

SRI RAMAKRISHNA MET HR SEC SCHOOL –SIVANARAGARAM-612201

HIGHER SECONDARY FIRST YEAR – CHEMISTRY - ONE MARK - 2018-2019

VOLUME-2

Unit- 8 - Physical and chemical equilibrium

- If K_b and K_f for a reversible reactions are 0.8×10^{-5} and 1.6×10^{-4} respectively, the value of the equilibrium constant is,
a) 20 b) 0.2×10^{-1} c) 0.05 d) none of these
- At a given temperature and pressure, the equilibrium constant values for the equilibrium $3A_2 + B_2 + 2C \rightleftharpoons 2A_3BC$ and $A_3BC \rightleftharpoons \frac{3}{2}[A_2] + \frac{1}{2}B_2 + C$ The relation between K_1 and K_2 is
a) $K_1 = \frac{1}{\sqrt{K_2}}$ b) $K_2 = K_1^{\frac{-1}{2}}$ c) $K_1^2 = 2K_2$ d) $\frac{K_1}{2} = K_2$
- The equilibrium constant for a reaction at room temperature is K_1 and that at 700 K is K_2 . If $K_1 > K_2$ then
a) the forward reaction is exothermic b) The forward reaction is endothermic
c) The reaction does not attain equilibrium. d) The reverse reaction is exothermic
- The formation of ammonia from $N_{2(g)}$ and $H_{2(g)}$ is a reversible reaction $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)} + \text{Heat}$ What is the effect of increase of temperature on this equilibrium reaction
a) equilibrium is unaltered b) formation of ammonia is favored
c) equilibrium is shifted to the left d) reaction rate does not change
- Solubility of carbon dioxide gas in cold water can be increased by
a) increase in pressure b) decrease in pressure c) increase in volume d) none of these
- Which one of the following is incorrect statement?
a) for a system at equilibrium, Q is always less than the equilibrium constant
b) equilibrium can be attained from either side of the reaction
c) presence of catalyst affects both the forward reaction and reverse reaction to the same extent
d) equilibrium constant varied with temperature
- K_1 and K_2 are the equilibrium constants for the reactions respectively. $N_{2(g)} + O_{2(g)} \rightleftharpoons 2NO(g)$ $2NO(g) + O_{2(g)} \rightleftharpoons 2NO_2(g)$ What is the equilibrium constant for the reaction $NO_{2(g)} \rightleftharpoons \frac{1}{2}N_{2(g)} + O_{2(g)}$ a) $\frac{1}{\sqrt{K_1K_2}}$ b) $(K_1 = K_2)^{1/2}$ c) $\frac{1}{2K_1K_2}$ d) $(\frac{1}{2K_1K_2})^{3/2}$
- In the equilibrium $2A(g) \rightleftharpoons 2B(g) + C_2(g)$ the equilibrium concentrations of A, B and C_2 at 400 K are $1 \times 10^{-4}M$, $2.0 \times 10^{-3}M$, $1.5 \times 10^{-4}M$ respectively. The value of K_c for equilibrium at 400 K is
a) 0.06 b) 0.09 c) 0.62 d) 3×10^{-2}
- An equilibrium constant of 3.2×10^{-6} for a reaction means, the equilibrium is
a) largely towards forward direction b) largely towards reverse direction
c) never established d) none of these
- $\frac{K_c}{K_p}$ for the reaction $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$ is
a) $1/RT$ b) \sqrt{RT} c) RT d) $(RT)^2$

11. For the reaction $AB(g) \rightleftharpoons A(g) + B(g)$, at equilibrium, AB is 20% dissociated at a total pressure of P. The equilibrium constant K_p is related to the total pressure by the expression
 a) $P=24 K_p$ b) $P=8 K_p$ c) $24 P=K_p$ d) none of these
12. In which of the following equilibrium, K_p and K_c are not equal?
 a) $2NO(g) \rightleftharpoons N_{2(g)} + O_{2(g)}$ b) $SO_{2(g)} + NO_2 \rightleftharpoons SO_{3(g)} + NO(g)$
 c) $H_{2(g)} + I_{2(g)} \rightleftharpoons 2HI(g)$ d) $PCl_{5(g)} \rightleftharpoons PCl_{3(g)} + Cl_{2(g)}$
13. If x is the fraction of PCl_5 dissociated at equilibrium in the reaction $PCl_5 \rightleftharpoons PCl_3 + Cl_2$ then starting with 0.5 mole of PCl_5 , the total number of moles of reactants and products at equilibrium is a) 0.5-x b) x+0.5 c) 2x+0.5 d) x+1
14. The values of K_{p1} and K_{p2} for the reaction $X \rightleftharpoons Y + Z$ $A \rightleftharpoons 2B$ are in the ratio 9:1 if degree of dissociation and initial concentration of X and A be equal than total pressure at equilibrium P_1 and P_2 are in the ratio a) 36:1 b) 1:1 c) 3:1 d) 1:9
15. In the reaction $Fe(OH)_3(s) \rightleftharpoons Fe^{3+}(aq) + 3OH^-(aq)$ if the concentration of OH^- ions is decreased by $\frac{1}{4}$ times, then the equilibrium concentration of Fe^{3+} will
 a) not changed b) also decreased by $\frac{1}{4}$ times c) increased by 4 times d) increased by 64 times
16. Consider the reaction where $K_p = 0.5$ at a particular temperature $PCl_{5(g)} \rightleftharpoons PCl_{3(g)} + Cl_{2(g)}$ If the three gases are mixed in a container so that the partial pressure of each gas is initially 1 atm, then which one of the following is true
 a) more PCl_3 will be produced b) more Cl_2 will be produced
 c) more PCl_5 will be produced d) none of these
17. Equimolar concentrations of H_2 and I_2 are heated to equilibrium in a 1 liter flask. What percentage of initial concentration of H_2 has reacted at equilibrium if rate constant for both forward and reverse reactions are equal
 a) 33% b) 66% c) $(33)^2\%$ d) 16.5%
18. In a chemical equilibrium, the rate constant for the forward reaction is 2.5×10^2 and the equilibrium constant is 50. The rate constant for the reverse reaction is
 a) 11.5 b) 5 c) 2×10^2 d) 2×10^{-3}
19. Which of the following is not a general characteristic of equilibrium involving physical process
 a) Equilibrium is possible only in a closed system at a given temperature
 b) The opposing processes occur at the same rate and there is a dynamic but stable condition
 c) All the physical processes stop at equilibrium
 d) All measurable properties of the system remains constant
20. For the formation of two moles of $SO_{3(g)}$ from SO_2 and O_2 , the equilibrium constant is K_1 . The equilibrium constant for the dissociation of one mole of SO_3 into SO_2 and O_2 is
 a) $1/K_1$ b) K_1^2 c) $(\frac{1}{K_1})^{1/2}$ d) $\frac{K_1}{2}$
21. Match the equilibria with the corresponding conditions, i) Liquid \rightleftharpoons Vapour ii) Solid \rightleftharpoons Liquid iii) Solid \rightleftharpoons Vapour iv) Solute(s) \rightleftharpoons Solute(Solution) 1) Melting point 2) Saturated solution 3) Boiling point 4) Sublimation point 5) Unsaturated solution

	(i)	(ii)	(iii)	(iv)
(a)	1	2	3	4
(b)	3	1	4	2
(c)	2	1	3	4

(d)	3	2	4	1
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22. Consider the following reversible reaction at equilibrium, $A+B \rightleftharpoons C$, If the concentration of the reactants A and B are doubled, then the equilibrium constant will
- a) be doubled b) become one fourth c) be halved d) remain the same
23. $[\text{Co}(\text{H}_2\text{O})_6]^{2+}(\text{aq})(\text{pink}) + 4\text{Cl}^{-}(\text{aq}) \rightleftharpoons [\text{CoCl}_4]^{2-}(\text{aq})(\text{blue}) + 6\text{H}_2\text{O}(\text{l})$ In the above reaction at equilibrium, the reaction mixture is blue in colour at room temperature. On cooling this mixture, it becomes pink in colour. On the basis of this information, which one of the following is true?
- a) $\Delta H > 0$ for the forward reaction b) $\Delta H = 0$ for the reverse reaction c) $\Delta H < 0$ for the forward reaction d) sign of the ΔH cannot be predicted based on this information.
24. The equilibrium constants of the following reactions are : $\text{N}_2 + 3\text{H}_2 \rightleftharpoons 2\text{NH}_3$; K_1 $\text{N}_2 + \text{O}_2 \rightleftharpoons 2\text{NO}$; K_2 $\text{H}_2 + \frac{1}{2}\text{O}_2 \rightleftharpoons \text{H}_2\text{O}$; K_3 The equilibrium constant (K) for the reaction: $2\text{NH}_3 + \frac{5}{2}\text{O}_2 \rightleftharpoons 2\text{NO} + 3\text{H}_2\text{O}$, will be
- a) $\frac{K_2^3 K_3}{K_1}$ b) $\frac{K_1 K_3^3}{K_2}$ c) $\frac{K_2 K_3^3}{K_1}$ d) $\frac{K_2 K_3}{K_1}$
25. A 20 liter container at 400 K contains $\text{CO}_{2(g)}$ at pressure 0.4 atm and an excess of SrO (neglect the volume of solid SrO). The volume of the container is now decreased by moving the movable piston fitted in the container. The maximum volume of the container, when pressure of CO_2 attains its maximum value will be: Given that : $\text{SrCO}_3(\text{s}) \rightleftharpoons \text{SrO}(\text{s}) + \text{CO}_{2(g)}$ $K_P = 1.6 \text{ atm}$
- a) 2 litre b) 5 litre c) 10 litre d) 4 litre

Unit- 9 Solutions

1. The molality of a solution containing 1.8 g of glucose dissolved in 250g of water is
- a) 0.2M b) 0.01 M c) 0.02 M d) 0.04 M
2. Which of the following concentration terms is/are independent of temperature
- a) Molality b) Molarity c) Mole fraction d) (a) and (b)
3. Stomach acid, a dilute solution of HCl can be neutralized by reaction with Aluminium hydroxide $\text{Al}(\text{OH})_3 + 3\text{HCl}_{(\text{aq})} \rightarrow \text{AlCl}_3 + 3\text{H}_2\text{O}$. How many milliliters of 0.1 M $\text{Al}(\text{OH})_3$ solution are needed to neutralize 21 mL of 0.1 M HCl?
- a) 14 mL b) 7mL c) 21mL d) none of these
4. The partial pressure of nitrogen in air is 0.76 atm and its Henry's law constant is $7.6 \times 10^4 \text{ atm}$ at 300 K. What is the mole fraction of nitrogen gas in the solution obtained when air is bubbled through water at 300 K?
- a) 7.61×10^{-4} b) 1×10^{-6} c) 2×10^{-5} d) 1×10^{-5}
5. The Henry's law constant for the solubility of nitrogen gas in water at 350 K is $8 \times 10^4 \text{ atm}$. The mole fraction of nitrogen in air is 0.5. The number of moles of Nitrogen from air dissolved in 10 moles of water at 350 K and 4 atm pressure is
- a) 4×10^{-4} b) 4×10^4 c) 2×10^{-2} d) 2.5×10^{-4}
6. Which one of the following is incorrect for ideal solution?
- a) $\Delta H_{\text{mix}} = 0$ b) $\Delta U_{\text{mix}} = 0$ c) $\Delta P = P_{\text{observed}} - P_{\text{calculated by raoult's law}} = 0$ d) $\Delta G_{\text{mix}} = 0$
7. Which one of the following gases has the lowest value of Henry's law constant?

- a) N_2 b) He c) CO_2 d) H_2
8. P_1 and P_2 are the vapour pressure of pure liquid components. 1 and 2 respectively of an ideal binary solution if x_1 represents the mole fraction of component 1, the total pressure of the solution formed by 1 and 2 will be
a) $P_1 + x_1 (P_2 - P_1)$ b) $P_2 - x_1 (P_2 + P_1)$ c) $P_1 - x_2 (P_1 - P_2)$ d) $P_1 + x_2 (P_1 - P_2)$
9. Osmotic pressure (π) of a solution is given by the relation
a) $\pi = nRT$ b) $\pi V = nRT$ c) $\pi RT = n$ d) none of these
10. Which one of the following binary liquid mixtures exhibits positive deviation from Raoult's law?
a) Acetone+ chloroform b) Water+ nitric acid c) HCl+ water d) Ethanol+ water
11. The Henry's law constants for two gases A and B are x and y respectively. The ratio of mole fraction of A and B is 0.2. The ratio of mole fraction of B and A dissolved in water will be
a) $\frac{2x}{y}$ b) $\frac{y}{0.2x}$ c) $\frac{0.2x}{y}$ d) $\frac{5x}{y}$
12. At $100^\circ C$ the vapour pressure of a solution containing 6.5g a solute in 100g water is 732mm. If $K_b = 0.52$, the boiling point of this solution will be
a) $102^\circ C$ b) $100^\circ C$ c) $101^\circ C$ d) $100.52^\circ C$
13. According to Raoult's law, the relative lowering of vapour pressure for a solution is equal to
a) Mole fraction of solvent b) Mole fraction of solute
c) Number of moles of solute d) Number of moles of solvent
14. At same temperature, which pair of the following solutions are isotonic?
a) 0.2 M $BaCl_2$ and 0.2 M urea b) 0.1M glucose and 0.2 M urea
c) 0.1 M NaCl and 0.1 M K_2SO_4 d) 0.1 M $Ba(NO_3)_2$ and 0.1 M Na_2SO_4
15. The empirical formula of a non-electrolyte(X) is CH_2O . A solution containing six gram of X exerts the same osmotic pressure as that of 0.025 M glucose solution at the same temperature. The molecular formula of X is a) $C_2H_4O_2$ b) $C_8H_{16}O_8$ c) $C_4H_8O_4$ d) CH_2O
16. The K_H for the solution of oxygen dissolved in water is 4×10^4 atm at a given temperature. If the partial pressure of oxygen in air is 0.4 atm, the mole fraction of oxygen in solution is
a) 4.6×10^3 b) 1.6×10^4 c) 1×10^{-5} d) 1×10^5
17. Normality of 1.25 M sulphuric acid is a) 1.25 N b) 3.75 N c) 2.5 N d) 2.25 N
18. Two liquids X and Y on mixing gives a warm solution. The solution is
a) Ideal b) Non-ideal and shows positive deviation from Raoult's law c) Ideal and shows negative deviation from Raoult's law d) Non-ideal and shows negative deviation from Raoult's law
19. The relative lowering of vapour pressure of a sugar solution in water is 3.5×10^{-3} . The mole fraction of water in the solution is
a) 0.0035 b) 0.35 c) 0.0035/18 d) 0.9965
20. The mass of a non volatile solute(molar mass 80 g mol^{-1}) which should be dissolved in 92 g of toluene to reduce its vapour pressure to 90%
a) 10g b) 20g c) 9.2g d) 8.89g
21. For a solution, the plot of osmotic pressure(π) verses the concentration (c in $mol L^{-1}$) gives a straight line with slope 310R where 'R' is the gas constant. The temperature at which osmotic pressure measured is a) 310×0.082 K b) $310^\circ C$ c) $37^\circ C$ d) $\frac{310}{0.082}$ K
22. 200 mL of an aqueous solution of a protein contains 1.26 g of protein. At 300K, the osmotic pressure of this solution is found to be 2.52×10^{-3} bar. The molar of protein will be ($R=0.083$ L

- bar $\text{mol}^{-1}\text{K}^{-1}$) a) 62.22 Kg mol^{-1} b) 12444 g mol^{-1} c) 300 g mol^{-1} d) none of these
23. The Van't Hoff factor(i) for a dilute aqueous solution of the strong electrolyte barium hydroxide is
a) 0 b) 1 c) 2 d) 3
24. What is the molality of a 10% w/w aqueous sodium hydroxide solution? a) 2.778 b) 2.5 c) 10 d) 0.4
25. The correct equation for the degree of an associating solute, 'n' molecules of which undergoes association in solution, is
a) $\alpha = \frac{n(i-1)}{n-1}$ b) $\alpha^2 = \frac{n(1-i)}{(n-1)}$ c) $\alpha = \frac{n(i-1)}{1-n}$ d) $\alpha = \frac{n(1-i)}{n(1-i)}$
26. Which of the following aqueous solutions has the highest boiling point?
a) 0.1 M KNO_3 b) 0.1 M Na_3PO_4 c) 0.1 M BaCl_2 d) 0.1 M K_2SO_4
27. The freezing point depression constant for water is $1.86 \text{ K Kg mol}^{-1}$. If 5g Na_2SO_4 is dissolved in 45g water, the depression in freezing point is 3.64°C . The Vant Hoff factor for Na_2SO_4 is
a) 2.50 b) 2.63 c) 3.64 d) 5.50
28. Equimolal aqueous solutions of NaCl and KCl are prepared. If the freezing point of NaCl is -2°C , the freezing point of KCl solution is expected to be
a) -2°C b) -4°C c) -1°C d) 0°C
29. Phenol dimerises in benzene having Vant Hoff factor 0.54. What is the degree of association?
a) 0.46 b) 92 c) 46 d) 0.92
30. Assertion : An ideal solution obeys Raoult's law Reason : In an ideal solution, Solvent-solvent as well as solute-solute interactions are similar to solute-solvent interactions.
a) both assertion and reason are true and the reason is the correct explanation of assertion.
b) both assertion and reason are true but reason is not the correct explanation of assertion
c) assertion is true but reason is false. d) Both assertion and reason are false.


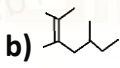
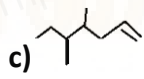
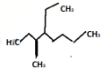
Unit-10 - Chemical bonding

1. In which of the following compounds does the central atom obey the octet rule?
a) XeF_4 b) AlCl_3 c) SF_6 d) SCl_2
2. In the molecule $\text{O}_A = \text{C} = \text{O}_B$, the formal charge on O_A , C and O_B are respectively
a) -1, 0, +1 b) +1, 0, -1 c) -2, 0, +2 d) 0, 0, 0
3. Which of the following is electron deficient?
a) PH_3 b) $(\text{CH}_3)_2$ c) BH_3 d) NH_3
4. Which of the following molecule contain no π bond?
a) SO_2 b) NO_2 c) CO_2 d) H_2O
5. The ratio of number of sigma (σ) and pi (π) bonds in 2-butyne is a) 8/3 b) 5/3 c) 8/2 d) 9/2
6. Which one of the following is the likely bond angles of sulphur tetra fluoride molecule?
a) $120^\circ, 80^\circ$ b) $109^\circ.28$ c) 90° d) $89^\circ, 117^\circ$
7. Assertion : Oxygen molecule is paramagnetic.
Reason : It has two unpaired electron in its bonding molecular orbital
a) both assertion and reason are true and the reason is the correct explanation of assertion.
b) both assertion and reason are true but reason is not the correct explanation of assertion
c) assertion is true but reason is false. d) Both assertion and reason are false.
8. According to Valence bond theory, a bond between two atoms is formed when

- a) fully filled atomic orbital's overlap b) half filled atomic orbital's overlap
c) non-bonding atomic orbital's overlap d) empty atomic orbital's overlap
9. In ClF_3 , NF_3 and BF_3 molecules the chlorine, nitrogen and boron atoms are
a) sp^3 hybridized b) sp^3 , sp^3 and sp^2 respectively
c) sp^2 hybridized d) sp^3d , sp^3 and sp hybridized respectively
10. When one s and three p orbitals hybridized,
a) four equivalent orbitals at 90° to each other will be formed
b) four equivalent orbitals at $109^\circ.28$ to each other will be formed
c) four equivalent orbitals, that are lying the same plane will be formed d) none of these
11. Which of these represents the correct order of their increasing bond order
a) $C_2 < C_2^{2-} < O_2^{2-} < O_2$ b) $C_2^{2-} < C_2^+ < O_2 < O_2^{2-}$
c) $O_2^{2-} < O_2 < C_2^{2-} < C_2^+$ d) $O_2^{2-} < C_2^+ < O_2 < C_2^{2-}$
12. Hybridization of central atom in PCl_5 involves the mixing of orbitals.
a) s, P_x , P_y , d_{xz} , d_{xzyz} b) s, P_x , P_y , P_{xy} , d_{xzyz}
c) s, P_x , P_y , P_z , d_{xzyz} d) s, P_x , P_y , d_{xy} , d_{xzyz}
13. The correct order of O-O bond length in hydrogen peroxide, ozone and oxygen is
a) $H_2O_2 > O_3 > O_2$ b) $O_2 > O_3 > H_2O_2$
c) $O_2 > H_2O_2 > O_3$ d) $O_3 > O_2 > H_2O_2$
14. Which one of the following is diamagnetic?
a) O_2 b) O_2^{2-} c) O_2^+ d) none of these
15. Bond order of a species is 2.5 and the number of electrons in its bonding molecular orbital is formed to be 8. The no of electrons in its antibonding molecular orbital is
a) three b) four c) zero d) cannot be calculated from the given information
16. Shape and hybridization of IF_5 are
a) Trigonal bipyramidal, sp^3d^2 b) Trigonal bipyramidal, sp^3d
c) square pyramidal, sp^3d^2 d) Octahedral, sp^3d^2
17. Pick out the incorrect statement from the following
a) sp^3 hybrid orbitals are equivalent and are at an angle of $109^\circ 28'$ with each other
b) dsp^2 hybrid orbitals are equivalent and bond angle between any two of them is 90°
c) all five sp^3d hybrid orbitals are not equivalent out of these five sp^3d hybrid orbitals, three are at an angle of 120° remainder two are perpendicular to the plane containing the other three
d) none of these
18. The molecules having same hybridization, shape and number of lone pairs of electrons are
a) SeF_4 , XeO_2F_2 b) SF_4 , XeF_2 c) $XeOF_4$, TeF_4 d) $SeCl_2$, XeF_4
19. In which of the following molecules/ions BF_3 , NO_2^- , H_2O the central atom is sp^2 hybridized?
a) NH_2^- and H_2O b) NO_2^- and H_2O c) BF_3 and NO_2^- d) BF_3 and NH_2
20. Some of the following properties of two species, NO_3^- and H_3O^+ are described below. Which one of them is correct?
a) dissimilar in hybridization for the central atom with different structure
b) isostructural with same hybridization for the Central atom
c) different hybridization for the central atom with same structure d) none of these
21. The types of hybridization on the five carbon atom from right to left in the, 2,3 pentadiene
a) sp^3 , sp^2 , sp , sp^2 , sp^3 b) sp^3 , sp , sp , sp , sp^3

- c) $sp^2, sp, sp^2, sp^2, sp^3$ d) $sp^3, sp^3, sp^2, sp^3, sp^3$
22. XeF_2 is isostructural with a) $SbCl_2$ b) $BaCl_2$ c) TeF_2 d) ICl_2^-
23. The percentage of s-character of the hybrid orbitals in methane, ethane, ethene and ethyne are respectively a) 25,25,33.3,50 b) 50,50,33.3,25 c) 50,25,33.3,50 d) 50,25,25,50
24. The following molecules, which have shape similar to carbon-dioxide? a) $SnCl_2$ b) NO_2 c) C_2H_2 d) all of these
25. According to VSEPR theory, the repulsion between different parts of electron obey the order a) $l.p-l.p > b.p-b.p > l.p-b.p$ b) $b.p-b.p > b.p-l.p > l.p-b.p$ c) $l.p-l.p > b.p-l.p > b.p-b.p$ d) $b.p-b.p > l.p-l.p > b.p-l.p$
26. Shape of ClF_3 is a) planar triangular b) pyramidal c) 'T' shaped d) none of these
27. Non-zero dipole moment is shown by a) CO_2 b) p-dichlorobenzene c) carbon tetrachloride d) water
28. Which of the following conditions is not correct for resonating structures? a) the contributing structure must have the same number of unpaired electrons b) the contributing structures should have similar energies c) the resonance hybrid should have higher energy than any of the contributing structure d) none of these
29. Among the following, the compound that contains, ionic, covalent and coordinate linkage is a) NH_4Cl b) NH_3 c) $NaCl$ d) none of these
30. CaO and $NaCl$ have the same crystal structure and approximately the same radii. If U is the lattice energy of $NaCl$, the approximate lattice energy of CaO a) U b) $2U$ c) $U/2$ d) $4U$

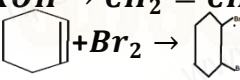
Unit-11 - Fundamentals of organic chemistry

1. Select the molecule which has only one π bond a) $CH_3 - CH = CH - CH_3$ b) $CH_3 - CH = CH - CHO$ c) $CH_3 - CH = CH - COOH$ d) All of these
2. In the hydrocarbon $\overset{7}{CH_3} - \overset{6}{CH_3} - \overset{5}{CH} = \overset{4}{CH} - \overset{3}{CH_2} - \overset{2}{C} \equiv \overset{1}{CH}$ the state of hybridization of carbon 1,2,3,4 and 7 are in the following sequence. a) sp, sp, sp^3, sp^2, sp^3 b) $sp^2, sp, sp^3, sp^2, sp^3$ c) sp, sp, sp^2, sp, sp^3 d) none of these
3. The general formula for alkadiene is a) C_nH_{2n} b) C_nH_{2n-1} c) C_nH_{2n-2} d) C_nH_{n-2}
4. Structure of the compound whose IUPAC name is 5,6-dimethylhept-2-ene is a)  b)  c)  d) None of these
5. The IUPAC name of the compound is  a) 2,3-dimethyl heptanes b) 3-Methyl-4-ethyloctane c) 5-ethyl-6-methyloctane d) 4-Ethyl-3-methyloctane
6. Which one of the following names does not fit a real name? a) 3-Methyl-3-hexanone b) 4-Methyl-3-hexanone c) 3-Methyl-3-hexanol d) 2-Methyl cyclo hexanone
7. The IUPAC name of the compound $CH_3 - CH = CH - C \equiv CH$ is a) pent-4-yn-2-ene b) pent-3-en-1-yne c) pent-2-en-4-yne d) pent-1-yn-3-ene

8. IUPAC name of $\text{CH}_3 - \overset{\text{H}}{\underset{\text{C}_2\text{H}_5}{\text{C}}} - \overset{\text{C}_4\text{H}_9}{\underset{\text{CH}_3}{\text{C}}} - \text{CH}_3$ is
- a) 3,4,4-Trimethylheptane b) 2-Ethyl-3,3-dimethylheptane
c) 3,4,4-Trimethyloctane d) 2-Butyl-2-methyl-3-ethyl-butane
9. The IUPAC name of the $\text{H}_3\text{C} - \overset{\text{CH}_3}{\underset{\text{CH}_3}{\text{C}}} - \text{CH} = \text{C}(\text{CH}_3)_2$
- a) 2,4,4-Trimethylpent-2-ene b) 2,4,4-Trimethylpent-3-ene
c) 2,4,4-Trimethylpent-4-ene d) 2,4,4-Trimethylpent-5-ene
10. The IUPAC name of the compound $\text{CH}_3 - \text{CH} = \underset{\text{CH}_2 - \text{CH}_2 - \text{CH}_3}{\text{C}} - \text{CH}_2 - \text{CH}_3$ is
- a) 3-Ethyl-2-hexane b) 3-propyl-3-hexane c) 4-Ethyl-4-hexane d) 3-propyl-2-hexane
11. The IUPAC name of the compound $\text{CH}_2 - \underset{\text{OH}}{\text{CH}} - \text{COOH}$ is
- a) 2-Hydroxypropionic acid b) 2-Hydroxy Propanoic acid
c) Propan-2-ol-1-oic acid d) 1-Carboxyethanol
12. The IUPAC name of $\text{CH}_3 - \underset{\text{Br}}{\text{CH}} - \underset{\text{CH}_3}{\text{CH}} - \text{COOH}$ is
- a) 2-Bromo-3-methylbutanoic acid b) 2-methyl-3-bromobutanoic acid
c) 3-Bromo-2-methylbutanoic acid d) 3-Bromo-2,3-dimethyl propanoic acid
13. The structure of isobutyl group in an organic compound is
- a) $\text{CH}_3 - \text{CH}_2 - \text{CH}_2 - \text{CH}_2 -$ b) $\text{CH}_3 - \underset{\text{CH}_3}{\text{CH}} - \text{CH}_2 -$
c) $\text{CH}_3 - \underset{\text{CH}_3}{\text{CH}} - \text{CH}_2 -$ d) $\text{CH}_3 - \text{CH} - \text{CH}_2 - \text{CH}_3$
14. The number of stereoisomers of 1,2-dihydroxy cyclopentane
- a) 1 b) 2 c) 3 d) 4
15. Which of the following is optically active?
- a) 3-Chloropentane b) 2-Chloro propane c) Meso-tartaric acid d) Glucose
16. The isomer of ethanol is
- a) acetaldehyde b) Dimethylether c) Acetone d) Methyl carbinol
17. How many cyclic and acyclic isomers are possible for the molecular formula $\text{C}_3\text{H}_6\text{O}$?
- a) 4 b) 5 c) 9 d) 10
18. Which one of the following shows functional isomerism?
- a) Ethylene b) Propane c) Ethanol d) CH_2Cl_2
19. $\text{CH}_2 = \overset{\ominus}{\text{C}} - \overset{\text{O}}{\parallel} \text{CH}_3$ and $\text{CH}_2 = \overset{\text{O}}{\parallel} \text{C} - \text{CH}_3$ are
- a) Resonating structure b) Tautomers c) Optical isomers d) Conformers
20. Nitrogen detection in an organic compound is carried out by Lassaigne's test. The blue colour formed is due to the formation of.
- a) $\text{Fe}_3[\text{Fe}(\text{CN})_6]_2$ b) $\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$ c) $\text{Fe}_4[\text{Fe}(\text{CN})_6]_2$ d) $\text{Fe}_3[\text{Fe}(\text{CN})_6]_3$
21. Lassaigne's test for the detection of nitrogen fails in
- a) $\text{H}_2\text{N} - \text{CO} - \text{NH} \cdot \text{NH}_2 \cdot \text{HCl}$ b) $\cdot \text{NH}_2 - \cdot \text{NH}_2 \cdot \text{HCl}$
c) $\text{C}_6\text{H}_5 - \text{NH} - \text{NH}_2 \cdot \text{HCl}$ d) $\text{C}_6\text{H}_5\text{CONH}_2$

22. Connect pair of compounds which give blue colourisation/ precipitate and white precipitate respectively, when their Lassaigne's test is separately done.
- a) NH_2NH_2HCl and $ClCH_2 - CHO$ b) NH_2CSNH_2 and $CH_3 - CH_2Cl$
 c) NH_2CH_2COOH and NH_2CONH_2 d) $C_6H_5NH_2$ and $ClCH_2 - CHO$
23. Sodium nitropruside reacts with sulphide ion to give a purple color due to the formation of
- a) $[Fe(CN)_5NO]^{3-}$ b) $[Fe(NO)_5CN]^+$ c) $[Fe(CN)_5NOS]^{4-}$ d) $[Fe(CN)_5NOS]^{3-}$
24. On organic compound weighing 0.15g gave on carius estimation, 0.12g of silver bromide. The percentage of bromine in the compound will be close to
- a) 46% b) 34% c) 3.4% d) 4.6%
25. A sample of 0.5g of an organic compound was treated according to Kjeldahl's method. The ammonia evolved was absorbed in 50mL of 0.5M H_2SO_4 . The remaining acid after neutralization by ammonia consumed 80 mL of 0.5 M NaOH, The percentage of nitrogen in the organic compound is
- a) 14% b) 28% c) 42% d) 56%
26. In an organic compound, phosphorus is estimated as
- a) $Mg_2P_2O_7$ b) $Mg_3(PO_4)_2$ c) H_3PO_4 d) P_2O_5
27. Ortho and para-nitro phenol can be separated by
- a) Azeotropic distillation b) Destructive distillation
 c) Steam distillation d) Cannot be separated
28. The purity of an organic compound is determined by
- a) Chromatography b) Crystallisation c) melting or boiling point d) Both (a) and (c)
29. A liquid which a liquid which decomposes at its boiling point can be purified by
- a) distillation at atmospheric pressure b) distillation under reduced pressure
 c) fractional distillation d) steam distillation
30. Assertion: $CH_3 - \underset{\substack{| \\ COOC_2H_5}}{C} = CH - COOH$ 3-carbethoxy -2-butetoic acid
- Reason: The principal functional group gets lowest number followed by double bond (or) triple bond
- a) both assertion and reason are true and the reason is the correction explanation of assertion.
 b) both assertion and reason are true but reason is not the correct explanation of assertion
 c) assertion is true but reason is false. d) Both assertion and reason are false.



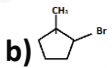



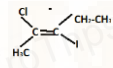
Unit-12- Basic concept of organic reaction

1. For the following reactions A. $CH_3CH_2CH_2Br + KOH \rightarrow CH_2 = CH_2 + KBr + H_2O$
 B. $(CH_3)_3CBr + KOH \rightarrow (CH_3)_3COH + KBr$ C.  which of the following statement is correct ?
- a) (A) is elimination (B) and (C) are substitution
 b) (A) is substitution (B) and (C) are elimination
 c) (A) and (B) are elimination and (C) is adition reaction
 d) (A) is elimination, B is subsitution and (c) is addition reaction
2. What is the hybridization state of benzyl carbonium ion?
- a) sp^2 b) spd^2 c) sp^3 d) sp^2d
3. Decreasing order of nucleophilicity is
- a) $OH^- > NH_2^- > -OCH_3 > RNH_2$ b) $NH_2^- > OH^- > -OCH_3 > RNH_2$

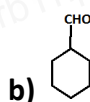
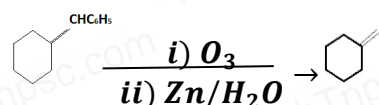
- c) $NH_2^- > CH_3O^- > OH^- >> RNH_2$ d) $CH_3O^- > NH_2^- > OH^- > RNH_2$
4. Which of the following species is not electrophilic in nature?
a) Cl^+ b) BH_3 c) H_3O^+ d) $+NO_2$
5. Hemolytic fission of covalent bond leads to the formation of
a) Electrophile b) Nucleophile c) Carbo cation d) Free radical
6. Hyper conjugation is also known as
a) No bond resonance b) Baker-Nathan effect c) Both (a) and (b) d) None of these
7. Which of the group has highest +I effect?
a) CH_3- b) $CH_3 - CH_2 -$ c) $(CH_3)_2 - CH -$ d) $(CH_3)_3 - C -$
8. Which of the following species does not exert a resonance effect?
a) C_6H_5OH b) C_6H_5Cl c) $C_6H_5NH_2$ d) $C_6H_5NH_3$
9. -I effect is shown by a) $-Cl$ b) $-Br$ c) Both (a) and (b) d) $-CH_3$
10. Which of the following carbocation will be most stable?
a) Ph_3C^{+} b) $CH_3 - CH_2 -$ c) $(CH_3)_2 - CH$ d) $CH_2 = CH - CH_2$
11. Assertion: Tertiary carbocations are generally formed more easily than primary carbocations ions.
Reason: Hyper conjugation as well as inductive effect due to additional alkyl group stabilize tertiary carbonium ions.
a) both assertion and reason are true and the reason is the correct explanation of assertion.
b) both assertion and reason are true but reason is not the correct explanation of assertion
c) assertion is true but reason is false. d) Both assertion and reason are false.
12. Heterolytic fission of C-Br bond results in the formation of
a) Free radical b) Carbanion c) Carbocation d) Carbanion and Carbocation
13. Which of the following represent a set of nucleophiles?
a) BF_3, H_2O, NH_2^- b) $AlCl_3, BF_3, NH_3$ c) CN^-, RCH_2^-, ROH d) H^+, RNH_3^+, CCl_2
14. Which of the following species does not acts as a nucleophile?
a) ROH b) ROR c) PCl_3 d) BF_3
15. The geometrical shape of carbocation is
a) Linear b) Tetrahedral c) Planar d) Pyramidal












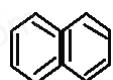


Unit-13 - Hydrocarbons

1. The correct statement regarding the comparison of staggered and eclipsed conformations of ethane, is
a) the eclipsed conformation of ethane is more stable than staggered conformation even though the eclipsed conformation has torsional strain.
b) the staggered conformation of ethane is more stable than eclipsed conformation, because staggered conformation has no torsional strain.
c) the staggered conformation of ethane is less stable than eclipsed conformation, because staggered conformation has torsional strain.
d) the staggered conformation of ethane is less stable than eclipsed conformation, because staggered conformation has no torsional strain.
2. $C_2H_5Br + 2Na \xrightarrow{\text{dry ether}} C_4H_{10} + 2NaBr$ The above reaction is an example of which of the following

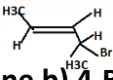
- a) Reimer Tiemann reaction b) Wurtz reaction c) Aldol condensation d) Hoffmann reaction
3. An alkyl bromide (A) reacts with sodium in ether to form 4,5-diethyloctane, the compound (A) is
 a) $CH_3(CH_2)_3Br$ b) $CH_3(CH_2)_5Br$
 c) $CH_3(CH_2)_3BrCH(Br)CH_3$ d) $CH_3 - (CH_2)_2 - \underset{\text{CH}_3}{\underset{|}{CH}}(Br) - CH_2$
4. The C-H bond and C-C bond in ethane are formed by which of the following types of overlap
 a) $sp^3 - s$ and $sp^3 - sp^3$ b) $sp^2 - s$ and $sp^2 - sp^2$ c) $sp - sp$ and $sp - sp$ d) $p - s$ and $p - p$
5. In the following reaction  The major product obtained is
 a)  b)  c)  d) 
6. Which of the following is optically active
 a) 2-methyl pentane b) citric acid c) Glycerol d) none of these
7. The compounds formed at anode in the electrolysis of an aqueous solution of potassium acetate are
 a) CH_4 and H_2 b) CH_4 and CO_2 c) C_2H_6 and CO_2 d) C_2H_4 and Cl_2
8. The general formula for cyclo alkanes a) C_nH_n b) C_nH_{2n} c) C_nH_{2n-2} d) C_nH_{2n+2}
9. The compound that will react most readily with gaseous bromine has the formula
 a) C_3H_6 b) C_2H_2 c) C_4H_{10} d) C_2H_4
10. Which of the following compounds shell not produce propene by reaction with HBr followed by elimination (or) only direct elimination reaction
 a)  b) $CH_3 - CH_2 - CH_2 - OH$ c) $H_2C = C = O$ d) $CH_3 - CH_2 - CH_2Br$
11. Which among the following alkenes on reductive ozonolysis produces only propanone?
 a) 2-Methyl propene b) 2-Methyl but -2- ene
 c) 2,3-Dimethyl but -1-ene d) 2,3 - Dimethyl but -2-ene
12. The major product formed when 2-bromo -2-methyl butane is refluxed with ethanolic KOH is
 a) 2-methylbut-2-ene b) 2-methyl butan-1-ol
 c) 2-methyl but -1-ene d) 2-methyl butan -2-ol
13. Major product of the below mentioned reaction is, $(CH_3)_2C = CH_2 \xrightarrow{ICl}$
 a) 2-chloro-1-iodo-2-methyl propane b) 1-chloro-2-iodo-2- methyl propane
 c) 1,2-dichloro -2- methyl propane d) 1,2-diiodo-2- methyl propane
14. The IUPAC name of the following compound is 
 a) trans-2-chloro-3-iodo-2-pentane b) cis-3-iodo-4-chloro-3- pentane
 c) trans-3-iodo -4-chloro-3- pentene d) cis-2-chloro-3-iodo-2-butene
15. Cis-2-butene and trans-2-butene are
 a) Conformational isomers b) Structural isomers c) Configurational isomers d) Optical isomers


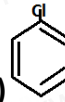
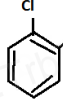
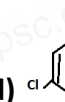
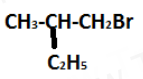
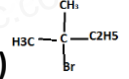
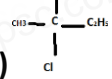


16. Identify the compound (A) in the following reaction



17. $\begin{array}{c} \text{CH}_3-\text{CH}_2 \\ | \quad | \\ \text{Br} \quad \text{Br} \end{array} \xrightarrow{\text{(A)}} \text{CH} \equiv \text{CH}$ Where a is a) Zn b) Conc H_2SO_4 c) alc. KOH d) dil H_2SO_4
18. Consider the nitration of benzene using mixed con H_2SO_4 and HNO_3 if a large quantity of KHSO_4 is added to the mixture, the rate of nitration will be
a) Unchanged b) Doubled c) Faster d) Slower
19. In which of the following molecules, all atoms are Co-planar
a)  b)  c)  d) Both (a) and (b)
20. Propyne on passing through red hot iron tube gives
a)  b)  c)  d) None of these
21.  $\xrightarrow{\text{HCl}}$ (A) is
a)  b)  c) both (a) and (b) d) 
22. Which one of the following is non aromatic? a)  b)  c)  d) 
23. Which of the following compounds will not undergo Friedal-crafts reaction easily?
a) Nitro benzene b) Toluene c) Cumene d) Xylene
24. Some meta-directing substituents in aromatic substitution are given. Which one is most deactivating?
a) $-\text{COOH}$ b) $-\text{NO}_2$ c) $-\text{C}\equiv\text{N}$ d) $-\text{SO}_3\text{H}$
25. Which of the following can be used as the halide component for friedal-crafts reaction?
a) Chloro benzene b) Bromo benzene c) Chloro ethane d) Isopropyl Chloride
26. An alkane is obtained by decarboxylation of sodium propionate. Same alkane can be prepared by
a) Catalytic hydrogenation of propene b) Action of sodium metal on iodomethane
c) Reduction of 1-Chloro propane d) Reduction of bromomethane
27. Which of the following is aliphatic saturated hydrocarbon
a) C_6H_{18} b) C_9H_{18} c) C_8H_{14} d) All of these
28. Identify the compound 'Z' in the following reaction $\text{C}_2\text{H}_6\text{O} \xrightarrow[623\text{K}]{\text{Al}_2\text{O}_3} \text{X} \xrightarrow{\text{O}_3} \text{Y} \xrightarrow{\text{Zn}/\text{H}_2\text{O}} \text{(z)}$
a) Formaldehyde b) Acetaldehyde c) Formic acid d) none of this
29. Peroxide effect (Kharasch effect) can be studied in case of
a) Oct-4-ene b) Hex-3-ene c) Pent-1-ene d) But-2-ene
30. 2-butyne on chlorination gives
a) 1-chloro butane b) 1,2-dichloro butane
c) 1,1,2,2-tetrachloro butane d) 2,2,3,3-tetrachloro butane

Unit-14 Haloalkanes and haloarenes

1. The IUPAC name of  is
a) 2-Bromo pent -3-ene b) 4-Bromo pent -2- ene c) 2-Bromo pent -4-ene d) 4-Bromo pent -1- ene
2. Of the following compounds, which has the highest boiling point?
a) n-Butyl chloride b) Isobutyl chloride c) t-Butyl chloride d) n-propyl chloride
3. Arrange the following compounds in increasing order of their density
a) CCl_4 b) CHCl_3 c) CH_2Cl_2 d) CH_3Cl
a) $\text{D} < \text{C} < \text{B} < \text{A}$ b) $\text{C} < \text{B} < \text{A} < \text{D}$ c) $\text{A} < \text{B} < \text{C} < \text{D}$ d) $\text{C} < \text{A} < \text{B} < \text{D}$
4. With respect to the position of $-\text{Cl}$ in the compound $\text{CH}_3 - \text{CH} = \text{CH} - \text{CH}_3 - \text{Cl}$, it is classified as
a) Vinyl b) Allyl c) Secondary d) Aralkyl

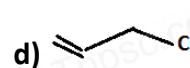
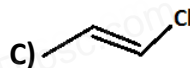
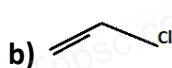
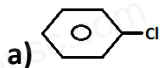
5. What should be the correct IUPAC name of diethyl chloromethane?
 a) 3-chloropentane
 b) 1-chloropentane
 c) 1-chloro-1,1,diethyl methane
 d) 1-chloro-1-ethyl propane
6. C-X bond is strongest in
 a) chloromethane
 b) Iodomethane
 c) Bromomethane
 d) Fluoromethane
7. In the reaction $X + \text{C}_6\text{H}_5\text{N}_2\text{Cl} \xrightarrow[\text{HCl}]{\text{Cu}} X + \text{N}_2$ X is
 a)  b)  c)  d) 
8. Which of the following compounds will give racemic mixture on nucleophilic substitution by OH^- ion?
 i)  ii)  iii) 
 a) (i)
 b) (ii) (iii)
 c) (iii)
 d) (i) and (ii)
9. The treatment of ethyl formate with excess of RMgX gives
 a)  b)  c) R-CHO d) R-O-R
10. Benzene reacts with Cl_2 in the presence of FeCl_3 and in absence of sunlight to form
 a) Chlorobenzene
 b) Benzyl chloride
 c) Benzal chloride
 d) Benzene hexachloride
11. The name of $\text{C}_2\text{F}_4\text{Cl}_2$ is
 a) Freon-112
 b) Freon-113
 c) Freon-114
 d) Freon-115
12. Which of the following reagents is helpful to differentiate ethylene dichloride and ethylidene chloride?
 a) Zn/methanol
 b) KOH/ethanol
 c) aqueous KOH
 d) $\text{ZnCl}_2/\text{conHCl}$
13. Match the following

Column I (compound)	Column II (uses)
A Iodoform	1 Fire extinguisher
B Carbon tetra chloride	2 Insecticide
C CFC	3 Antiseptic
D DDT	4 Refrigerants

- a) A-2 B-4 C-1 D-3
 b) A-3 B-2 C-4 D-1
 c) A-1 B-2 C-3 D-4
 d) A-3 B-1 C-4 D-2

14. Assertion: In mono haloarenes, electrophilic substitution occurs at ortho and para positions.
 Reason: Halogen atom is a ring deactivator
 a) If both assertion and reason are true and the reason is the correct explanation of assertion.
 b) If both assertion and reason are true but reason is not the correct explanation of assertion.
 c) If assertion is true but reason is false.
 d) Both assertion and reason are false.
15. Consider the reaction, $\text{CH}_3\text{CH}_2\text{CH}_2\text{Br} + \text{NaCN} \rightarrow \text{CH}_3\text{CH}_2\text{CH}_2\text{CN} + \text{NaBr}$ This reaction will be the fastest in
 a) Ethanol
 b) Methanol
 c) DMF ($\text{N,N'$ -dimethyl formamide)
 d) Water
16. Freon-12 is manufactured from tetrachloro methane by
 a) wurtz reaction
 b) swarts reaction
 c) haloform reaction
 d) Gattermann reaction
17. The most easily hydrolysed molecule under $\text{S}_\text{N}1$ condition is
 a) allyl chloride
 b) ethyl chloride
 c) isopropyl chloride
 d) benzyl chloride
18. The carbo cation formed in $\text{S}_\text{N}1$ reaction of alkyl halide in the slow step is
 a) sp^3 hybridised
 b) sp^2 hybridised
 c) sp hybridised
 d) none of these
19. The major products obtained when chlorobenzene is nitrated with HNO_3 and $\text{con H}_2\text{SO}_4$
 a) 1-chloro-4-nitrobenzene
 b) 1-chloro-2-nitrobenzene
 c) 1-chloro-3-nitrobenzene
 d) 1-chloro-1-nitrobenzene

20. Which one of the following is most reactive towards nucleophilic substitution reaction?



21. Ethylidene chloride on treatment with aqueous KOH gives

a) acetaldehyde

b) ethylene glycol

c) formaldehyde

d) glyoxal

22. The raw material for Rasching process

a) Chloro benzene

b) Phenol

c) Benzene

d) Anisole

23. Chloroform reacts with nitric acid to produce

a) Nitro toluene

b) Nitro glycerine

c) Chloropicrin

d) Chloropicric acid

24. acetone $\xrightarrow[i) H_2O/H^{-1}]{i) CH_3MgI} X$, X is

a) 2-propanol b) 2-methyl 2-propanol c) 1-propanol d) Acetonol

25. silverpropionate when refluxed with bromine in carbon tetrachloride gives

a) Propionic acid

b) Chloro ethane

c) Bromo ethane

d) Chloro propane

Unit-15 - Environmental chemistry

1. The gaseous envelope around the earth is known as atmosphere. The region lying between an altitudes of 11-50 km is

a) Troposphere

b) Mesosphere

c) Thermosphere

d) Stratosphere

2. Which of the following is natural and human disturbance in ecology?

a) Forest fire

b) Floods

c) Acid rain

d) Green house effect

3. Bhopal Gas Tragedy is a case of

a) Thermal pollution

b) Air pollution

c) Nuclear pollution

d) Land pollution

4. Hemoglobin of the blood forms carboxyl hemoglobin with....

a) Carbon dioxide

b) Carbon tetra chloride

c) Carbon monoxide

d) Carbonic acid

5. Which sequence for green house gases is based on GWP?

a) $CFC > N_2O > CO_2 > CH_4$ b) $CFC > CO_2 > N_2O > CH_4$ c) $CFC > N_2O > CH_4 > CO_2$ d) $CFC > CH_4 > N_2O > CO_2$

6. Photo chemical smog formed in congested metropolitan cities mainly consists of

a) Ozone, SO_2 and hydrocarbons

b) Ozone, PAN and NO_2

c) PAN, smog and SO_2

d) Hydrocarbons, SO_2 and CO_2

7. The pH of normal rain water is

a) 6.5

b) 7.5

c) 5.6

d) 4.6

8. Ozone depletion will cause.....

a) Forest fire

b) Eutrophication

c) Bio magnification

d) Global warming

9. Identify the wrong statement in the following

a) The clean water would have a BOD value of more than 5 ppm

b) Green house effect is also called as Global warming

c) Minute solid particles in air is known as particulate pollutants

d) Biosphere is the protective blanket of gases surrounding the earth

10. Living in the atmosphere of CO is dangerous because it

a) Combine with O_2 present inside to form CO_2

b) Reduces organic matter of tissues

c) Combines with haemoglobin and makes it incapable to absorb oxygen

d) Dries up the blood

11. Release of oxides of nitrogen and hydrocarbons into the atmosphere by motor vehicles is prevented by using....

a) grit chamber

b) scrubbers

c) trickling filters

d) catalytic convertors

12. Biochemical oxygen demand value less than 5 ppm indicates a water sample to be

- a) Highly polluted b) Poor in dissolved oxygen c) Rich in dissolved oxygen d) Low COD

13. Match the following

List I

List II

- | | | |
|-----------------------------|------|--------|
| A) Depletion of ozone layer | - 1. | CO_2 |
| B) Acid rain | - 2. | NO |
| C) Photo chemical smog | - 3. | SO_2 |
| D) Green house effect | - 4. | CFC |

- | | A | B | C | D |
|----|---|---|---|---|
| a) | 3 | 4 | 1 | 2 |
| b) | 2 | 1 | 4 | 3 |
| c) | 4 | 3 | 2 | 1 |
| d) | 2 | 4 | 1 | 3 |

14. Match the following

List I

List II

- | | | |
|---------------------------------|------|-------------------|
| D) Stone | - 1. | leprosy |
| E) Biological magnification | - 2. | Green house gases |
| F) Global warming | - 3. | Acid rain |
| D) Combination with haemoglobin | - 4. | DDT |

- | | A | B | C | D |
|----|---|---|---|---|
| a) | 1 | 2 | 3 | 4 |
| b) | 3 | 4 | 2 | 1 |
| c) | 2 | 3 | 4 | 1 |
| d) | 4 | 2 | 1 | 3 |

The questions gives below consists of an assertion the reason. Choose the correct option out of the choices given below each question

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

15. Assertion (A) : If BOD level of water in a reservoir is more than 5 ppm it is highly polluted

Reason (R): High biological oxygen demand means high activity of bacteria in water

- a) i b) ii c) iii d) iv

16. Assertion (A) : Excessive use of chlorinated pesticide causes soil and water pollution

Reason (R): Such pesticides are non-biodegradable

- a) i b) ii c) iii d) iv

17. Assertion (A) : Oxygen plays a key role in the troposphere

Reason (R): Troposphere is not responsible for all biological activities

- a) i b) ii c) iii d) iv

Unit- 8 - Physical and chemical equilibrium

1. [A][B][C][D]
2. [A][B][C][D]
3. [A][B][C][D]
4. [A][B][C][D]
5. [A][B][C][D]
6. [A][B][C][D]
7. [A][B][C][D]
8. [A][B][C][D]
9. [A][B][C][D]
10. [A][B][C][D]
11. [A][B][C][D]
12. [A][B][C][D]
13. [A][B][C][D]
14. [A][B][C][D]
15. [A][B][C][D]
16. [A][B][C][D]
17. [A][B][C][D]
18. [A][B][C][D]
19. [A][B][C][D]
20. [A][B][C][D]
21. [A][B][C][D]
22. [A][B][C][D]
23. [A][B][C][D]
24. [A][B][C][D]
25. [A][B][C][D]

Unit- 9 Solutions

1. [A][B][C][D]
2. [A][B][C][D]
3. [A][B][C][D]
4. [A][B][C][D]
5. [A][B][C][D]
6. [A][B][C][D]
7. [A][B][C][D]
8. [A][B][C][D]
9. [A][B][C][D]
10. [A][B][C][D]
11. [A][B][C][D]
12. [A][B][C][D]
13. [A][B][C][D]
14. [A][B][C][D]

15. [A][B][C][D]
16. [A][B][C][D]
17. [A][B][C][D]
18. [A][B][C][D]
19. [A][B][C][D]
20. [A][B][C][D]
21. [A][B][C][D]
22. [A][B][C][D]
23. [A][B][C][D]
24. [A][B][C][D]
25. [A][B][C][D]
26. [A][B][C][D]
27. [A][B][C][D]
28. [A][B][C][D]
29. [A][B][C][D]
30. [A][B][C][D]

Unit-10 - Chemical bonding

1. [A][B][C][D]
2. [A][B][C][D]
3. [A][B][C][D]
4. [A][B][C][D]
5. [A][B][C][D]
6. [A][B][C][D]
7. [A][B][C][D]
8. [A][B][C][D]
9. [A][B][C][D]
10. [A][B][C][D]
11. [A][B][C][D]
12. [A][B][C][D]
13. [A][B][C][D]
14. [A][B][C][D]
15. [A][B][C][D]
16. [A][B][C][D]
17. [A][B][C][D]
18. [A][B][C][D]
19. [A][B][C][D]
20. [A][B][C][D]
21. [A][B][C][D]
22. [A][B][C][D]
23. [A][B][C][D]
24. [A][B][C][D]
25. [A][B][C][D]

26. [A][B][C][D]
27. [A][B][C][D]
28. [A][B][C][D]
29. [A][B][C][D]
30. [A][B][C][D]

Unit-11 - Fundamentals of organic chemistry

1. [A][B][C][D]
2. [A][B][C][D]
3. [A][B][C][D]
4. [A][B][C][D]
5. [A][B][C][D]
6. [A][B][C][D]
7. [A][B][C][D]
8. [A][B][C][D]
9. [A][B][C][D]
10. [A][B][C][D]
11. [A][B][C][D]
12. [A][B][C][D]
13. [A][B][C][D]
14. [A][B][C][D]
15. [A][B][C][D]
16. [A][B][C][D]
17. [A][B][C][D]
18. [A][B][C][D]
19. [A][B][C][D]
20. [A][B][C][D]
21. [A][B][C][D]
22. [A][B][C][D]
23. [A][B][C][D]
24. [A][B][C][D]
25. [A][B][C][D]
26. [A][B][C][D]
27. [A][B][C][D]
28. [A][B][C][D]
29. [A][B][C][D]
30. [A][B][C][D]

Unit-12- Basic concept of**organic reaction**

1. [A][B][C][D]
2. [A][B][C][D]
3. [A][B][C][D]
4. [A][B][C][D]
5. [A][B][C][D]
6. [A][B][C][D]
7. [A][B][C][D]
8. [A][B][C][D]
9. [A][B][C][D]
10. [A][B][C][D]
11. [A][B][C][D]
12. [A][B][C][D]
13. [A][B][C][D]
14. [A][B][C][D]
15. [A][B][C][D]

Unit-13- Hydrocarbons

1. [A][B][C][D]
2. [A][B][C][D]
3. [A][B][C][D]
4. [A][B][C][D]
5. [A][B][C][D]
6. [A][B][C][D]
7. [A][B][C][D]
8. [A][B][C][D]
9. [A][B][C][D]
10. [A][B][C][D]
11. [A][B][C][D]
12. [A][B][C][D]
13. [A][B][C][D]

14. [A][B][C][D]

15. [A][B][C][D]
16. [A][B][C][D]
17. [A][B][C][D]
18. [A][B][C][D]
19. [A][B][C][D]
20. [A][B][C][D]
21. [A][B][C][D]
22. [A][B][C][D]
23. [A][B][C][D]
24. [A][B][C][D]
25. [A][B][C][D]
26. [A][B][C][D]
27. [A][B][C][D]
28. [A][B][C][D]
29. [A][B][C][D]
30. [A][B][C][D]

Unit-14 Haloalkanes and haloarenes

1. [A][B][C][D]
2. [A][B][C][D]
3. [A][B][C][D]
4. [A][B][C][D]
5. [A][B][C][D]
6. [A][B][C][D]
7. [A][B][C][D]
8. [A][B][C][D]
9. [A][B][C][D]
10. [A][B][C][D]
11. [A][B][C][D]
12. [A][B][C][D]
13. [A][B][C][D]

14. [A][B][C][D]

15. [A][B][C][D]
16. [A][B][C][D]
17. [A][B][C][D]
18. [A][B][C][D]
19. [A][B][C][D]
20. [A][B][C][D]
21. [A][B][C][D]
22. [A][B][C][D]
23. [A][B][C][D]
24. [A][B][C][D]
25. [A][B][C][D]

Unit-15 -**Environmental chemistry**

1. [A][B][C][D]
2. [A][B][C][D]
3. [A][B][C][D]
4. [A][B][C][D]
5. [A][B][C][D]
6. [A][B][C][D]
7. [A][B][C][D]
8. [A][B][C][D]
9. [A][B][C][D]
10. [A][B][C][D]
11. [A][B][C][D]
12. [A][B][C][D]
13. [A][B][C][D]
14. [A][B][C][D]
15. [A][B][C][D]
16. [A][B][C][D]
17. [A][B][C][D]