methods ?
- 23) What do you understand by the term 'super computer ? Give the name of a super computer installed in India .

24) How are digital, analog and hybrid computers different from one another ?

25) What is Booting ?

26) Explain different types of booting .

27) Differentiate between source code and object code .

28) What are different OS types ? Give examples .

29) What are Device Drivers ?

30) Discuss the importance of backup tools .

31) How are Disk Defragmenter and Disk cleanup tools different ?

32) Explain the concept of virtual storage .

33) What are open source based software ?

34) Compare and Contrast

(i) Free software and open source software

(ii) Proprietary software and free software

(iii) Freeware and shareware

(iv) Freeware and Free software .

PM SHRI KV PANISAGAR

HOLIDAY HOMEWORK

For Class – XI (English)

Write each of the following questions in 100-120 words.

1. Explain the reasons of changing relationship between the grandmother and the author.
2. Sketch the character of the grandmother.
3. Discuss the values highlighted in the chapter The Portrait of a Lady.
4. Identify the poetic devices used in the poem A Photograph and discuss their meanings.
5. Human life is short-lived in contrast to nature. Comment on the statement in the light of the poem A Photograph.
6. Can the act of stealing be ever justified? Give your views in the context of reading of The Summer of the Beautiful White Horse.

Class-11

पी. एम. श्री केंद्रीय विद्यालय पानीसागर

शीतावकाश हेतु गृह-कार्य 2023 -2024

दिनांक – 21/12/2023

कक्षा – ग्यारहवीं

1. राजस्थान के रजत बुँदें पाठ के आधार पर चेजारों के साथ सामाजिक व्यवहार में क्या परिवर्तन देखने को मिलता है ?
2. घर की याद कविता का सार अपने शब्द में लिखिए .
3. संचार के प्रकार और जनसंचार माध्यम पर विस्तार से लिखिए .
4. कथा-पटकथा पर संक्षेप में लिखिए ।
5. हिंदी साहित्य के एक कवि तथा एक उपन्यासकार की जीवनी , उनकी कृतियाँ, पुरस्कार आदि के बारे में एक कला एकीकृत परियोजना कार्य तैयार कीजिये . (कला एकीकृत परियोजना कार्य – प्रश्न संख्या - 4 - फाईल में)

PM SHRI KENDRIYA VIDYALAYA PANISAGAR

2023-24

HOLIDAY HOME WORK (WINTER BREAK)

CLASS -11 SUBJECT –PHYSICS

- 1.Explain the variation of g with height and depth.
2. State kepler's laws of planetary motion.
- 3.Find the expression for orbital velocity of a satellite.
- 4.Draw stress –strain curve for a metallic wire and explain important points regarding it.
5. Explain any two applications of knowledge of elasticity
- 6.Solve any one numerical problem based on Young's modulus.
- 7.Solve any one numerical problem based on bulk modulus.
8. Explain the principle, construction and working of hydraulic lift.
7. state and prove equation of continuity.
8. Solve any one numerical problem based on equation of continuity.
- 9.Explain any one examples based on application of Bernoulli's theorem .
- 10.Solve any one numerical problem based on Bernoulli's theorem.
- 11.Complete the Physics practical file.

PM SHRI K.V. PANISAGAR

WINTER VACATION HOMEWORK

Class - 11th

Subject- BIOLOGY

1. Photosynthesis in higher plants, Respiration in plants.

* Revise the above chapters. Practice all important diagram with labelling properly.

2. Subject capacity building assignment.(project)

* Carry out a detailed study on effects of antibiotics on micro-organisms.

3. Read the chapters of human physiology thoroughly.

