

QUESTION BANK
LAST FIVE YEARS AISSCE

SUBJECT : CHEMISTRY
CLASS XII

KENDRIYA VIDYALAYA
SANGATHAN

REGIONAL OFFICE
AHMEDABAD

YEAR 2017-18

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PATRON

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SH R M BHABHOR, AC KVS RO AHMEDABAD

COORDINATOR

SH. MANISH JAIN

PRINCIPAL, KV ONGC ANKLESHWAR

RESOURCE PERSONS

MS. SAPANA TEMBHURNE,

PGT(CHEMISTRY), KV ONGC ANKLESHWAR

SOLID STATE

1.	Accounts for the following (i) Schottky defects lowers the density of related solids. (ii) Conductivity of silicon increases on doping it with phosphorous.	13 set 1 2 mark
2.	Aluminium crystallizes in an FCC structure. Atomic radius of the metal is 125 pm. What is the length of the side of the unit cell of the metal?	13 set 1 2 mark
3.	(a) why does presence of excess of lithium makes LiCl crystals pink? (b) A solid with cubic crystal made of two elements P and Q. atoms of (A) are at the corners of the cube and P at the body center. What is the formula of the compound?	13 set 2 2 mark
4.	(i) What changes occurs when AgCl is doped with CdCl ₂ ? (ii) What type of semiconductor is produced when silicon is doped with boron?	set 3 2 mark
5.	An element with density 2.8g cm ³ forms a fcc unit cell with cell edge length 4X10 ⁻⁸ cm. calculate the molar mass of the element. (Given: N _A =6.022X10 ²³)	14 set 123 2 mark
6.	(a) What type of nonstoichiometric defect is responsible for the pink colour of LiCl? (b) What type of stoichiometric defect is shown by NaCl? Or How will you distinguish between the following pair of terms (a) Tetrahedral and octahedral voids (b) Crystal lattice and unit cell	2014 set 1 2 mark
7.	(a) Write the type of magnetism observed when the magnetic moments are oppositely aligned and cancel out each other. (b) Which stoichiometric defect does not change density of the crystal?	14 set 23 2 mark
8.	Write the formula of a compound in which the element Y forms ccp lattice and atoms of X occupy 1/3 rd of tetrahedral voids.	15 set123 1 mark
9.	Examine the given defective crystal: X ⁺ Y ⁻ X ⁺ Y ⁻ X ⁺ Y ⁻ X ⁺ Y ⁻ X ⁺ Y ⁻ X ⁺ Y ⁻ X ⁺ e ⁻ X ⁺ Y ⁻ Y ⁻ X ⁺ Y ⁻ Y ⁻ Answer the following questions: (i) Is the above defect stoichiometric or nonstoichiometric? (ii) Write the term used for the electron occupied site. (iii) Give an example of the compound which shows this type of defect.	15 set123 3 mark
10.	ZnO turns yellow on heating. Why?	16 set123 1 mark
11.	An element crystallized in afcc lattice with cell edge of 400 pm. The density of the element is 7 (g) cm ⁻³ . How many how many atoms are present in 280 (g) of the element	16 set123 3 mark
12.	Calculate the number of unit cells in 8.1g of aluminium if it crystallizes In a face-centered cubic(f.c.c) structure.(Atomic mass of Al=27g/mol)	2017 3 marks
13.	(a)Based on the nature if intermolecular forces, classify the following Solids: Silicon carbide, Argon. (b)ZnO turns yellow on heating. Why? (c)What is meant by groups 12-16 compounds? Give example.	2017 3marks

AISSCE QUESTION SOLUTIONS

1.	<p>(a) State Raoult's law for a solution containing volatile components. How does Raoult's become special case of Henry's law.</p> <p>(b) 1 g of a non-electrolyte solute is dissolved in 50 g of benzene lowered the freezing point by 0.4 K. Find the molar mass of the solute? K_f for benzene = 5.12 K kg mol⁻¹.</p> <p style="text-align: center;">Or</p> <p>(a) Define the following terms: (i) Azeotrope (ii) ideal solution (iii) Osmotic pressure (b) A solution of glucose (C₆H₁₂O₆) in water is labeled as 10% by weight. What would be the molality of the solution? (molar mass of the glucose = 180 g mol⁻¹)</p>	2013 set123 5 mark
2.	<p>(a) Define the following terms: (i) Molality (ii) Molal elevation constant (K_b)</p> <p>(b) A solution containing 15 g of urea (molar mass = 60 g mol⁻¹) per litre of solution in water has the same osmotic pressure (isotonic) as a solution of glucose (molar mass = 160 g mol⁻¹) in water. Calculate the mass of glucose present in one litre of its solution.</p> <p style="text-align: center;">Or</p> <p>(a) What type of deviation is shown by a mixture of ethanol and acetone? Give reason. (b) A solution of glucose (molar mass = 180 g mol⁻¹) in water is labeled as 10% (by mass). What would be the molality and molarity of the solution? Density of solution = 1.2 g mol⁻¹</p>	2014 set 123 5 mark
3.	<p>(i) Why are aquatic species more comfortable in cold water than in warm water? (ii) what happens when we place the blood cell in saline water solution (hypertonic solution)? Give reason.</p>	15 set123 2 mark
4.	Vapour pressure of water at 20° C is 17.5 mm Hg. Calculate the vapour pressure of water at 20° C when 15 g of glucose (Molar mass = 180 g mol ⁻¹) is dissolved in 150 g of water.	15 set123 3 mark
5.	Calculate the boiling point of solution when 2 g of Na ₂ SO ₄ (M=142 g mol ⁻¹) was dissolved in 50 g of of water assuming Na ₂ SO ₄ undergoes complete ionization (K_b for water = 0.52 Kkgmol ⁻¹)	16 set123 1 mark
6.	<p>(i) Write the colligative property which is used to find the molecular mass of macromolecules (ii) In non-ideal solution, what type of deviation shows the formation of minimum boiling azeotrope?</p>	16 set123 2 mark
7.	<p>a) A 10% solution (by mass) of sucrose in water has a freezing point 269.15K Calculate the freezing point of 10% glucose in water if the freezing point of pure water is 273.15K (MM of sucrose =342g/mol Molar mass of glucose =108g/mol)</p> <p>b) Define the following terms: Molality and Abnormal molar mass</p> <p style="text-align: center;">OR</p> <p>a) 30g of urea (M=60g/mol) is dissolved in 846g of water. Calculate the vapor pressure of water for this solution if vapor pressure of pure water at 298K is 23.8mm Hg. b) Write two differences between ideal solutions and non-ideal solutions.</p>	2017

ELECTROCHEMISTRY

1.	The standard electrode potential (E°) for Daniell cell is +1.1 V. calculate the ΔG° for the reaction $Zn(s) + Cu^{2+}(aq) \rightarrow Zn^{2+}(aq) + Cu(s)$ ($1F = 96500 \text{ C mol}^{-1}$)	13 Set123 2 mark
2.	Calculate the emf of the cell at 25°C $Ag(s) Ag^+(10^{-3}M) Cu^{2+}(0.1M) Cu(s)$ Given that $E^\circ_{\text{cell}} = +0.46 \text{ V}$ and $\log 10^n = n$	13 set123 3 mark
3.	State Kohlrausch law of independent migration of ions. Why does the conductivity of a solution decrease with dilution?	14 set 1 2 mark
4.	(a) Calculate the $\Delta_r G^\circ$ for the reaction $Mg(s) + Cu^{2+}(aq) \rightarrow Mg^{2+}(aq) + Cu(s)$ Given $E^\circ_{\text{cell}} = 2.71 \text{ V}$, $1 F = 96500 \text{ C mol}^{-1}$ (b) Name the type of cell which was used in Apollo space programme for providing electrical power.	2014 set 123 3 mark
5.	Define the following terms (i) Fuel cell (ii) Limiting molar conductivity	2014 set 2 2 mark
6.	Define the following terms (i) Molar conductivity (Λ_m) (ii) Secondary batteries	2014 set 3 2 mark
7.	Setup a Nernst equation for the standard dry cell. Using this equation show that the voltage of a dry cell has to decrease with use.	14 sup set 13 1 mark
8.	Calculate the time to deposit 1.5 g of silver at cathode when a current of 1.5 A was passed through the solution of $AgNO_3$. (Molar Mass of $Ag = 108 \text{ g mol}^{-1}$, $1F = 96500 \text{ C mol}^{-1}$)	15 set123 2 mark
9.	Calculate E°_{cell} and $\Delta_r G^\circ$ for the following reaction at 25°C $A^{2+} + B^+ \rightarrow A^{3+} + B$ (Given $K_C = 10^{10}$, $1F = 96500 \text{ C mol}^{-1}$)	15 set123 3 mark
10.	(a) Calculate E°_{cell} for the following reaction at 298 K : $2Cr(s) + 3Fe^{2+}(0.01M) \rightarrow 2Cr^{3+}(0.01M) + 3Fe(s)$ Given : $E_{\text{cell}} = 0.261 \text{ V}$ (b) Using the E° values of A and B, predict which one is better for coating the surface of iron [$E^\circ(Fe^{2+}/Fe) = -0.44 \text{ V}$] to prevent corrosion and why? Given : $E^\circ(A^{2+}/A) = -2.37 \text{ V}$; $E^\circ(B^+/B) = -0.14 \text{ V}$ OR (a) Conductivity of 0.001 mol L^{-1} solution of CH_3COOH is $3.905 \times 10^{-5} \text{ S cm}^{-1}$. Calculate its molar conductivity and degree of dissociation (α). Given $\lambda^\circ(H^+) = 349.6 \text{ S cm}^2 \text{ mol}^{-1}$ and $\lambda^\circ(CH_3COO^-) = 40.9 \text{ S cm}^2 \text{ mol}^{-1}$. (b) Define electrochemical cell. What happens if external potential applied becomes greater than E°_{cell} of electrochemical cell?	16 set123 5 mark
11.	Write the name of the cell which is generally used in hearing aids. Write the reactions taking place at the anode and the cathode of this cell.	2017 Set 1 2 Marks
12.	a) The cell in which the following reaction is occurred: $2Fe^{3+}(aq) + 2I^-(aq) \rightarrow 2Fe^{2+}(aq) + I_2(s)$ Has $E^\circ_{\text{cell}} = 0.236 \text{ V}$ at 298K. Calculate the standard Gibbs energy of the cell reaction. (Given: $1F = 96,500 \text{ C mol}^{-1}$) b) How many electrons flow through a metallic wire if a current of 0.5A is passed for 2 hours. (Given: $1F = 96,500 \text{ C mol}^{-1}$)	2017 Set 1 3 Marks

CHEMICAL KINETICS

1.	The rate of a reaction increases four times when the temperature changes from 293 K to 313 K. Calculate the energy of activation of the reaction assuming that it does not change with temperature ($R = 8.31 \text{ J mol}^{-1} \text{ K}^{-1}$, $\log 4 = 0.6021$)	13set12 3 3 mark									
2.	<p>The following data were obtained during the first order thermal decomposition of SO_2Cl_2 at a constant volume. $\text{SO}_2\text{Cl}_2(\text{g}) \rightarrow \text{SO}_2(\text{g}) + \text{Cl}_2(\text{g})$</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">Experiment</th> <th style="padding: 5px;">Time/s^{-1}</th> <th style="padding: 5px;">Total pressure/atm</th> </tr> </thead> <tbody> <tr> <td style="text-align: center; padding: 5px;">1</td> <td style="text-align: center; padding: 5px;">0</td> <td style="text-align: center; padding: 5px;">0.5</td> </tr> <tr> <td style="text-align: center; padding: 5px;">2</td> <td style="text-align: center; padding: 5px;">100</td> <td style="text-align: center; padding: 5px;">0.6</td> </tr> </tbody> </table> <p>Calculate the rate of the reaction when total pressure is 0.65 atm given $\log 4 = 0.6021$, $\log 2 = 0.3010$.</p>	Experiment	Time/ s^{-1}	Total pressure/atm	1	0	0.5	2	100	0.6	2014 set 123 3 mark
Experiment	Time/ s^{-1}	Total pressure/atm									
1	0	0.5									
2	100	0.6									
3.	<p>For the hydrolysis of methyl acetate in aqueous solution, the following results were obtained:</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">t/s</th> <th style="padding: 5px;">0</th> <th style="padding: 5px;">30</th> <th style="padding: 5px;">60</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;">$[\text{CH}_3\text{COOCH}_3]/\text{molL}^{-1}$</td> <td style="text-align: center; padding: 5px;">0.60</td> <td style="text-align: center; padding: 5px;">0.30</td> <td style="text-align: center; padding: 5px;">0.15</td> </tr> </tbody> </table> <p>(i) Show that it follows pseudo first order reaction as the concentration of water remains constant. (ii) Calculate the average rate of reaction between the time interval 30 to 60 seconds</p> <p style="text-align: center;">Or</p> <p>(a) For a reaction $\text{A} + \text{B} \rightarrow \text{P}$, the rate is given by $\text{Rate} = k[\text{A}]^2[\text{B}]$ (i) How is the rate of reaction affected if the concentration of A is doubled? (ii) What is the overall order of reaction if B is present in large excess? (b) A first order reaction takes 23.1 min for 50% completion. Calculate the time required for 75% completion of the reaction (given : $\log 2 = 0.301$, $\log 3 = 0.4771$, $\log 4 = 0.6021$)</p>	t/s	0	30	60	$[\text{CH}_3\text{COOCH}_3]/\text{molL}^{-1}$	0.60	0.30	0.15	15 set123 5 mark	
t/s	0	30	60								
$[\text{CH}_3\text{COOCH}_3]/\text{molL}^{-1}$	0.60	0.30	0.15								
4.	<p>The rate constant for the first order decomposition of H_2O_2 is given by the following equation:</p> $\log k = 14.2 - \frac{1.0 \times 10^4 \text{ K}}{T}$ <p>Calculate E_a for this reaction and rate constant k if its half-life period be 200 minutes. (Given : $R = 8.314 \text{ JK}^{-1} \text{ mol}^{-1}$)</p>	16 set123 3 mark									
5.	<p>For a reaction $2 \text{NH}_3(\text{g}) \xrightarrow{Pt} \text{N}_2(\text{g}) + 3\text{H}_2(\text{g})$ RATE = K</p> <p>(I) Write the order and molecularity of this reaction (II) Write the unit of K</p>										
6.	<p>A first order reaction takes 20 minutes for 25% decomposition. Calculate the time when 75% of the reaction will be completed. (Given $\log 2 = 0.3010$, $\log 3 = 0.4771$, $\log 4 = 0.6021$)</p>	2017 Set 1 3 marks									
7.	<p>What is the effect of adding a catalyst on</p> <p>a) Activation energy (E_a) and b) Gibbs energy (ΔG) of a reaction?</p>	17 Set 1 1 marks									

SURFACE CHEMISTRY

1.	What are the characteristics of the following colloids? Give one example of each: (i) multimolecular colloids (ii) Emulsion (iii) Lyophobic colloids	13set 1 3 mark
2.	What are the characteristics of the following colloids? Give one example of each: (i) Associated colloids (ii) adsorption (iii) Lyophilic colloids	13set 2 3 mark
3.	What are the characteristics of the following colloids? Give one example of each: (i) macromolecular colloids (ii) Emulsion (iii) Peptisation	13set 3 3 mark
4.	Of the physisorption of chemisorptions, which has higher enthalpy of adsorption?	13set 1 1mark
5.	What is especially observed when a beam of light is passed through a colloidal solution?	13set 3 1mark
6.	What is the effect of temperature on chemisorptions?	2014 set 1 1 mark
7.	What are emulsions? What are their different types? Give one example of each type.	2014 set 1 3 mark
8.	Why is adsorptions always exothermic?	2014 set 2 1 mark
9.	What are the dispersed phase and dispersion medium in milk?	2014 set 3 1 mark
10.	What are emulsions? What are their different types? Give one example of each type.	2014 set 23 3 mark
11.	Out of $AlCl_3$ and $NaCl$ which is more effective in causing coagulation of a negative sol and why?	15 set123 1 mark
12.	Define adsorption with an example. Why is adsorption exothermic in nature? Write the type of adsorption based on the nature of forces between adsorbate and adsorbent.	15 set123 3 mark
13.	Write the reason for the stability of colloidal sols	16 set123 1 mark
14.	Define the following terms: (i) O/W Emulsion (ii) Zeta potential (iii) Multimolecular colloids	16 set123 3 mark
15.	What type of colloid is found when a liquid is dispersen in a solid. Give an example	2017 1 mark
16.	Write the difference in each of the following : A) Multimolecular colloid and associated colloid B) Coagulation and Peptization C) Homogeneous catalysis and Heterogeneous catalysis OR a) Write the dispersed phase and dispersion medium of milk. b) Write one similarity between physisorption and chemisorption. c) Write the chemical method by which $Fe(OH)_3$ sol is prepared from $FeCl_3$.	2017 set 1 3 marks

PRINCIPLES AND PREOCCESS OF EXTRACTION

1.	(i) Name the method used for removing gangue from sulphide ores. (ii) How is wrought iron is different from steel?	13set 1 2mark
2.	Outline the principles of refining by the following methods : (i) Zone refining (ii) Vapour phase refining.	13set 2 2mark
3.	Name the principal ore of aluminium. Explain the significance of leaching in the extraction of aluminium.	13set 3 2mark
4.	Name the method used for refining of copper metal.	13set 1,3 1 mark
5.	What is the role of zinc metal in the extraction of silver?	2014 set 1 1 mark
6.	Explain the principle of the method of electrolytic refining of metals. Give one example.	2014 set 1 2 mark
7.	Name the method that is used for refining of Nickel?	2014 set 2 1 mark
8.	Describe the role of following (i) SiO_2 in the extraction of copper from copper matte (ii) NaCN in froth floatation process.	2014 set 2 2 mark
9.	Name the method that is used for refining of COPPER?	2014 set 3 1 mark
10.	Write the principle behind the froth floatation process. What is the role of collectors in this process.	2014 set 3 2 mark
11.	(i) Name the method used for the refining of titanium (ii) What is the role of Zinc in the extraction of silver? (iii) Reduction of metal oxide to metal becomes easier if the metal obtained is in liquid state. Why?	15 set123 3 mark
12.	(i) Name the method of refining which is based on the principle of adsorption. (ii) What is the role of depressant in froth floatation process? (iii) What is the role of limestone in the extraction of iron from its oxides?	16 set123 3 mark
13.	Write the principle of the following a) Zone refining b) Froth floatation process c) Chromatography	2017 Set 1 3 marks

Elements of p block

1.	Draw the structure of the following molecules: (a) H_3PO_3 (b) XeOF_4	13set 1 2mark
2.	How are interhalogen compounds formed? What general compositions can be assigned to them?	13set 1 2 mark
3.	Draw the structure of the following molecules: (a) $\text{H}_2\text{S}_2\text{O}_7$ (b) XeF_6	13set 2 2mark
4.	Draw the structure of the following molecules: (a) N_2O_5 (b) XeF_2	13set 3 2mark
5.	Give reasons for the following: (i) Where R is an alkyl group, $\text{R}_3\text{P}=\text{O}$ exists but $\text{R}_3\text{N}=\text{O}$ does not. (ii) PbCl_4 is more covalent than PbCl_2 . (iii) At room temperature, N_2 is much less reactive.	13set 1 3 mark
6.	Give reasons for the following: (i) Oxygen is a gas but sulphur is a solid. (ii) O_3 acts as powerful oxidizing agent. (iii) BiH_3 is the strongest reducing agent amongst all the hydrides of Group 15 elements.	13set 2 3 mark
7.	Give reasons for the following: (i) Though nitrogen exhibits +5 oxidation state but it does not form pentahalide. (ii) Electron gain enthalpy with negative sign of fluorine is less than that of chlorine. (iii) The two oxygen–oxygen bond lengths in ozone molecule are identical.	13set 3 3 mark
8.	Name two poisonous gases which can be synthesized from chlorine.	13set 1 1mark
9.	Which aerosol depletes the ozone layer?	13set 2 1mark
10.	What is the basicity of H_3PO_3 and why?	13set 3 1mark
11.	What is the basicity of H_3PO_3 ?	2014 set 1 1 mark
12.	Why does NO_2 dimerise?	2014 set 2 1 mark
13.	Why does NH_3 act as a Lewis base?	2014 set 3 1 mark
14.	Draw the structures of the following: (i) XeF_2 (ii) BrF_3	14 set 1 2 mark
15.	Draw the structures of the following: (i) XeF_4 (ii) HClO_4	14 set 2 2 mark
16.	Draw the structures of the following: (i) XeO_3 (ii) H_2SO_4	14 set 3 2 mark
17.	Give reasons for the following:- (i) $(\text{CH}_3)_3\text{P}=\text{O}$ exist but $(\text{CH}_3)_3\text{N}=\text{O}$ does not (ii) Oxygen has less electron gain enthalpy with negative sign than sulphur (iii) H_3PO_2 is a stronger reducing agent than H_3PO_3 .	14 set 123 3 mark
18.	Complete the following equations (i) $\text{P}_4 + \text{H}_2\text{O} \rightarrow$ (ii) $\text{XeF}_4 + \text{O}_2\text{F}_2 \rightarrow$	14 set 1 2 mark
19.	Complete the following equations (i) $\text{Ag} + \text{PCl}_5 \rightarrow$ (ii) $\text{CaF}_2 + \text{H}_2\text{SO}_4 \rightarrow$	14 set 2 2 mark

20.	Complete the following equations (iii) $C + \text{conc } H_2SO_4 \rightarrow$ (iv) $XeF_2 + H_2O \rightarrow$	14 set 3 2 mark
21.	Write the formula of any two oxoacids of phosphorous.	15set123 1 mark
22.	(a) Accounts for the following (i) Bond angle in NH_4^+ is greater than that in NH_3 (ii) Reducing character decreases from SO_2 to TeO_2 . (iii) $HClO_4$ is a stronger acid than $HClO$ (b) Draw the structure of the following (i) $H_2S_2O_8$ (ii) $XeOF_4$ OR (a) Which poisonous gas is evolved when white phosphorous is heated with conc NaOH solution? Write the chemical equation. (b) Write the formula of first noble gas compound prepared by N Bartlett to prepare this compound? (c) Fluorine is a stronger oxidizing agent than chlorine. Why? (d) Write one use of chlorine gas. (e) Complete the following reaction $CaF_2 + H_2SO_4 \rightarrow$	15 set123 5 mark
23.	On heating $Pb(NO_3)_2$ a brown gas is evolved which undergoes dimerization on cooling. Identify the gas	16 set123 1 mark
24.	Write the structures of the following: (i) $(HPO_3)_3$ (ii) XeF_4	16 set123 2 mark
25.	Assign reason for the following: (i) H_3PO_2 is a stronger reducing agent than H_3PO_4 . (ii) Sulphur shows more tendency for catenation than Oxygen. (iii) Reducing character increases from HF to HI.	16 set123 3 mark
26.	Write the formula of a compound of phosphorus which is obtained when conc. HNO_3 oxidises P_4	17 Set 1 1 marks
27.	Draw the structure of the following: a) H_2SO_3 b) $HClO_3$	17 Set 1 2 marks
28.	Give reasons for the following: a) Red Phosphorus is less reactive than white phosphorus. b) Electron gain enthalpies of halogens are largely negative. c) N_2O_5 is more acidic than N_2O_3	2017 Set 1 3 marks

TRANSITION ELEMENTS

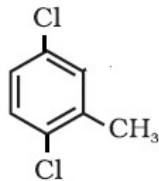
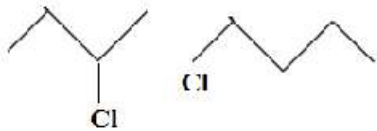
1.	<p>(a) Give reasons for the following</p> <p>(i) Mn^{3+} is a good oxidizing agent.</p> <p>(ii) $E^\circ_{\text{M}^{2+}/\text{M}}$ values are not regular for first row transition metals (3d series)</p> <p>(iii) Although 'F' is more electronegative than 'O', the highest Mn fluoride is MnF_4, whereas the highest oxide is Mn_2O_7.</p> <p>(b) Complete the following reactions</p> <p>(i) $2\text{CrO}_4^{2-} + 2\text{H}^+ \rightarrow$ (ii) $\text{KMnO}_4(\text{heat}) \rightarrow$</p> <p style="text-align: center;">Or</p> <p>(a) Why do transition elements show variable oxidation states?</p> <p>(i) Name the element showing maximum number of oxidation states among the first series of transition metals from Sc(Z=21) to Zn (Z=30)</p> <p>(ii) Name the element which shows only +3 oxidation state.</p> <p>What is lanthanoid contraction? Name an important alloy which contains some of the lanthanoid metals.</p>	2013 set123 5mark
2.	<p>(a) Complete the following equations:</p> <p>(i) $\text{Cr}_2\text{O}_7^{2-} + 2\text{OH}^- \rightarrow$</p> <p>(ii) $\text{MnO}_4^- + 4\text{H}^+ + 3\text{e}^- \rightarrow$</p> <p>(b) Account for the following</p> <p>(i) Zn is not considered as a transition element.</p> <p>(ii) Transition metals form a large number of complexes.</p> <p>(iii) The E° value for the $\text{Mn}^{3+}/\text{Mn}^{2+}$ couple is much more positive than that for $\text{Cr}^{3+}/\text{Cr}^{2+}$ couple.</p> <p style="text-align: center;">Or</p> <p>(a) With reference to structural variability and chemical reactivity, write the differences between lanthanides and actinoids.</p> <p>(b) Name a member of the lanthanide series which is well known to exhibit +4 oxidation state.</p> <p>(c) Complete the following equation: $\text{MnO}_4^- + 8\text{H}^+ + 5\text{e}^- \rightarrow$</p> <p>(d) Out of Mn^{3+} and Cr^{3+} which is more paramagnetic and why (atomic number : Mn = 25, Cr = 24)</p>	2014 set 123 5 mark
3.	<p>(a) Account for the following:</p> <p>(i) Mn shows the highest oxidation state of +7 with oxygen but with fluorine it shows the highest oxidation state of +4.</p> <p>(ii) Zirconium and Hafnium exhibit similar properties.</p> <p>(i) Transition metals act as catalysts.</p> <p>(b) Complete the following equations :</p> <p>(i) $2\text{MnO}_2 + 4\text{KOH} + \text{O}_2 \rightarrow$</p> <p>(ii) $\text{Cr}_2\text{O}_7^{2-} + 14\text{H}^+ + 6\text{I}^- \rightarrow$</p> <p style="text-align: center;">OR</p> <p>The elements of 3d transition series are given as : Sc Ti V Cr Mn Fe Co Ni Cu Zn</p> <p>Answer the following :</p> <p>(i) Write the element which is not regarded as a transition element. Give reason.</p> <p>(ii) Which element has the highest m.p ?</p> <p>(iii) Write the element which can show an oxidation state of +1.</p> <p>(iv) Which element is a strong oxidation agent in +3 oxidation state and why?</p>	16 set123 5 mark

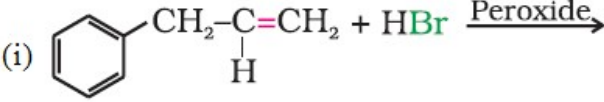
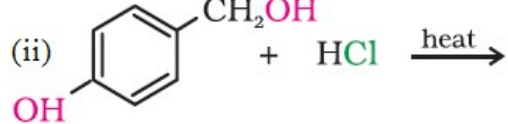

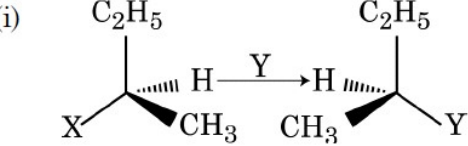
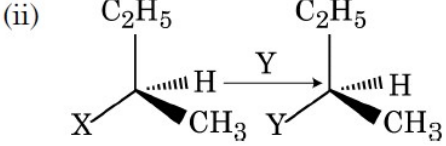
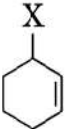
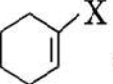
4.	<p>Account for the following:</p> <p>a) Transition metal show variable oxidation states</p> <p>b) Zn, Cd and Hg are soft metal.</p> <p>c) E° value for the Mn^{3+}/Mn^{2+} couple is highly positive (+1.57 V) as compare to Cr^{3+}/Cr^{2+}</p>	2017 Set 1 3 marks
5.	<p>a) Account for the following :</p> <p>i) Transition metals show variable oxidation states.</p> <p>ii) Zn, Cd and Hg are soft metals.</p> <p>iii) E° value for the Mn^{3+}/Mn^{2+} couple is highly positive (+1.57V) as compared to Cr^{3+}/Cr^{2+}.</p> <p>b) Write one similarity and one difference between the chemistry of lanthanoid and actinoid elements.</p> <p style="text-align: center;">OR</p> <p>Following are the transition metals ions of 3d series: Ti^{4+}, V^{2+}, Mn^{3+}, Cr^{3+} (Atomic number: Ti=22, V=23, Mn=25, Cr=24)</p> <p>a) Answer the following:</p> <ol style="list-style-type: none"> 1) Which ion is most stable in an aqueous solution and why? 2) Which ion is strong oxidizing agent and why? 3) Which ion is colorless and why? <p>b) Complete the following equations:</p> <ol style="list-style-type: none"> 1) $2 MnO_4^- + 16 H^+ + 5 S^{2-} \rightarrow$ 2) $KMnO_4 \xrightarrow{Heat}$ 	2017 Set 1 5 marks

COORDINATION COMPOUNDS

1.	<p>For the complex $[\text{NiCl}_4]^{2-}$, write</p> <p>(i) The IUPAC name</p> <p>(ii) The hybridization type</p> <p>(iii) The shape of the complex. [atomic number of Ni = 28]</p> <p style="text-align: center;">OR</p> <p>What is meant by crystal field splitting energy? On the basis of crystal field theory, write the electronic configuration of d^4 in terms of t_{2g} and e_g in an octahedral field when</p> <p>(i) $\Delta_0 < P$ (ii) $\Delta_0 > P$</p>	2013 set 123 3 mark
2.	<p>(i) Write the IUPAC name of the complex $[\text{Cr}(\text{NH}_3)_4\text{Cl}_2]\text{Cl}$.</p> <p>(ii) What type of isomerisation is exhibited by complex $[\text{Co}(\text{en})_3]^{3+}$.</p> <p>(iii) Why is $[\text{NiCl}_4]^{2-}$ is paramagnetic but $[\text{Ni}(\text{CO})_4]$ is diamagnetic? [at no Ni=28, Cr =24, Co=27]</p>	2014 set 123 3 mark
3.	<p>(i) Write down the IUPAC name of the following complex $[\text{Pt}(\text{NH}_3)(\text{H}_2\text{O})\text{Cl}_2]$</p> <p>(ii) Write down the formula of following complex: tris (ethane –1,2–diamine) chromium (III) chloride</p>	15 set123 2 mark
4.	<p>(i) What type of isomerisation is shown by $[\text{Co}(\text{NH}_3)_5\text{ONO}]\text{Cl}_2$.</p> <p>(ii) On the basis of crystal field theory, write the electronic configuration for d^4 ion if $\Delta_0 < P$</p> <p>(iii) Write the shape of $[\text{Fe}(\text{CN})_6]^{3-}$ (at No of Fe = 26)</p>	15 set123 3 mark
5.	<p>When a co-ordination compound $\text{NiCl}_2 \cdot 6\text{H}_2\text{O}$ is mixed with AgNO_3, 2 moles of AgCl are precipitated per mole of the compound. Write</p> <p>(i) Structural formula of the complex</p> <p>(ii) IUPAC name of the complex</p>	16 set123 2 mark
6.	<p>(a) For the complex $[\text{Fe}(\text{CN})_6]^{4-}$, write the hybridization, magnetic character and spin type of the complex. (At. Number : Fe=26)</p> <p>(b) Draw one of the geometric isomers of the complex $[\text{Co}(\text{en})_2\text{Cl}_2]^+$ which is optically active.</p>	16 set123 3 mark
7.	<p>Using IUPAC norms write the formulae for the following</p> <p>a) Sodium dicyanidoaurate(I)</p> <p>b) Tetraamminechloridonitrito-N-platinum(IV)sulphate</p>	2017 Set 1 2 marks
8.	<p>a) Why is $[\text{NiCl}_4]^{2-}$ paramagnetic while $[\text{Ni}(\text{CN})_4]^{2-}$ is diamagnetic (Atomic number of Ni = 28)</p> <p>b) Why are low spin tetrahedral complexes rarely observed?</p>	2017 Set 1 3 marks

HALOALKANE


1.	<p>Give reasons for the following:</p> <p>(i) Ethyl iodide undergoes S_N2 reaction faster than ethyl bromide.</p> <p>(ii) (\pm) 2-Butanol is optically active</p> <p>(iii) C-X bond length in halobenzene is smaller than C-X bond length in CH_3-X</p>	2013 set123 3 mark
2.	<p>Give the IUPAC name of the following compound</p> $CH_3-C(CH_3)_2-CH(Cl)CH_3$	2013 set 1 1mark
3.	<p>Give the IUPAC name of the following compound</p> $CH_3-CH(Br)-CH_2-CH(Cl)CH_3$	2013 set 2 1mark
4.	<p>Give the IUPAC name of the following compound</p> 	2013 set 3 1mark
5.	<p>Identify the chiral molecule in the following pair</p> 	2014 set 123 1 mark
6.	<p>Write the mechanism of the following reaction</p> $CH_3CH_2OH + HBr \rightarrow CH_3CH_2Br + H_2O$	2014 set 123 2 mark
7.	<p>Draw the structure of major products in each of the following reaction</p> <p>(a) $C_6H_5OH + PCl_5 \rightarrow$</p> <p>(b) $C_6H_5CH_2CH=CH_2 + HBr \rightarrow$</p> <p>Which halogen compound in each of the following pairs will react faster in S_N2 reaction</p> <p>(i) CH_3Br Or CH_3I</p> <p>(ii) $(CH_3)_3C-Cl$ Or CH_3Cl</p>	2014 set 123 3 mark
8.	<p>Which would undergo S_N2 reaction faster in the following pair:</p> $C_6H_5-CH_2-CH_2-Br$ and $C_6H_5-CH(Br)-CH_3$	15 set123 1 mark
9.	<p>How do you convert the following:</p> <p>(i) Prop - 1 - ene to propan - 2 - ol</p> <p>(ii) Bromobenzene to 2 - bromoacetophenone</p> <p>(iii) 2 - bromobutane to But - 2 - ene</p> <p style="text-align: center;">Or</p> <p>What happens when</p> <p>(i) Ethyl chloride is treated with NaI in the presence of acetone</p> <p>(ii) Chlorobenzene is treated with Na Metal in the presence of dry ether</p> <p>(iii) Methyl chloride is treated with KNO_2</p> <p>Write chemical equations in support of your answer</p>	15 set123 3 mark

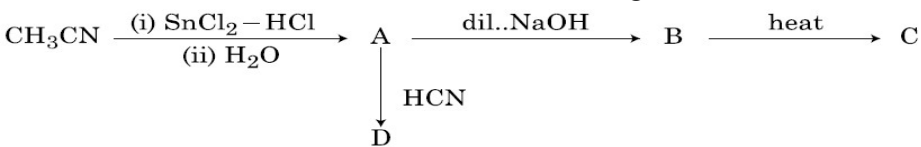
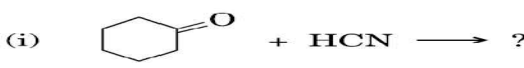
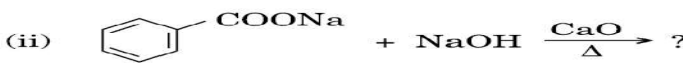
10.	<p>Write the major monohalo product(s) in each of the following reactions:</p> <p>(i) </p> <p>(ii) </p> <p>(iii) </p>	16 set123 3 mark
11.	<p>Which of the following two reactions is S_N2 and why</p> <p>(i) </p> <p>(ii) </p>	16 set123 1 mark
12.	<p>The following compound are given to you: 2-Bromopentane , 2-Bromo-2-methylbutane , 1-Bromopentane</p> <ol style="list-style-type: none"> Write the compound which is most reactive towards S_N2 reaction. Write the compound which is optically active. Write the compound which is most reactive towards β-elimination reaction. 	2017 Set 1 3 marks
13.	<p>Out of  and , which is an example of allylic halide ?</p>	2017 Set 1 1 marks

ALCOHOL PHENOL AND ETHER

1.	Explain the mechanism of the following reaction $\text{CH}_3\text{CH}_2\text{OH} \xrightarrow{\text{H}^+, 443\text{K}} \text{CH}_2=\text{CH}_2 + \text{H}_2\text{O}$	2013 set123 2mark
2.	Describe the following giving the relevant chemical equation in each case: (i) Reimer Tiemann reaction (ii) Williamson's ether synthesis.	2013 set 123 2 mark
3.	Write the mechanism of the following reaction $\text{CH}_3\text{CH}_2\text{OH} + \text{HBr} \rightarrow \text{CH}_3\text{CH}_2\text{Br} + \text{H}_2\text{O}$	2014 set 123 2 mark
4.	Write the equations involved in the following reactions (i) Reimer Tiemann reaction (ii) Williamson synthesis	2014 set 123 2 mark
5.	Write the IUPAC name of the given compound: $\text{CH}_3 - \text{C} - (\text{CH}_3)_2 \text{CH}_2 - \text{OH}$	15 set123 1 mark
6.	Give reasons for the following (i) p-nitrophenol is more acidic than p-methyl phenol (ii) Bond length of C – O bond in phenol is shorter than that in methanol (iii) $(\text{CH}_3)_3\text{C} - \text{Br}$ on reaction with sodium methoxide gives alkene as the main product and not an ether.	15 set123 3 mark
7.	(a) Protonation of Phenols is difficult whereas ethanol easily undergoes protonation (b) Boiling point of ethanol is higher than that of dimethyl ether (c) Anisole on reaction with HI gives phenol and CH_3I as main products and not iodobenzene and CH_3OH .	16 set123 3 mark
8.	Write the chemical equations involved in the following reactions: (i) Kolbe's Reaction (ii) Friedal and craft reaction Or How do you convert : (i) Phenol to toluene (ii) Formaldehyde to Ethanol	16 set123 2 mark
9.	Write the IUPAC name of the compound: $(\text{H}_3\text{C})_2\text{-C}=\text{C}(\text{Br})\text{-CH}_2\text{-OH}$	2017 Set 1 1 marks
10.	a) Arrange the following compounds in the increasing order of their acid strength: p-cresol , p-nitrophenol , phenol b) Write the mechanism (using curved arrow notation) of the following reaction: $\text{CH}_2=\text{CH}_2 \xrightarrow{\text{H}_3\text{O}^+} \text{CH}_3\text{-CH}_2^+ + \text{H}_2\text{O}$ OR Write the structures of the products when Butan-2-ol reacts with the following: (a) CrO_3 (b) SOCl_2	2017 Set 1 2 marks

ALDEHYDE KETONES AND CARBOXYLIC ACID

1.	Rearrange the following compounds in the increasing order of their boiling points $\text{CH}_3\text{-CHO}$, $\text{CH}_3\text{-CH}_2\text{-OH}$, $\text{CH}_3\text{-CH}_2\text{-CH}_3$	13 set 1,3 1 mark
2.	(a) How will you convert the following (i) Propanone to Propan-2-ol. (ii) Ethanol to 2-hydroxyl propanoic acid. (ii) Toluene to benzoic acid (b) distinguish between (i) pentan-2-one and pentan-3-one (ii) Ethanal and Propanal. OR (a) write the products of the following reactions: (i) $\text{CH}_3\text{COCH}_3 \xrightarrow{\text{Zn-Hg (concHCl)}} ?$ (ii) $\text{CH}_3\text{COCl} + \text{H}_2 \xrightarrow{\text{Pd-BaSO}_4}$ (ii)  $\xrightarrow{\text{Br}_2/\text{FeBr}_3}$	13 set 1,2,3 5 mark
3.	Ethanal is soluble in water. Why?	13 set 2 1 mark
4.	Write the structure of p-methyl benzaldehyde?	2014 set 1 1 mark
5.	Write the structure of 4-chloropentan-2-one?	2014 set 2 1 mark
6.	Write the structure of 2-hydroxybenzoic acid?	2014 set 3 1 mark
7.	(a) Write the products formed when CH_3CHO reacts with the following reagents: (i) HCN (ii) H_2NOH (iii) CH_3CHO in the presence of NaOH (b) Give simple chemical tests to distinguish between the following pairs of compounds: (I) Benzoic acid and phenol (ii) Propanal and propanone Or (a) Account for the following (i) $\text{Cl-CH}_2\text{COOH}$ is a stronger acid than CH_3COOH . (ii) Carboxylic acids do not give reactions of carbonyl group. (b) Write the chemical equations to illustrate the following name reactions: (i) Rosenmund reaction (ii) Cannizzaro's reaction (c) Out of $\text{CH}_3\text{CH}_2\text{-CO-CH}_2\text{-CH}_3$ and $\text{CH}_3\text{CH}_2\text{-CH}_2\text{-CO-CH}_3$ which give iodoform test?	2014 set 123 5 mark
8.	Write the reagents used in the following reactions: (i) $\text{C}_6\text{H}_5\text{CO-CH}_3 \rightarrow \text{C}_6\text{H}_5\text{CH}_2\text{CH}_3$ (ii) $\text{CH}_3\text{COOH} \rightarrow \text{CH}_3\text{COCl}$ Or Arrange the following compounds in increasing order of their property as indicated: (i) CH_3CHO , $\text{C}_6\text{H}_5\text{CHO}$, HCHO reactivity towards nucleophilic addition reaction (ii) 2,4 dinitrobenzoic acid, 4 methoxybenzoic acid, 4-nitrobenzoic acid (acidic character)	15 set 123 2 mark
9.	Predict the product of the following:- (i) $\text{CH}_3\text{COCH}_3 + \text{H}_2\text{N-NHCONH}_2 \rightarrow$ KMnO_4/KOH (B) H^+ (ii) $\text{C}_6\text{H}_5\text{-CH}_2\text{-CH}_3 \rightarrow$ $\text{Conc HNO}_3/\text{H}_2\text{SO}_4$ (iii) $\text{C}_6\text{H}_5\text{COOH} \rightarrow$	15 set 123 3 mark

10.	<p>(a) Write the structures of A,B,C and D in the following reactions:</p> $\text{CH}_3\text{CN} \xrightarrow[\text{(ii) H}_2\text{O}]{\text{(i) SnCl}_2 - \text{HCl}} \text{A} \xrightarrow{\text{dil. NaOH}} \text{B} \xrightarrow{\text{heat}} \text{C}$ <p style="text-align: center;">  </p> <p>(b) Distinguish between : (i) $\text{C}_6\text{H}_5 - \text{CH} = \text{CH} - \text{COCH}_3$ and $\text{C}_6\text{H}_5 - \text{CH} = \text{CH} - \text{COCH}_2\text{CH}_3$ (ii) $\text{CH}_3\text{CH}_2\text{COOH}$ and HCOOH</p> <p>(c) Arrange the following in the increasing order of their boiling points : $\text{CH}_3\text{CH}_2\text{OH}$, CH_3COCH_3, CH_3COOH</p> <p style="text-align: center;">OR</p> <p>(a) Write the chemical reaction involved in Etard reaction. (b) Arrange the following in the increasing order of their reactivity towards Nucleophilic addition reaction : $\text{CH}_3\text{-CHO}$, $\text{C}_6\text{H}_5\text{COCH}_3$, HCHO (c) Why pKa of $\text{Cl-CH}_2\text{-COOH}$ is lower than the pKa of CH_3COOH ? (d) Write the product in the following reaction. $\text{CH}_3\text{CH}_2\text{CH}=\text{CH-CH}_2\text{CN} \rightarrow$ (e) A and B are two functional isomers of compound $\text{C}_3\text{H}_6\text{O}$. On heating with NaOH and I_2, isomer A forms yellow precipitate of iodoform whereas isomer B does not form any precipitate. Write the formulae of A and B.</p>	16 set123 5 mark
11.	<p>write the products in the following reaction</p> <p>(i)  $\text{C}_6\text{H}_{11}\text{O} + \text{HCN} \rightarrow ?$</p> <p>(ii)  $\text{C}_6\text{H}_5\text{COONa} + \text{NaOH} \xrightarrow[\Delta]{\text{CaO}} ?$</p> <p>(iii) $\text{CH}_3 - \text{CH} = \text{CH} - \text{CN} \xrightarrow[\text{(b) H}_2\text{O}]{\text{(a) DIBAL-H}} ?$</p> <p>give simple chemical test to distinguish between the following pairs of compounds (i) Butanal and Butan-2-one (ii) Benzoic acid and Phenol</p> <p style="text-align: center;">OR</p> <p>a) Write the reactions involved in the following: 1) Etard reaction 2) Stephen reduction b) How will you convert the following in not more than two steps. 1) Benzoic acid to benzaldehyde 2) Acetophenone to benzoic acid 3) Ethanoic acid to 2-hydroxyethanoic acid</p>	2017 Set 1 5 marks
12.	<p>Write the structures of compounds A ,B and C in the following reactions:</p> <p>(a) $\text{CH}_3 - \text{COOH} \xrightarrow{\text{NH}_3/\Delta} \text{A} \xrightarrow{\text{Br}_2/\text{KOH}(\text{aq})} \text{B} \xrightarrow{\text{CHCl}_3 + \text{alc. KOH}} \text{C}$</p> <p>(b) $\text{C}_6\text{H}_5\text{N}_2^+\text{BF}_4^- \xrightarrow[\Delta]{\text{NaNO}_2/\text{Cu}} \text{A} \xrightarrow{\text{Fe}/\text{HCl}} \text{B} \xrightarrow{\text{CH}_3\text{COCl}/\text{पिरिडीन}} \text{C}$</p>	2017 Set 1 3 marks
13.	<p>Give reasons for the following:</p> <p>a) Acetylating of aniline reduces its activation effect. b) CH_3NH_2 is more basic than $\text{C}_6\text{H}_5\text{NH}_2$ c) Although $-\text{NH}_2$ is o/p directing group , yet aniline on nitration gives a significant amount of m-nitro aniline.</p>	2017 Set 1 3 marks

AMINES

1.	Write the structure of N-methylethanamine.	13set 1 1 mark
2.	Complete the following reaction equations: (i) $\text{CH}_3\text{CH}_2\text{NH}_2 + \text{CHCl}_3 + \text{KOH}(\text{alc})$ (ii) $\text{C}_6\text{H}_5\text{N}_2\text{Cl} + \text{H}_2\text{O} \rightarrow$ (iii) $\text{C}_6\text{H}_5\text{NH}_2 + \text{HCl}(\text{aq}) \rightarrow$	13set 1 3 mark
3.	Complete the following reaction equations: (i) $\text{CH}_3\text{CONH}_2 + \text{Br}_2 + \text{NaOH} \rightarrow$ (ii) $\text{C}_6\text{H}_5\text{N}_2\text{Cl} + \text{H}_3\text{PO}_2 + \text{H}_2\text{O} \rightarrow$ (iii) $\text{C}_6\text{H}_5\text{NH}_2 + \text{Br}_2(\text{aq}) \rightarrow$	set 2 3 mark
4.	Complete the following reaction equations: (i) $\text{CH}_3\text{CH}_2\text{NH}_2 + \text{HNO}_2 \rightarrow$ (ii) $\text{C}_6\text{H}_5\text{SO}_2\text{Cl} + \text{C}_2\text{H}_5\text{NH}_2 \rightarrow$ (iii) $\text{C}_6\text{H}_5\text{NH}_2 + \text{CH}_3\text{COCl} \rightarrow$	set 3 3 mark
5.	Write the structure of 2-amino toluene.	set 2 1 mark
6.	Write the structure of prop -2-en-1-.amine.	set 3 1 mark
7.	The conversion of primary aromatic amines into diazonium salts is known as	14 set 123 1 mark
8.	Account for the following (i) Aniline does not undergo Friedel-Crafts reaction. (ii) primary amines have higher boiling point than tertiary amines (iii) $(\text{CH}_3)_2\text{NH}$ is more basic than $(\text{CH}_3)_3\text{N}$ in an aqueous solution. OR (i) $\text{C}_6\text{H}_5\text{NO}_2 \xrightarrow[\text{HCl}]{\text{Sn}} \text{A} \xrightarrow[\text{HCl}]{\text{NaNO}_2 + \text{HCl } 273\text{K}} \text{B} \xrightarrow{\text{H}_2\text{O}} \text{C}$ (ii) $\text{CH}_3 \xrightarrow{\text{H}_2\text{O}/\text{H}^+} \text{A} \xrightarrow{\text{NH}_3, \Delta} \text{B} \xrightarrow{\text{Br}_2/\text{KOH}} \text{C}$	2014 set 123 3 mark
9.	$(\text{C}_7\text{H}_7\text{ON}) \text{A} \xrightarrow{\text{Fe}/\text{HCl}} \text{C}_6\text{H}_5\text{NH}_2 \xrightarrow[\downarrow \text{CHCl}_3 + \text{NaOH}]{\text{NaNO}_2 + \text{HCl}} \text{D} \xrightarrow[\downarrow \text{H}_2\text{O}]{\text{H}_3\text{PO}_2 + \text{H}_2\text{O}} \text{B} \xrightarrow{\text{C}} \text{E}$ OR (A) Write the structure of main products when aniline reacts with the following reagents : (i) Br_2 water (ii) HCl (iii) $(\text{CH}_3\text{CO})_2\text{O}$ / PYRIDINE (B) Give a simple chemical test to distinguish between the following pair of compounds $(\text{CH}_3)_2\text{-NH}$ and $(\text{CH}_3)_3\text{N}$	15 set 123 5 mark
10.	(a) Write the structures of A, B, C and D in the following reactions : $\text{CH}_3\text{CN} \xrightarrow[\text{(ii) H}_2\text{O}]{\text{(i) SnCl}_2 - \text{HCl}} \text{A} \xrightarrow{\text{dil. NaOH}} \text{B} \xrightarrow{\text{heat}} \text{C}$ $\text{A} \xrightarrow{\text{HCN}} \text{D}$	2016 Set 123 5 marks
11.	Give reasons for the following:- (i) Acylation of aniline reduces its activation effect. (ii) CH_3NH_2 is more basic than $\text{C}_6\text{H}_5\text{NH}_2$ (iii) Although NH_2 group is o,p directing group yet aniline on nitration give significant amount of m-nitroaniline	2017 3 marks
12.	Write the structures of A,B and C in the following reactions:	17 set 123 3 mark

	(i) $C_6H_5 - COO^-NH_4^+ \xrightarrow{\Delta} A \xrightarrow{Br_2/KOH} B \xrightarrow{CH_3COCl/pyridine} C$	
	(ii) $C_6H_5N_2^+BF_4^- \xrightarrow{NaNO_2/Cu} A \xrightarrow{Sn/HCl} B \xrightarrow{CHCl_3+alc. KOH} C$	
13.	Write the IUPAC name of the given compound $CH_3-NH-CH_2-CH(CH_3)-CH_3$	17set123 1 mark

BIOMOLECULES

1.	<p>Shanti, a domestic helper of Mrs Anuradha, fainted while mopping the floor. Mrs Anuradha immediately took her to the nearby hospital where she was diagnosed to be severely anaemic. The doctor prescribed an iron rich diet and multivitamin supplement to her. Mrs Anuradha supported her financially to get the medicines. After a month, Shanti was diagnosed to be normal</p> <p>After reading the above passage, answer the following questions:</p> <p>(i) What values are displayed by Mrs Anuradha</p> <p>(ii) Name the vitamin whose deficiency causes 'Pernicious anaemia'.</p> <p>(iii) Give an example of a water soluble vitamin.</p>	13 set123 3 mark
2.	What are the products of hydrolysis of sucrose?	13 set 1 1mark
3.	Write the name of linkage joining two amino acids.	13 set 2 1mark
4.	What are the products of hydrolysis of lactose?	13 set 3 1ma
5.	<p>(i) Write one reaction of D-Glucose which cannot be explained by its open chain structure.</p> <p>(ii) What type of linkage is present in nucleic acids?</p> <p>(iii) Give on example each for water soluble vitamins and fat soluble vitamins?</p>	16 set123 3 mark
6.	<p>After watching a programme on TV about the presence of carcinogens (cancer causing agents) Potassium bromated ant Potassium iodate in bread and other bakery products, Rupali a Class XII student decided to make others aware about the adverse effect of these carcinogens in foods. She consulted the school principal and requested him to instruct the canteen contractor to stop selling sandwiches ,pizzas ,burgers and other bakery products to the students. The principal took an immediate action and instructed the canteen contractor to replace the bakery products with some protein and vitamin rich food like fruits , salads ,sprouts ,etc. The decision was welcomed by the parents and the students.</p> <p>After reading the above passage , answer the following questions:</p> <p>a) What are the values (at least two) displayed by Rupali?</p> <p>b) Which polysaccharide component of carbohydrate is commonly present in bread?</p> <p>c) Write the two steps of secondary structures of Protein.</p> <p>d) Give two example of water soluble vitamins.</p>	2017 Set 1 4 marks

SYNTHETIC AND NATURAL POLYMER

1.	Define thermoplastic and thermosetting polymers. Give one example of each. Or What is biodegradable polymer? Give an example of a biodegradable aliphatic polymer.	13 set123 2 mark
2.	Is $-(\text{CH}_2-\text{CH}(\text{Cl}))_n-$ a homopolymer or a copolymer?	13 set 1,3 1 mark
3.	Give an example of condensation polymer	13 set 2 1 mark
4.	Which of the following is a natural polymer? Buna – S, Protein, PVC	2014 set 1 1 mark
5.	Which of the following is a fibre? Nylon, Neoprene, PVC	14 set 3 1 mark
6.	Based on molecular forces what type of polymer is neoprene?	14 set 2 1 mark
7.	Write the name of monomers used for getting the following polymers (i) Bakelite (ii) Neoprene	2014 set 1 2 mark
8.	Write the name of monomers used for getting the following polymers (iii) Terylene (iv) Nylon-6,6	14 set 2 2 mark
9.	Write the name of monomers used for getting the following polymers (v) Teflon (vi) Buna – N	14 set 3 2 mark
10.	Write the name and structures of the following monomers of the following polymers (I) Nylon – 6,6 (II) Bakelite (III) Polystyrene	15 set123 3 mark
11.	(i) What is the role of benzoyl peroxide in the polymmerisation of ethane (ii) Identify the monomer in the following polymer $\left(\begin{array}{c} \text{H} \\ \\ -\text{N}-(\text{CH}_2)_6-\text{NH}-\text{C}-\text{O} \\ \quad \quad \quad \\ \text{O} \quad \quad \quad \text{O} \end{array} \right)_n$ (iii) Arrange the following polymers in the increasing order of their intermolecular forces Nylon -66, polyethene and Buna –S Or (iv) Write the mechanism of free radical polymerisation of ethane	2016
12.	Write the structures of the following monomers used for getting the following polymers: a) Nylon-6,6 b) Melamine –Formaldehyde polymer c) Buna-S	2017 Set 1 3 marks

CHEMISTRY IN EVERYDAY LIFE

1.	<p>(i) What class of drug Ranitidine?</p> <p>(ii) If water contains dissolved Ca^{2+} ions, out of soaps and synthetic detergents, which will you use for cleansing clothes?</p> <p>(iii) Which of the following is an antiseptic 0.2% phenol of 1% phenol</p>	13 set123 3 mark
2.	<p>On the occasion of World Health Day, Dr. Satpal organized a 'health camp' for the poor farmers living in a nearby village. After check-up, he was shocked to see that most of the farmers suffered from cancer due to regular exposure to pesticides and many were diabetic. They distributed free medicines to them. Dr. Satpal immediately reported the matter to the National Human Rights Commission (NHRC). On the suggestions of NHRC, the government decided to provide medical care, financial assistance, setting up of super-speciality hospitals for treatment and prevention of the deadly disease in the affected villages all over India.</p> <p>(i) Write the values shown by (a) Dr. Satpal (B) NHRC</p> <p>(ii) What type of analgesics are chiefly used for the relief of pains of terminal cancer?</p> <p>(iii) Give an example of artificial sweetener that could have been recommended to diabetic patients.</p>	2014 set 123 3 mark
3.	<p>Due to hectic and busy schedule, Mr. Awasthi made his life full of tensions and Anxiety. He started taking sleeping pills to overcome the depression without consulting the doctor. Mr. Roy, a close friend of Mr. Awasthi advised him to stop taking sleeping pills and suggested to change his lifestyle by doing Yoga, meditation and some physical exercise. Mr. Awasthi followed his friend's advice and after few days he started feeling better.</p> <p>After reading the above passage, answer the following :</p> <p>(ii) What are the values (at least two) displayed by Mr. Roy?</p> <p>(iii) Why it is not advisable to take sleeping pills without consulting doctor?</p> <p>(iv) What are tanquilizers? Give two examples.</p>	16 set123 4 mark
4.	<p>Define the following :</p> <p>Anionic detergents , Limited spectrum antibiotics , Antiseptics</p>	2017 Set 1 3 marks