# DELHI PUBLIC SCHOOL, JAMMU ASSIGNMENT <br> (2018-2019) 

## SUBJECT: CHEMISTRY

CLASS: XII

## SECTION A(VERY SHORT ANSWER TYPE)

Q.1. Which crystal defect lowers the density of a solid?
Q.2. Out of $\mathrm{BaCl}_{2}$ and KCl , which is more effective in causing coagulation of a -vely charged colloidal solution. Give reason?
Q.3. Write the equation for Kolbe's reaction?
Q.4. What do you mean Schiff's base? Give an example?
Q.5. Why do amines behave as nucleophiles?

## SECTION B(SHORT ANSWER TYPE)

Q.6. State Raoult's law for a solution containing non volatile solute. What type of deviation from Raoult's law is shown by a solution of chloroform amd acetone?
Q.7. Give reasons for the following:
(i)Red phosphorous is less reactive than white phosphorous.
(ii)Electron gain enthalpies of halogens are largely -ve?
Q.8. Write two similarities and two difference between the chemistry of lanthanoids and actanoid elements?
Q.9. Why is butan-1-ol optically inactive but butan-2-ol is optically active?
Q.10. Give reason why benzyl chloride undergoes SN 1 reaction faster than cyclohexyl methyl chloride?
Q.11. Silver crystallises in fcc lattice. If the edge length of the cell is $4.077 * 10^{-8} \mathrm{~cm}$ and density is $10.5 \mathrm{gm} \mathrm{cm}^{-3}$, calculate the atomic mass of silver?
Q.12. A solution of glucose in water is labelled as $10 \% \mathrm{w} / \mathrm{w}$, what would be the molality and mole fraction of each component in the solution? If the density of the solution is $1.2 \mathrm{~g} \mathrm{~mL}^{-1}$, then what shall be the molarity of the solution?
Q.13. Write the difference in each of the following:
(i)Coagulation and peptization
(ii)Homogeneous catalysis and heterogeneous catalysis
(iii)Absorption and adsorption
(iv)orderand molecularity of reaction.
Q.14. (i) Arrange: the following in decreasing order of their basic strength:
$\mathrm{C}_{6} \mathrm{H}_{5} \mathrm{NH}_{2}, \mathrm{C}_{2} \mathrm{H}_{5} \mathrm{NH}_{2},\left(\mathrm{C}_{2} \mathrm{H}_{5}\right)_{2} \mathrm{NH}, \mathrm{NH}_{3}$.
(ii) Why cannot aromatic primary amines be prepared by Gabriel Phthalimide Synthesis?
Q.15. Draw the structures of the following:
(i) $\mathrm{XeF}_{2}$
(ii) $\mathrm{XeO}_{3}$
Q.16. (i) $\left[\mathrm{Ni}(\mathrm{CN})_{4}\right]^{2-}$ is colourless whereas $\left[\mathrm{Ni}\left(\mathrm{H}_{2} \mathrm{O}\right)_{6}\right]^{2+}$ is green. Why?
(ii) Define crystal field splitting energy .On the basis of CFT, write the electronic configuration for $d^{4}$ ion if $\Delta_{o}$ less than P?
Q.17. What happens when:
(i) $\left(\mathrm{CH}_{3}\right)_{3} \mathrm{C}-\mathrm{O}-\mathrm{CH}_{3}$ is treated with HI
(ii) Anisole is treated with $\mathrm{CH}_{3} \mathrm{COCl}$ / anhydrous $\mathrm{AlCl}_{3}$ ?
Q.18. Illustrate the following reactions:
(i)Hoffmann bromamide degradation reaction.
(ii)Coupling reaction?
Q.19. Write the names and structures of the monomers of the following polymers:
(i)Terylene (ii)Teflon (iii)Nylon-6,6
Q.20. Define the following terms:
(i)Antiseptic
(ii)Cationic detergents
(iii)Broad spectrum antibiotics.

## SECTION C(LONG ANSWER TYPE)

Q.21. The following data were obtained for the reaction:
$2 \mathrm{NO}+\mathrm{O}_{2} \rightarrow 2 \mathrm{NO}_{2}$

| Experiment | $[\mathrm{A}] / \mathrm{mol} \mathrm{L}^{-1}$ | $[\mathrm{~B}] / \mathrm{mol} \mathrm{L}^{-1}$ | Initial rate of formation of <br> $\mathrm{NO}_{2} / \mathrm{M} \mathrm{min}^{-1}$ |
| :---: | :---: | :---: | :---: |
| I | 0.3 | 0.2 | $7.2 \times 10^{-2}$ |
| II | 0.1 | 0.1 | $6.0 \times 10^{-3}$ |
| III | 0.3 | 0.4 | $2.88 \times 10^{-1}$ |
| IV | 0.4 | 0.1 | $2.40 \times 10^{-2}$ |

(i) Find the order of the reaction with respect to NO and $\mathrm{O}_{2}$.
(ii) Write rate law and overall order of the reaction.
(iii) Calculate the rate constant(k).
Q.22. (i)State the relationship amongst cell constant of a cell, resistance of the solution in the cell and conductivity of the solution. How is molar conductivity of a solution related to conductivity of its solution?
(ii) A voltaic cell is set up at $25^{\circ} \mathrm{C}$ with the following half cell;
$\mathrm{Al} / \mathrm{Al}^{3+}(0.001 \mathrm{M})$ and $\mathrm{Ni} / \mathrm{Ni}^{2+}(0.50 \mathrm{M})$
Calculate the cell voltage. $\left[\mathrm{E}_{\mathrm{Ni}}^{\circ}{ }^{2+}{ }_{\mathrm{Ni}}=-0.25 \mathrm{~V}, \mathrm{E}^{\circ}{ }_{\mathrm{Al} 3+/ \mathrm{Al}}=-1.66 \mathrm{~V}\right]$
Q.23. (i)Give reason why Propanone is less reactive than ethanol towards nucleophilic addition reactions.
(ii)Bring out the following conversions:
a)Acetaldehyde to but-2-enal
b)Benzoic acid to benzaldehyde
c)Propanone to propene.

