Sample Paper 1

Class XII 2023-24

Chemistry

Time: 3 Hours **Max. Marks: 70**

General Instructions:

1. There are 33 questions in this question paper with internal choice.
2. SECTION A consists of 16 multiple-choice questions carrying 1 mark each.
3. SECTION B consists of 5 very short answer questions carrying 2 marks each.
4. SECTION C consists of 7 short answer questions carrying 3 marks each.
5. SECTION D consists of 2 case-based questions carrying 4 marks each.
6. SECTION E consists of 3 long answer questions carrying 5 marks each.
7. All questions are compulsory.
8. Use of log tables and calculators is not allowed.

SECTION-A

Directions (Q. Nos. 1-16) : The following questions are multiple-choice questions with one correct answer. Each question carries 1 mark. There is no internal choice in this section.

1. For the reaction, $2X + Y \longrightarrow X_2Y$
What will be the expression for instantaneous rate of the reaction?

(a) $+\frac{1}{2}\frac{d(Y)}{dt}$ (b) $-\frac{1}{2}\frac{d(X_2Y)}{dt}$

(c) $\frac{-d(X)}{2dt}$ (d) None of these

2. Out of the following, the strongest base in aqueous solution is:

(a) dimethylamine (b) aniline

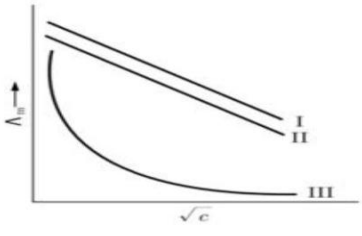
(c) methylamine (d) trimethylamine

3. Which of the following compound will not undergo azo coupling reaction with benzene diazonium chloride?

(a) Phenol (b) Aniline

(c) Nitrobenzene (d) Anisole

4. A graph was plotted between molar conductivity of various electrolytes (NaCl, HCl and NH_4OH) and $\sqrt{c}$ (in mol L^{-1}). Which of the following is the correct set?



(a) I (NH_4OH), II (HCl), III (NaCl)

(b) I (NaCl), II (HCl), (III) (NH_4OH)

(c) I (HCl), II (NaCl), III (NH_4OH)

(d) I (NH_4OH), II (NaCl), III (HCl)

5. The role of a catalyst is to change :

(a) enthalpy of reaction (b) Gibbs' energy of reaction

(c) equilibrium constant (d) activation energy of reaction

6. Out of the following transition elements, the maximum number of oxidation states are shown by:

(a) Cr ($Z = 24$) (b) Sc ($Z = 21$)

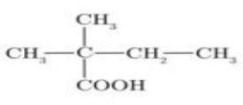
(c) Fe ($Z = 26$) (d) Mn ($Z = 25$)

7. The value of K_H for Ar(g), CO_2(g), HCHO(g) and CH_4(g) are 40.39, 1.67, 1.83×10^{-5} and 0.413 respectively. Arrange these gases in increasing order of solubility.

(a) $Ar < CO_2 < CH_4 < HCHO$ (b) $Ar < CH_4 < CO_2 < HCHO$

(c) $HCHO < CH_4 < CO_2 < Ar$ (d) $HCHO < CO_2 < CH_4 < Ar$

8. What is the correct IUPAC name of the given compound?



(a) 2-carboxyl-2-methylpropanoic acid

(d) 2, 2-dimethylbutanoic acid

9. The boiling points of alcohols are higher than those of hydrocarbons of comparable masses due to:

(a) ion-dipole interaction (b) dipole -dipole interaction

(c) hydrogen bonding (d) vander Waals forces

10. For the reaction $2H_2O_2 \longrightarrow 2H_2O + O_2$, $r = k[H_2O_2]$. The reaction is of :

(a) first order (b) second order

(c) third order (d) zero order

11. The compound obtained by the reaction of nitrous acid on aliphatic primary amine is:

(a) alkyl nitrite (b) alcohol

(c) nitroalkane (d) secondary amine

12. A graph was plotted between the molar conductivity Using valence bond theory, the complex $[Cr(NH_3)_6]^{3+}$ can be described as :

(a) d^2sp^3, inner orbital complex, paramagnetic

(b) d^2sp^3, outer orbital complex, diamagnetic

(c) sp^3d^2, outer orbital complex, paramagnetic

(d) dsp^2, inner orbital complex, diamagnetic

Directions (Q. Nos. 13-16) : Each of the following questions consists of two statements, one is Assertion and the other is Reason. Give answer :

13. **Assertion :** Vanadium had the ability to exhibit a wide range of oxidation states.
Reason : The standard potentials Vanadium are rather small, making a switch between oxidation states relatively easy.

(a) Both Assertion and Reason are true but Reason is not a correct explanation of Assertion.

(b) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(c) Assertion is fake but Reason is true.

(d) Assertion is true but Reason is fake.

14. **Assertion :** DNA has a double strand helix structure.
Reason : The two strands in a DNA molecule are exactly similar.

(a) Both Assertion and Reason are true but Reason is not a correct explanation of Assertion.

(b) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(c) Assertion is fake but Reason is true.

(d) Assertion is true but Reason is fake.

15. **Assertion :** Tertiary butylamine can be prepared by the action of NH_3 on tert-butylbromide.
Reason : Tertiary butyl bromide being 3° alkyl halide prefers to undergo elimination on the treatment with a base.

(a) Both Assertion and Reason are true but Reason is not a correct explanation of Assertion.

(b) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(c) Assertion is fake but Reason is true.

(d) Assertion is true but Reason is fake.

16. **Assertion :** IUPAC name of the compound

$$CH_3 - \underset{\displaystyle CH_3}{\overset{\displaystyle |}{CH}} - O - CH_2 - CH_2 - CH_3$$

is 2-Ethoxy-2-methylethane.
Reason : In IUPAC nomenclature, ether is regarded as hydrocarbon derivative in which a hydrogen atom replaced by —OR or —OAr group
[where R = alkyl group and Ar = aryl group]

(a) Both Assertion and Reason are true but Reason is not a correct explanation of Assertion.

(b) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.

(c) Assertion is fake but Reason is true.

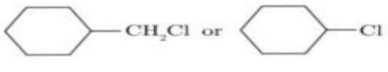
(d) Assertion is true but Reason is fake.

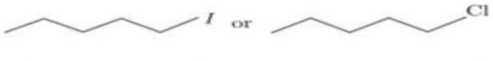
SECTION-B

Directions (Q. Nos. 17-21) : This section contains 5 questions with internal choice in one question. The following questions are very short answer type and carry 2 marks each.

17. Time required to decompose SO_2Cl_2 to half of its initial amount is 60 minutes. If the decomposition is a first order reaction, calculate the rate constant of the reaction.

18. Which one of the following pairs of substances undergoes S_N2 substitution reaction faster and why?

(i) 

(ii) 

If the two half cells are working under standard condition, then calculate the emf of the cell.
$E^\circ_{Cu^{2+}/Cu} = +0.34\ V$, $E^\circ_{Ag^+/Ag} = +0.80\ V$

20. Identify compounds (A) and (B) in the following reactions and write the related balanced chemical equation :

$$CH_3CONH_2 \xrightarrow[\Delta]{P_2O_5} (A) \xrightarrow[Sn+HCl]{4[H]} (B)$$

or

Complete and name the following reaction:

(i) $RNH_2 + CHCl_3 + 3KOH \longrightarrow$

(ii) $RCONH_2 + Br_2 + 4NaOH \longrightarrow$

21. (i) Sketch the zwitter ionic form of α-amino acetic acid.

(ii) What type of linkage holds together the monomers in DNA?

SECTION-C

Directions (Q. Nos. 22-28) : This section contains 7 questions with internal choice in one question. The following questions are short answer type and carry 3 marks each.

22. A zinc rod is dipped in 0.1 M solution of $ZnSO_4$. The salt is 95% dissociated at this dilution at 298K. Calculate the electrode potential.
$[E^{\circ}_{(Zn^{2+}/Zn)} = -0.76\ V]$

23. (i) Give the electronic configuration of the d-orbitals of Ti in $[Ti(H_2O)_6]^{3+}$ ion and explain why this complex is coloured ? [At. No. of Ti = 22]

(ii) Write IUPAC name of $[Cr(NH_3)_3\ (H_2O)_3]Cl_3$.

24. (i) Draw the structural formulas and write IUPAC names of all the isomeric alcohols with the molecular formula $C_5H_{12}O$.

(ii) Classify the isomers of alcohols given in part (a) as primary, secondary and tertiary alcohols.

25. Answer the following questions :(Any three)

(i) What do you mean by depression in freezing point?

(ii) How can the molecular weight of a non-volatile substance be calculated by freezing point depression method? Only give the formula.

(iii) Measurement of osmotic pressure method is preferred for the determination of molar mass of macromolecules such as proteins and polymers.

(iv) Elevation of boiling point of 1M KCl solution is nearly double than that of 1 M sugar solution.

26. (i) Write the IUPAC name of the following complex :
$[Co(NH_3)_4(H_2O)Cl]C1_2$

(ii) What is the difference between an Ambidentate ligand and a Bidentate ligand?

(iii) Out of $[Fe(NH_3)_6]^{3+}$ and $[Fe(C_2O_4)_3]^{3-}$, which complex is more stable and why ?

27. What happens when :

(i) N-ethylethanamine reacts with benzenesulphonyl chloride.

(ii) Benzylchloride is treated with ammonia followed by the reaction with Chloromethane.

(iii) Aniline reacts with chloroform in the presence of alcoholic potassium hydroxide.

28. How will you convert ethanal to the following compounds?

(i) Butane-1, 3-diol

(ii) But-2-enal

(iii) But-2-enoic acid

SECTION-D

Directions (Q. Nos. 29-30) : The following questions are case-based questions. Each question has an internal choice and carries 4 marks each. Read the passage carefully and answer the questions that follow.

29. The rate law for a chemical reaction relates the reaction rate with the concentrations or partial pressures of the reactants. For a general reaction $aA + bB \longrightarrow C$ with no intermediate steps in its reaction mechanism, meaning that it is an elementary reaction, the rate law is given by $r = k[A]^x[B]^y$, where [A] and [B] express the concentrations of A and B in moles per litre. Exponents x and y vary for each reaction and are determined experimentally. The value of k varies with conditions that affect reaction rate, such as temperature, pressure, surface area, etc. The sum of these exponents is known as overall reaction order. A zero order reaction has a constant rate that is independent of the concentration of the reactants. A first order reaction depends on the concentration of only one reactant. A reaction is said to be second order when the overall order is two. Once we have determined the order of the reaction, we can go back and plug in one set of our initial values and solve for k.
In the context of the given passage, answer the following questions :

(i) Calculate the overall order of a reaction which has the following rate expression :
Rate $= k[A]^{1/2}[B]^{3/2}$

(ii) What is the effect of temperature on rate of reaction?

(iii) A first order reaction takes 77.78 minutes for 50% completion. Calculate the time required for 30% completion of this reaction log 10 = 1, log 7 = 0.8450.

or

(iv) A first order reaction has a rate constant 1×10^{-3} per sec. How long will 5g of this reactant take to reduce to 3 g?
(log 3 = 0.4771; log 5 = 0.6990)

30. An amino acid is a compound that contains both carboxyl group and an amino group. Although,

(a) Unionised form (b) Internal salt (Zwitter ion) form

An α- amino acid

Although, figure (a) is a common way of writing structural formulas for amino acids, it is not accurate because it shows an acid (—COOH) and a base ($—NH_2$) within the same molecule. These acidic and basic groups react with each other to form a dipolar ion or internal salt (figure (b). The internal salt of an amino acid is given the special name Zwitter ion. Note that a Zwitter ion has no net charge, it contains one positive charge and one negative charge.
Because they exist as Zwitter ions, amino acids have many of the properties associated with salts. They are crystalline solids with high melting points and are fairly soluble in water but insoluble in non-polar organic solvents such as ether and hydrocarbon solvents.
According to the above passage, answer the following questions :

(i) Amino acids are usually colourless, crystalline solids. They behave like salts rather than simple amines or carboxylic acids. Why amino acids show such a behaviour?

(ii) Amino acids are essential and non-essential depending upon their need. One of the essential amino acid is lysine. Can you say why lysine is considered an essential amino acid?

(iii) Here are given some amino acids—lysine, Tyrosine, Glycine, Alamine. One of these amino acids is not optically active. Which one is that amino acid? Also, provide the reason.

or

(iv) The pk_{a_1}, and pk_{a_2}, of an amino acid are 2.3 and 9.7 respectively. What would be the isoelectric point of the amino acid? Calculate by defining it.

SECTION-E

Directions (Q. Nos. 31-33) : The following questions are long answer type and carry *5* marks each. Two questions have an internal choice.

31. (i) The cell in which the following reaction occurs:
$2Fe^{3+}(aq) + 2I^{-}(aq) \longrightarrow 2Fe^{2+}(aq) + I_2(s)$
has $E^{\circ}_{Cell} = 0.236$ Volt at 298K. Calculate the standard Gibbs energy of the cell reaction. (Given : 1F = 96,500 C mol^{-1})

(ii) How many electrons flow through a metallic wire if a current of 0.5 A is passed for 2 hours? (Given : 1F = 96,500 C mol^{-1})

(iii) Explain the following with reason :
(a) Chlorine can displace iodine from KI solution but iodine can not displace bromine from KBr solution.
(b) Following reaction is possible or not.
$Hg + H_2SO_4 \longrightarrow HgSO_4 + H_2$

32. (i) Account for the following :
(a) Transition metals from large number of complex compounds.
(b) The lowest oxide of transition metal is basic whereas the highest oxide is amphoteric or acidic.
(c) E° value for the Mn^{3+}/Mn^{2+} couple is highly positive (+1.57 V) as compare to Cr^{3+}/Cr^{2+}.

(ii) Write one similarity and one difference between the chemistry of lanthanoid and actinoid elements.

or

(i) (a) How is the variability in oxidation states of transition metals different from that of the *p*-block elements ?
(b) Out of Cu^{+} and Cu^{2+}, which ion is unstable in aqueous solution and why ?
(c) Orange colour of $Cr_2O_7^{2-}$ ion changes to yellow colour when treated with an alkali. Why ?

(ii) Chemistry of actinoids is complicated as compared to lanthanoids. Give two reasons.

33. (i) Write the product (s) in the following reactions:

(a) 

(b) 

(c) $CH_3 - CH = CH - CN \xrightarrow[(b)\ H_2O]{(a)\ DIBAL-H} ?$

(ii) Give simple chemical test to distinguish between the following pairs of compounds :
(a) Butanal and Butan-2-one.
(b) Benzoic acid and Phenol.

or

(i) An organic compound (A) with molecular formula C_3H_7NO on heating with Br_2 and KOH forms a compound (B), compound (B), on heating with $CHCl_3$ and alcoholic KOH produces a foul smelling compound (C) and on reacting with $C_6H_5SO_2Cl$ forms a compound (D) which is soluble in alkali. Write the structures of (A), (B), (C) and (D).

(ii) Give reasons to support the answer :
(a) Presence of alpha hydrogen in aldehydes and ketones is essential for aldol condensations.
(b) 3-Hydroxy pentan-2-one shows positive result to Tollen's test.

Sample Paper 2

Class XII 2023-24

Chemistry

Time: 3 Hours **Max. Marks: 70**

General Instructions:

1. There are 33 questions in this question paper with internal choice.
2. SECTION A consists of 16 multiple-choice questions carrying 1 mark each.
3. SECTION B consists of 5 very short answer questions carrying 2 marks each.
4. SECTION C consists of 7 short answer questions carrying 3 marks each.
5. SECTION D consists of 2 case-based questions carrying 4 marks each.
6. SECTION E consists of 3 long answer questions carrying 5 marks each.
7. All questions are compulsory.
8. Use of log tables and calculators is not allowed.

SECTION-A

Directions (Q. Nos. 1-16) : The following questions are multiple-choice questions with one correct answer. Each question carries 1 mark. There is no internal choice in this section.

1. Acetic acid reacts with hydrazoic acid at 0° in the presence of conc. H_2SO_4 to give:

(a) methyl amine (b) methyl cyanide

(c) ethylamine (d) methane

2. Osmotic pressure of a solution is 0.0821 atm at a temperature of 300 K. The Concentration in moles/lit. will be:

(a) 0.3×10^{-2} (b) 3

(c) 0.33 (d) 0.666

3. When nitrobenzene is reduced in neutral medium, the product is:

(a) C_6H_5NHOH (b) C_6H_5NH2

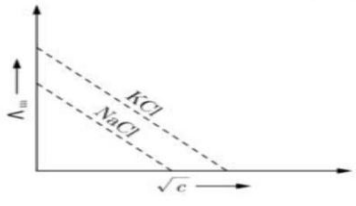
(c) *p*-aminophenol (d) azobenzene

4. The rate constant for the reaction, $A + 2B \longrightarrow$ product is expressed by $R = [A][B]$ The order of reaction will be:

(a) 6 (b) 5

(c) 2 (d) 3

5. Consider the following graph between molar conductivity (Λ_m) and $\sqrt{c}$



What do you infer about NaCl and KCl from the graph?

(a) NaCI and KCl are strong electrolytes

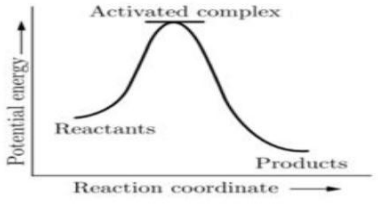
(b) Na^+ (aq.) has less conductance than $K^+(aq)$ due to less hydration

(c) NaCl and KCl are weak electrolytes

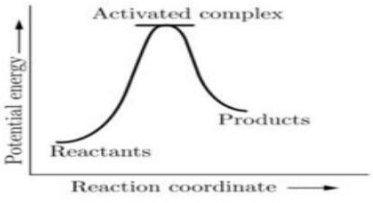
(d) Na^+ (aq.) has more conductance than $K^+(aq)$

6. Which of the following graphs represents exothermic reaction?

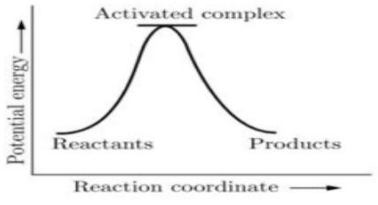
(i)



(ii)



(iii)



(a) (ii) only (b) (i) only

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

(c) $Zn^{++}(Z = 30)$ (d) $Cu^{++}(Z = 29)$

8. Phenol does not undergo nucleophilic substitution reaction easily due to:
   (a) instability of phenoxide ion
   (b) acidic nature of phenol
   (c) partial double bond character of C—OH bond
   (d) partial double bond character of C—C bond

9. The time required for the half-completion ($t_{1/2}$) of a first order reaction is:
   (a) independent of its initial concentration
   (b) dependent on square root of its initial concentration
   (c) dependent on its initial concentration
   (d) inversely proportional to its initial concentration

10. Which of the following isomer has the highest melting point?
   (a) 1, 4-dichlorobenzene
   (b) 1, 2-dichlorobenzene
   (c) 1, 3-dichlorobenzene
   (d) All isomers have same melting points

11. Why is $[Ni(CN)_4]^{2-}$ diamagnetic while $[NiCl_4]^{2-}$ is paramagnetic in nature:
   (a) In $[Ni(CN)_4]^{2-}$, no unpaired electrons are present while in $[NiCl_4]^{2-}$ two unpaired electrons are present.
   (b) $[NiCl_4]^{2-}$ shows sp^2 hybridisation, hence it is paramagnetic.
   (c) $[Ni(CN_4)]^{2-}$ shows sp^3 hybridisation, hence it is diamagnetic.
   (d) In $[NiCl_4]^{2-}$, no unpaired electrons are present while in $[Ni(CN)_4]^{2}$ two unpaired electrons are present.

12. Which one of the following is formed by Gabriel phthalimide reaction?
   (a) Tertiary amine
   (b) Primary aromatic amine
   (c) Primary aliphatic amine
   (d) Secondary amine

Directions (Q. Nos. 13-16) : Each of the following questions consists of two statements, one is Assertion and the other is Reason. Give answer :

13. **Assertion :** Separation of Zr and Hf is difficult.
   Reason : Because Zr and Hf lie in the same group of the periodic table.
   (a) Both Assertion and Reason are true but Reason not the correct explanation of Assertion.
   (b) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
   (c) Assertion is false but Reason is true.
   (d) Assertion is true but Reason is false.

14. **Assertion :** All naturally occurring α-amino acids except glycine are optically active.
   Reason : Most naturally occurring amino acids have L-configuration.
   (a) Both Assertion and Reason are true but Reason not the correct explanation of Assertion.
   (b) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
   (c) Assertion is false but Reason is true.
   (d) Assertion is true but Reason is false.

15. **Assertion :** N, N-Diethylbenzene sulphonamide is insoluble in alkali.
   Reason: Sulphonyl group attached to nitrogen atom is strong electron withdrawing group.
   (a) Both Assertion and Reason are true but Reason not the correct explanation of Assertion.
   (b) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
   (c) Assertion is false but Reason is true.
   (d) Assertion is true but Reason is false.

16. **Assertion :** Alcohols have higher boiling Points than ethers of comparable molecular masses
   Reason: Alcohols and ethers are isomeric in nature
   (a) Both Assertion and Reason are true but Reason not the correct explanation of Assertion.
   (b) Both Assertion and Reason are true and Reason is the correct explanation of Assertion.
   (c) Assertion is false but Reason is true.
   (d) Assertion is true but Reason is false.

SECTION-B

Directions (Q. Nos. 17-21) : This section contains 5 questions with internal choice in one question. The following questions are very short answer type and carry 2 marks each.

17. Define molar conductivity for the solution of an electrolyte. How does it vary with concentration?

18. Consider the decomposition of hydrogen peroxide in alkaline medium which is catalysed by iodide ions.

$$2H_2O_2 \xrightarrow{OH^-} 2H_2O + O_2$$

This reaction takes place in two steps as given below :

Step-I : $H_2O_2 + I^- \longrightarrow H_2O + IO^-$ (Show)

Step-II : [illegible]

(ii) What is the molecularity of each individual step?

ring compounds) are insoluble in water. Explain.

or

What type of bonding helps in stabilising the α-helix structure of proteins? Explain

20. CH_3CHO is more reactive than CH_3COCH_3 towards reaction with HCN. Why?

21. Write the IUPAC name and geometrical isomer of $[Pt(NH_3)_2Cl_2]$.

SECTION-C

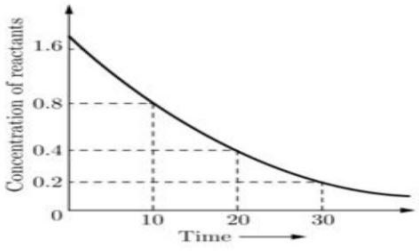
Directions (Q. Nos. 22-28) : This section contains 7 questions with internal choice in one question. The following questions are short answer type and carry 3 marks each.

22. Arrange each set of compounds in order of increasing boiling points:

(i) Bromomethane, bromoform, chloromethane, dibromomethane

(ii) 1-Chloropropane, isopropylchloride, 1-chlorobutane.

23. Analyse the given graph, drawn between concentration of reactant *vs* time.



(i) Predict the order of reaction.

(ii) Theoretically, can the concentration of the reactant reduce to zero after infinite time? Explain.

24. Answer the following questions:(Any three)

(i) Why is the vapour pressure of an aqueous solution of glucose lower than that of water?

(ii) What is semi-permeable membrane?

(iii) Why do gases always tend to be less soluble in liquids as the temperature is raised?

(iv) How does sprinkling of salt help in clearing the snow covered roads in hilly areas? Explain the phenomenon involved in the process.

25. (i) What is diazonium salt?

(ii) Write the chemical reaction of preparation of chlorobenzene from benzene diazonium chloride.

26. Determine the structure and magnetic behaviour of $[Fe(CN)_6]^{4-}$ ion on the basis of valence bond theory.

27. Write structure of compounds *A*, *B* and *C* in each of the following reactions:

(i) $C_6H_5Br \xrightarrow{Mg/\text{dry ether}} A \xrightarrow[(b)\,H_3O^+]{(a)\,CO_2(g)} B \xrightarrow{PCl_5} C$

(ii) $CH_3CN \xrightarrow[(b)\,H_3O^+]{(a)\,SnCl_2/HCl} A \xrightarrow{dil.\,NaOH} B \xrightarrow{\Delta} C$

28. (i) Define the following terms:

(a) Enantiomers

(b) Racemic mixture

(ii) Why is chlorobenzene resistant to nucleophilic substitution reaction?

SECTION-D

Directions (Q. Nos. 29-30) : The following questions are case-based questions. Each question has an internal choice and carries 4 marks each. Read the passage carefully and answer the questions that follow.

29. The four colligative properties of the dilute solutions help in calculating the molecular mass of the solute which is often called observed molecular mass. It may be same as the theoretical molecular mass (calculated from the molecular formula) if the solute behaves normally in solution. In case, it undergoes association or dissociation, the observed molar mass gives different results. The nature of the solute in solution is expressed in terms of van't Hoff factor (i) which may be 1 (if the solute behaves normally), less than 1 (if the solute associates) and more than 1 (if the solute dissociates). The extent of association or dissociation is represented by cc which is:

$a = \frac{i-1}{(1/n-1)}$ or $\frac{i-1}{n-1}$ (for dissociation)

(for association)

Based on the above passage, answer the following questions :

(i) What is common in all the four colligative properties?

(ii) What is the expected value of van't Hoff factor for $K_4[Fe(CN)_6]$ when it completely dissociates in water?

(iii) What is the value of van't Hoff factor fora dilute solution of K_2SO_4 in water?

van't Hoff factor if the solute is 40% dissociated?

30. Polysaccharides may be very large molecules. Starch, glycogen, cellulose, and chitin are examples of polysaccharides.

Starch is the stored form of sugars in plants and is made up of amylose and amylopectin (both polymers of glucose). Amylose is soluble in water and can be hydrolyzed into glucose units breaking glycosidic bonds, by the enzymes α-amylase and β-amylase. It is straight chain polymer. β-mylopectin is a branched chain polymer of several D-glucose molecules. 80% of amylopectin is present in starch. Plants are able to synthesize glucose, and the excess glucose is stored as starch in different plant parts, including roots and seeds. The starch that is consumed by animals is broken down into smaller molecules, such as glucose.

The cells can then absorb the glucose. Glycogen is the storage form of glucose in humans and other vertebrates, and is made up of monomers of glucose. It is structurally quite similar to amylopectin. Glycogen is the animal equivalent of starch. It is stored in liver and skeletal muscles.

Cellulose is one of the most abundant natural biopolymers. The cell walls of plants are mostly made of cellulose, which provides structural support to the cell. Wood and paper are mostly cellulosic in nature.

Like amylose, cellulose is a linear polymer of glucose. Cellulose is made up of glucose monomers that are linked by bonds between particular carbon atoms in the glucose molecule. Every other glucose monomer in cellulose is flipped over and packed tightly as extended long chains. This gives cellulose its rigidity and high tensile strength—which is so important to plant cells. Cellulose passing through our digestive system is called dietary fiber.

Based on the above passage, answer the following questions:

(i) Glycogen is a kind of polysaccharide and is the storage form of glucose present in humans and other vertebrates. It is the animal equivalent of starch but can you say where is it stored in animals?

(ii) What can you infer about the characteristic of amylose from the passage?

(iii) Whenever glucose levels drop in our body, a bipolymer breaks down to release glucose. Name this bipolymer and it is structurally similar to which polymer?

or

(iv) Which polymer is important to plant cells? How?

Section-E

Directions (Q. Nos. 31-33) : The following questions are long answer type and carry 5 marks each. Two questions have an internal choice.

31. (i) Write down complete equation for the following reactions:

(a) Oxidation of Fee' by 0.203- in acidic medium.

(b) Oxidation of 5203- by $KMnO_4$ (aq) neutral.

(c) Decomposition of oxalate in the presence of $KMnO_4$ in acidic medium.

(ii) Compare the chemistry of actinoids with that of the lanthanoids with special reference to :

(a) Electronic configuration. (b) Atomic and ionic sizes.

(c) Oxidation state. (d) Chemical reactivity.

32. (i) Give the mechanism for the formation of ethanol from ethene.

(ii) Predict the reagent for carrying out the following conversions:

(a) Phenol to benzoquinone.

(b) Anisole to p-bromoanisole.

(c) Phenol to 2, 4, 6-tribromophenol.

or

(i) Write the product(s) in the following reactions:

(a) 

(b) $H_3-\underset{\displaystyle CH_3}{\underset{|}{CH}}-O-CH_2-CH_3 \xrightarrow{HI} ? + ?$

(c) $CH_3-CH=CH-CH_2-OH \xrightarrow{PCC} ?$

(ii) Give simple chemical tests to distinguish between the following pairs of compounds:

(a) Ethanol and Phenol.

(b) Propanol and 2-methylpropan-2-ol.

33. (i) For the reaction:

$2AgCl(s) + H_2(g)\,(1\,atm) \longrightarrow 2Ag\,(s) + 2H^+$

$(0.1M) + 2C1^-(0.1M)$, $\Delta G^\circ = -43600$ J at 25°C.

Calculate the emf of the cell. [$Log10^{-n} = -n$]

(ii) Define fuel cell and write its two advantages.

or

(i) Out of the following pairs, predict with reason which pair will allow greater conduction of electricity:

(a) Silver wire at 30°C or silver wire at 60°C.

(b) 0.1 M CH_3COOH solution or 1 M CH_3COOH solution.

(c) KG solution at 20°C or KCl solution at 50°C.

(ii) Give two points of difference between electrochemical and electrolytic cells.

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शीतकालीन अवकाश गृहकार्य- 2023
विषय हिंदी (आधार)
कक्षा- बारहवीं

1. **सीबीएसई के <u>दो नए</u> प्रतिदर्श प्रश्न-पत्र अपनी अभ्यास-पुस्तिका (कॉपी) में हल कीजिए।**

नोट: (i). प्रश्न पत्रों में दिए गए सभी विषयों पर रचनात्मक लेख लिखिए। इसी तरह जिन प्रश्नों में विकल्प दिए गए हैं, उनके सभी प्रश्नों के उत्तर लिखने हैं।

(ii) नए प्रश्न-पत्र हल कीजिए, जो पहले कर चुके हैं, उन्हें न करें।

Holiday Homework
Subject: English

Class - XII

1. Solve three sample papers as already provided to you in a separate notebook or loose ruled sheet.
2. Revise all the important concepts as discussed in the class with their value points.
3. Read all the chapters for better understanding.
4. Revise all the formats from the writing skills.
5. In case of any doubt of difficulty, be in touch with the teacher concerned.

Holiday Homework
Class : 12.

Subject. Economics.

Day:1

Chapter: 1 INDIAN ECONOMY ON THE EVE OF INDEPENDENCE and BOP

1. What was the focus of the economic policies pursued by the colonial government in India? What were the impacts of these policies?
2. What were the main causes of India's agricultural stagnation during the colonial period?
3. Answer in one line:

a. Name some notable economists who estimated India's per capita income during the colonial period.

b. Name some modern industries which were in operation in our country at the time of independence.

c. What do you understand by the drain of Indian wealth during the colonial period?

d. Which is regarded as the defining year to mark the demographic transition from its first to the second decisive stage?

e. When was India's first official census operation undertaken?

4. What was the two-fold motive behind the systematic deindustrialisation effected by the British in pre-independent India?

OR

The traditional handicrafts industries were ruined under the British rule. Do you agree with this view? Give reasons in support of your answer.

5. What objectives did the British intend to achieve through their policies of infrastructure development in India?

OR

Were there any positive contributions made by the British in India?

6. Explain any four features of India's pre-independence occupational structure and demographic profile.
7. Underscore some of India's most crucial economic challenges at the time of independence.
8. Indicate the volume and direction of trade at the time of independence.

9:define BOP and it's components

10: differences between autonomous items and accommodating items.

11. Causes of deficit in BOP.

Day: 2: INDIAN ECONOMY 1950–1990 and foreign exchange rate.

1. Define a plan. And why did India opt for planning?
2. Why should plans have goals and what are the goals decided by planning commission just after independence. Explain each goal in brief. OR

Explain 'growth with equity' as a planning objective.

3. Explain the need and type of land reforms implemented in the agriculture sector.
4. What is Green Revolution? Why was it implemented and how did it benefit the farmers? Explain in brief. OR

Does modernisation as a planning objective create contradiction in the light of employment generation? Explain.

5: Explain the following concepts:

A: Self-reliance as a planning objective?

B: import substitution can protect domestic industry.

C: IPR 1956?

D: What is marketable surplus?

E: What are High Yielding Variety (HYV) seeds?

6. What is sectoral composition of an economy? Is it necessary that the service sector should contribute maximum to GDP of an economy? Comment.
7. Why was public sector given a leading role in industrial development during the planning

8. Explain the statement that green revolution enabled the government to procure sufficient food grains to build its stocks that could be used during times of shortage.
9. While subsidies encourage farmers to use new technology, they are a huge burden on government finances. Discuss the usefulness of subsidies in the light of this fact.
10. Match the following:

1. Prime Minister	A. Seeds that give large proportion of output
2. Gross Domestic	B. Quantity of goods that can be imported Product
3. Quota	C. Chairperson of the planning commission
4. Land Reforms	D. The money value of all the final goods and services produced within the economy in one year
5. HYV Seeds	E. Improvements in the field of agriculture to increase its productivity
6. Subsidy	F. The monetary assistance given by government for production activities.

11:define following
Foreign exchange
foreign exchange rate
fix exchange rate
flexible exchange rate
manage floating exchange rate
Difference between Devaluation And depreciation and it's impact on import and export.

Day: 3: LIBERALISATION, PRIVATISATION AND GLOBALISATION: AN APPRAISAL government budget
1. Why were reforms introduced in India?
2. Why did RBI have to change its role from controller to facilitator of financial sector in India?
3. How is RBI controlling the commercial banks?
4. What do you understand by devaluation of rupee?
5. Distinguish between the following
(i) Strategic and Minority sale (ii) Bilateral and Multi-lateral trade (iii) Tariff and Non-tariff barriers.
6. Define following:
a. tariffs
b. quota/ Quantitative restrictions
c. WTO
d. outsourcing in India
e. navaratna policy of the government
7. Those public sector undertakings which are making profits should be privatised. Do you agree with this view? Why?
8. Agriculture sector appears to be adversely affected by the reform process. Why?
9. Why has the industrial sector performed poorly in the reform period?
10. Define government budget and what are its main objectives.
11. What are the components of budget
12. Define following
A.revenue deficit
B fiscal deficit
C primary deficit

Day: 4: HUMAN CAPITAL FORMATION IN INDIA and money and banking
1. What are the major sources of human capital in a country?
2. What are the indicators of educational achievement in a country?
3. Why do we observe regional differences in educational attainment in India?
4. Bring out the differences between human capital and human development.
5. How is human development a broader term as compared to human capital?
6. Discuss the following as a source of human capital formation (i) Health infrastructure (ii) Expenditure on migration.

8. How does investment in human capital contribute to growth?
9. Bring out the need for on-the-job-training for a person.
10. Trace the relationship between human capital and economic growth.
11 Discuss the need for promoting women's education in India.
12. What are the main problems of human capital formation in India?
13. What are the main functions of the central bank. Explain
14.explain the process of credit creation.
15. What are the quantity and qualitative rules of monetary policy. Define each and explain its role in inflationary condition.

Day 5: RURAL DEVELOPMENT
1.What do you mean by rural development? Bring out the key issues in rural development
2. Discuss the importance of credit in rural development.
3. Explain following:
A agriculture banking or .the role of micro-credit in meeting credit requirements of the poor.
B. rural markets /agriculture marketing
C.agricultural diversification essential for sustainable livelihoods? .
D.. Distinguish between 'Green Revolution' and 'Golden Revolution'.
F. Non farm employment in rural areas
G. Jan dhan yojana
3. Do you think various measures taken by the government to improve agricultural marketing are sufficient? Discuss.
4. Bring out the importance of animal husbandry, fisheries and horticulture as a source of diversification.
5. 'Information technology plays a very significant role in achieving sustainable development and food security' — comment.

Day 6.EMPLOYMENT: GROWTH, INFORMALISATION AND OTHER ISSUES
1.Define following
A. worker
B. worker-population ratio.
C. Jobless growth .
D.formal employment and informal employment
2. Raj is going to school. When he is not in school, you will find him working in his farm. Can you consider him as a worker? Why?
3.Compared to urban women, more rural women are found working. Why?
4.. Meena is a housewife. Besides taking care of household chores, she works in the cloth shop which is owned and operated by her husband. Can she be considered as a worker? Why?
5.. The following table shows distribution of workforce in India for the year 1972-73. Analyse it and give reasons for the nature of workforce distribution. You will notice that the data is pertaining to the situation in India about 50 years ago.

Place of Residence	Workforce (in millions)		
	male	female	total
rural	125	69	195
urban	32	7	39

6 The following table shows the population and worker population ratio for India in 1999-2000. Can you estimate the workforce (urban and total) for India?

Region	Estimates of population (crores)	Worker population ratio	Estimated no of workers in (crores)
Rural	71.88	41.9	
Urban	28.52	33.7	
total	100.40	39.5	

7. Why are regular salaried employees more in urban areas than in rural areas?
8 Why are less women found in regular salaried employment?
9.. Analyse the recent trends in sectoral distribution of workforce in India.

Day 7 ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

1:Define following

A.environment

B. land degradation

C negative opportunity cost

D sustainable development

2. What happens when the rate of resource extraction exceeds that of their regeneration?

3. Classify the following into renewable and non-renewable resources (i) trees (ii) fish (iii) petroleum (iv) coal (v) iron-ore (vi) water.

4. Two major environmental issues facing the world today are _____ and _____.

5. How do the following factors contribute to the environmental crisis in India? What problem do they pose for the government? (i) Rising population (ii) Air pollution (iii) Water contamination (iv) Affluent consumption standards (v) Illiteracy (vi) Industrialisation (vii) Urbanisation (viii) Reduction of forest coverage (ix) Poaching, and (x) Global warming.

6. What are the functions of the environment?

7 Give two instances of (a) Overuse of environmental resources (b) Misuse of environmental resources.

8. Explain how the supply-demand reversal of environmental resources accounts for the current environmental crisis.

9.Highlight any two serious adverse environmental consequences of development in India. India's environmental problems pose a dichotomy — they are poverty induced and, at the same time, due to affluence in living standards — is this true?

10. Explain the relevance of intergenerational equity in the definition of sustainable development.

Day .8.COMPARATIVE DEVELOPMENT EXPERIENCES OF INDIA AND ITS NEIGHBOURS

1. Why are regional and economic groupings formed?

2. What are the various means by which countries are trying to strengthen their own domestic economies?

3. What similar developmental strategies have India and Pakistan followed for their respective developmental paths?

4. Explain the Great Leap Forward campaign of China as initiated in 1958.

5. China's rapid industrial growth can be traced back to its reforms in 1978. Do you agree? Elucidate.

6. Describe the path of developmental initiatives taken by Pakistan for its economic development.

7. What is the important implication of the 'one child norm' in China?

8. Mention the salient demographic indicators of China, Pakistan and India.

9.Mention the various indicators of human development.

10.Define the liberty indicator. Give some examples of liberty indicators.

11. Evaluate the various factors that led to the rapid growth in economic development in China.

12. Give reasons for the slow growth and re-emergence of poverty in Pakistan.

13. Compare and contrast the development of India, China and Pakistan with respect to some salient human development indicators.

14.Fill in the blanks

(a) First Five Year Plan of _____ commenced in the year 1956. (Pakistan/China)

(b) Maternal mortality rate is high in _____. (China/ Pakistan)

(c) Proportion of people below poverty line is more in _____. (India/Pakistan)

(d) Reforms in _____ were introduced in 1978. (China/ Pakistan)

KENDRIYA VIDYALAYA NO. 2 BHOPAL
WINTER BREAK HOME WORK
CLASS XII
PHYSICS

1. In which case is diffraction effect more dominant – slit formed by two blades or slit formed by two fingers?
2. Yellow light (λ = 6000 A0) illuminates a single slit of width 1 X 10^{-4} m. Calculate (i) the distance between two dark lines on either side of central maximum, in the diffraction pattern observed on a screen kept 1.5 m away from the slit, and (ii) the angular spread of the first minimum.
3. What will be the colour of the central bright fringe in Young‟s double slit experiment if the monochromatic source is replaced by a source of white light? Give reason for your answer. (ii) In Young‟s double slit experiment, the slits are separated by 0.3 mm and the screen is placed 1.5 m away from the slits. The distance between the central bright fringe and the sixth bright fringe is found to be 1.8 m. Find the wavelength of light used in the experiment.
4. Photoelectrons are emitted from a metal surface when illuminated with UV light of wavelength 330 nm. The minimum amount of energy required to emit the electrons from the surface is 3.5 x 10^{-19} J. Calculate : (i) the energy of the incident radiation, and (ii) the kinetic energy of the photoelectron
5. What is the wavelength of a photon of energy 3.3 x 10^{-19} J ?
6. Define the term „threshold frequency‟ in photoelectric emission
7. The threshold wavelength for the two photosensitive surfaces A and B are λ1 and λ2 , respectively. What is the ratio of the work functions of the two surfaces?
8. Draw graphs showing variation of photoelectric current with applied voltage for two incident radiation of equal frequency and different intensities. Mark the graph for the radiation of higher intensity.
9. (a) Describe briefly three experimentally observed features in the phenomenon of photoelectric effect. (b) Discuss briefly how wave theory of light cannot explain these features.
10. Define intensity of radiation on the basis of photon picture of light. Write its SI unit
11. An electron microscope uses electrons accelerated by a voltage of 50 kV. Determine the de Broglie wavelength associated with these electrons.
12. Write Einstein‟s photoelectric equation and point out any two

Briefly explain the three observed features which can be explained by this equation.

13. A proton and an electron have same kinetic energy. Which one has greater de Broglie wavelength and why?
14. A hydrogen atom in the ground state is excited by an electron beam of 12.5 eV energy. Find out the maximum numbers of lines emitted by the atom from its excited state.
15. . (a) State Bohr‟s postulate to define stable orbits in hydrogen atom. How does de Broglie‟s Hypothesis explain the stability of these orbits? (b) A hydrogen atom initially in the ground state absorbs a photon which excites it to the n = 4 level. Estimate the frequency of the photon.