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NEET-CHEMISTRY **ELP NO.-1** **SOLUTION**

1. What volume of a 0.8 M solution contains 100 millimoles of the solute?

(1) 100 mL (2) 125 mL (3) 500 mL (4) 62.5 mL

2. 500 mL of a glucose solution contains 6.02×10^{22} molecules. The concentration of the solution is

(1) 0.1 M (2) 1.0 M (3) 0.2 M (4) 2.0 M

3. The molality of a sulphuric acid solution is 0.2. Calculate the total weight of the solution having 1000 gm of solvent.

(1) 1000 g (2) 1098.6 g (3) 980.4 g (4) 1019.6g

4. Find the mass of KOH needed to prepare 100 ml 1 M KOH solution. [At. mass K = 39]

(1) 5.6 gm (2) 5 gm (3) 6 gm (4) 6.5 gm

5. How many grams of NaOH will be needed to prepare 250 mL of 0.1 M solution

(1) 1g (2) 10g (3) 4g (4) 6g

6. The molarity of a glucose solution containing 36 g of glucose per 400 mL of the solution is

(1) 1.0 (2) 0.5 (3) 2.0 (4) 0.05

7. 200 ml of a solution contains 5.85 g dissolved sodium chloride. The concentration of the solution will be (Na = 23; Cl = 35.5)

(1) 1 Molar (2) 2 Molar (3) 0.5 Molar (4) 0.25 Molar

8. If one mole of a substance is present in 1 kg of solvent. then

(1) It shows molar concentration (2) It shows molal concentration

(3) It shows normality (4) It shows strength gm/ gm

9. The number of moles of a solute in its solution is 20 and total number of moles are 80. The mole fraction of solute is:

(1) 2.5 (2) 0.25 (3) 1 (4) 0.75

10. Density of water is 1 g/mL. The concentration of water in mol/litre is

(1) 1000 (2)18 (3) 0.018 (4) 55.5

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NEET-CHEMISTRY **ELP NO.-2** **SOLUTION**

1. A solution of $FeCl_3$ is $\frac{M}{30}$ its molarity for Cl^- ion will be

(1) $\frac{M}{90}$ (2) $\frac{M}{30}$ (3) $\frac{M}{10}$ (4) $\frac{M}{5}$

2. The molarity of the solution containing 2.8% (mass/volume) solution of KOH is : (Given atomic mass of K = 39) is:

(1) 0.1 M (2) 0.5 M (3) 0.2 M (4) 1 M

3. A mixture has 18g water and 414g ethanol. The mole fraction of water in mixture is (assume ideal behaviour of the mixture)

(1) 0.1 (2) 0.4 (3) 0.7 (4) 0.9

4. How much $NaNO_3$ must be weighed out to make 50 ml of an aqueous solution containing 70 mg Na^+ per ml ?

(1) 12.934 g (2) 1.29 g (3) 0.129 g (4) 1.59 g

5. 360g of water is present in a one L mixture of ethanol and water. Molarity of water in the mixture is-

(1) 20.0 (2) 36.0 (3) 18.0 (4) None of these

6. Mole fraction of solvent in aqueous solution of NaOH having molality of 3 is :

(1) 0.3 (2) 0.05 (3) 0.7 (4) 0.95

7. 171 g of cane sugar ($C_{12}H_{22}O_{11}$) is dissolved in 1 litre of water. The molarity of the solution is

(1) 2.0 M (2) 1.0 M (3) 0.5 M (4) 0.25 M

8. A 5.2 molal aqueous solution of methyl alcohol, CH_3OH, is supplied. What is the mole fraction of methyl alcohol in the solution?

(1) 0.100 (2) 0.190 (3) 0.086 (4) 0.050

9. The molality of a urea solution in which 0.0100g of urea, $[(NH_2)_2CO]$ is added to 0.3000 dm^3 of water at STP is:

(1) 5.55×10^{-4} m (2) 33.3 m (3) 3.33×10^{-2} m (4) 0.555 m

10. The molarity of a solution obtained by mixing 750 mL of 0.5M HCl with 250 mL of 2MHCl will be:

(1) 0.875 M (2) 1.00 M (3) 1.75 M (4) 0.975 M

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NEET-CHEMISTRY **ELP NO.-3** **SOLUTION**

1. Determine the molarity of 0.2 mol NaCl present in 10L aqueous solution

(1) 0.02 M (2) 0.01 M (3) 0.05 M (4) 1 M

2. Determine the molarity of 100 milli moles of the solute present in 125 mL aqueous solution.

(1) 0.4 M (2) 0.8 M (3) 0.6 M (4) 0.5 M

3. 19.6 gm of sulphuric acid (H_2SO_4) is present in 1000 of water. The molality of the solution is

(1) 0.1 m (2) 1 m (3) 0.2 m (4) 0.5 m

4. Find the mass of KOH needed to prepare 100 mL, 1M KOH solution. [At. mass K = 39]

(1) 5.6 gm (2) 5 gm (3) 6 gm (4) 4 gm

5. 8 g KOH is dissolved in 392 g water. Determine mass % $\left(\frac{w}{w}\right)$ of NaOH.

(1) 1% (2) 3% (3) 4% (4) 2%

6. 4 g NaOH is dissolved in 162 g of water. Determine the mole fraction of NaOH

(1) $\frac{1}{91}$ (2) $\frac{2}{91}$ (3) $\frac{3}{91}$ (4) $\frac{4}{91}$

7. 10 kg water is used to dissolved 58.5 g of NaCl in it. Determine its molality.

(1) 0.2 m (2) 0.3 m (3) 0.1 m (4) 0.4 m

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NEET-CHEMISTRY **ELP NO.-4** **SOLUTION**

1. A 20.0 mL sample of $CuSO_4$ solution was evaporated to dryness, leaving 0.967 g of residue. What was the molarity of the original solution ? (Cu = 63.5)

(1) 48.4 M (2) 0.0207 M (3) 0.0484 M (4) 0.303 M

2. The concentration of pollutant in ppm (w/w), that has been measured at 450 mg per 150 kg of sample is :

(1) 3 ppm (2) 6 ppm (3) 3000 ppm (4) 330 ppm

3. Incorrect statement about 11.35 V H_2O_2 (aq) solution at STP is - ($d_{solution}$ = 1.034 g/ml)

(1) Molarity of H_2O_2 is 1 M (2) % w/v of solution is 3.4

(3) % w/w of solution is 6.8. (4) Molality of solution is 1.

4. 15 g of urea (M = 60 g/mol) is dissolved in 100ml water to form an aqueous solution, molality(m) of solution will be - [Given : Density of water = 1 g/ml]

(1) 0.25 (2) 2.5 (3) 25 (4) Data insufficient

5. The amount of $BaSO_4$ formed upon mixing 100mL of 20.8% $BaCl_2$ solution with 50mL of 9.8% H_2SO_4 solution will be : (Ba = 137, Cl = 35.5, S = 32, H = 1 and O = 16)

(1) 23.3 g (2) 11.65 g (3) 30.6 g (4) 33.2 g

6. 3L H_2O_2 (aq) solution upon decomposition produces 33.6L O_2(g) at 1atm and 0°C. Then concentration of H_2O_2 (aq) solution in mol/L is ____

(1) 1 (2) 1.5 (3) 2 (4) 0.5

7. The molality of a sulphuric acid solution in which mole fraction of water is 0.85

(1) 9.80 (2) 10.50 (3) 10.58 (4) 11.25

8. Identify the temperature independent quantity-

(1) Molarity (2) W/v% (3) Molality (4) v/v%

9. Calculate volume strength of H_2O_2 in 5L solution which yields 100 L of O_2 at NTP.

(1) 20 V (2) 30 V (3) 5 V (4) 100 V

10. Find out the mass of H_2SO_4 in 150 mL, $\frac{N}{7}$ H_2SO_4.

(1) 49 g (2) 9 g (3) 98 g (4) 1.05 g

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NEET-CHEMISTRY **ELP NO.-5** **SOLUTION**

1. What is the normality of 2M H_3PO_2 solution?

(1) 0.5N (2) 1.0N (3) 2.0N (4) 3.0N

2. 23 g ethanol is dissolved in 36 g water. Find mole fraction of ethanol?

(1) 2 (2) 0.5 (3) 0.2 (4) 0.8

3. How many gram of HNO_3 is required to prepare 400 mL solution of 0.2M HNO_3?

(1) 5.04 g (2) 5040 g (3) 25.2 g (4) 2.52 g

4. Calculate normality of 2.1% (w/V) H_2SO_4 solution?

(1) 2.14 N (2) 4.28 N (3) 0.428 N (4) 0.214 N

5. What is the molarity of 1N H_2SO_4 solution?

(1) 1 M (2) 2 M (3) 0.5 M (4) 3 M

6. 20.6 g NaBr is dissolved in 500 mL solution what is the molarity of resulting solution?

(1) 0.6 (2) 0.4 (3) 1 (4) None

7. Calculate molality of the solution obtained by dissolving 11.7 g NaCl in 500 g water

(1) 0.1 m (2) 0.3 m (3) 0.2 m (4) 0.4 m

8. Density of 2.03 M aqueous solution of acetic acid is 1.017 g mL^{-1} molecular mass of acetic acid is 60. Calculate the molality of solution?

(1) 2.27 (2) 1.27 (3) 3.27 (4) 4.27

9. A molar solution is one that contains one mole of solute in

(1) 1000 g of the solvent (2) One litre of the solution

(3) 1000 g of the solution (4) 22.4 litres of the solution

10. Calculate the mole percentage of CH_3OH and H_2O respectively in 60% (by mass) aqueous solution of CH_3OH

(1) 45.8, 54.2 (2) 54.2, 45.8 (3) 50, 50 (4) 60, 40

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NEET-CHEMISTRY **ELP NO.-6** **SOLUTION**

1. Which of the following units is useful in relating concentration of solution with its vapour pressure?
(1) Mole fraction
(2) Parts per million
(3) Mass percentage
(4) Molality

2. On dissolving sugar in water at room temperature solution feels cool to touch Under which of the following cases dissolution of sugar will be most rapid?
(1) Sugar crystals in cold water.
(2) Sugar crystals in hot water
(3) Powdered sugar in cold water
(4) Powdered sugar in hot water

3. At equilibrium the rate of dissolution of a solid solute in a volatile liquid solvent is
(1) Less than the rate of crystallization
(2) Greater than the rate of crystallization
(3) Equal to the rate of crystallization
(4) Zero

4. A beaker contains a solution of substance A. Precipitation of substance A takes place when small amount of A is added to the solution. The solution is
(1) Saturated (2) Supersaturated (3) Unsaturated (4) Concentrated

5. Maximum amount of a solid solute that can be dissolved in a specified amount of a given liquid solvent does not depend upon
(1) Temperature (2) Nature of solute
(3) Pressure (4) Nature of solvent

6. Low concentration of oxygen in the blood and tissues of people living at high altitude is due to
(1) Low temperature
(2) Low atmospheric pressure
(3) High atmospheric pressure
(4) Both low temperature and high atmospheric pressure

7. Value of Henry's constant K_H _____
(1) Increases with increase in temperature
(2) Decreases with increase in temperature
(3) Remains constant
(4) First increases then decreases.

8. The value of Henry's constant K_H is

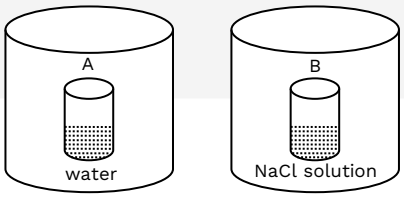
(1) Greater for gases with higher solubility

(2) Greater for gases with lower solubility

(3) Constant for all gases.

(4) Not related to the solubility of gases.

9. Two beakers of capacity 500 mL were taken. One of these beakers labelled as A was filled with 400 mL water whereas the beaker labelled B was filled with 400 mL of 2 M solution of NaCl. At the same temperature both the beakers were placed in closed containers of same material and same capacity as shown in Fig



At a given temperature, which of the following statement is correct about the vapour pressure of pure water and that of NaCl solution.

(1) Vapour pressure in container (A) is more than that in container (B).

(2) Vapour pressure in container (A) is less than that in container (B).

(3) Vapour pressure is equal in both the containers.

(4) Vapour pressure in container (B) is twice the vapor pressure in container (A).

10. K_H value for Ar(g), CO_2(g), HCHO (g) and CH_4(g) are 40.39, 1.67, $.83\times10^{-5}$ and 0.413 respectively. Arrange these gases in the order of their increasing solubility.

(1) HCHO < CH_4 < CO_2 < Ar

(2) HCHO < CO_2 < CH_4 < Ar

(3) Ar < CO_2 < CH_4 < HCHO

(4) Ar < CH_4 < CO_2 < HCHO

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NEET-CHEMISTRY **ELP NO.-7** **SOLUTION**

1. Which of the following factor (s) affect the solubility of a gaseous solute in fixed volume of liquid solvent?

(a) Nature of solute (b) Temperature (c) Pressure

(1) (a) and (c) at constant T (2) (a) and (b) at constant P

(3) (b) and (c) only (4) (c) only

2. Match the items given in Column I with the type of solutions given in Column II.

Column I	Column II
(i) Soda water	(a) A solution of gas in solid
(ii) Sugar solution	(b) A solution of gas in gas
(iii) German silver	(c) A solution of solid in liquid
(iv) Air	(d) A solution of solid in solid
(v) Hydrogen gas in palladium	(e) A solution of gas in liquid
	(f) A solution of liquid in solid

3. **Assertion :** Molarity of a solution in liquid state changes with temperature.

Reason : The volume of a solution changes with change in temperature.

(1) If both Assertion & Reason True & the Reason is a correct explanation of the Assertion.

(2) If both Assertion & Reason True but Reason in not a correct explanation of the Assertion.

(3) If Assertion is True but the Reason is False.

(4) If both Assertion & Reason are false.

4. Intermolecular forces between two benzene molecules are nearly of same strength as those between two toluene molecules. For a mixture of benzene and toluene, which of the following are not true ?

(1) Δ_{mix} H = zero

(2) Δ_{mix} V = zero

(3) These will form minimum boiling azeotrope

(4) These will not form ideal solution.

5. Considering the formation, breaking and strength of hydrogen bond predict which of the following mixtures will show a positive deviation from Raoult's law?

(1) Methanol and acetone (2) Chloroform and acetone

(3) Nitric acid and water (4) Phenol and aniline

6. On the basic of information given below mark the incorrect option.

(a) In bromoethane and chloroethane mixture intermolecular interactions of A-A and B-B type are nearly same as A-B type interactions.

(b) In ethanol and acetone mixture A-A or B-B type intermolecular interactions are stronger than A-B type interactions.

(c) In chloroform and acetone mixture A-A or B-B type intermolecular interaction are weaker than A-B type interactions.

(1) Solution (B) and (C) will follow Raoult's law.
(2) Solution (A) will follow Raoult's law.
(3) Solution (B) will show positive deviation from Raoult's law
(4) Solution (C) will show negative deviation from Raoult's law.

7. On the basis of information given below mark the correct option.

On adding acetone to methanol some of the hydrogen bonds between methanol molecules break.

(1) At specific composition methanol-acetone mixture will form minimum boiling azeotrope and will show positive deviation from Raoult's law

(2) At specific composition methanol-acetone mixture forms maximum boiling azeotrope and will show positive deviation from Raoult's law.

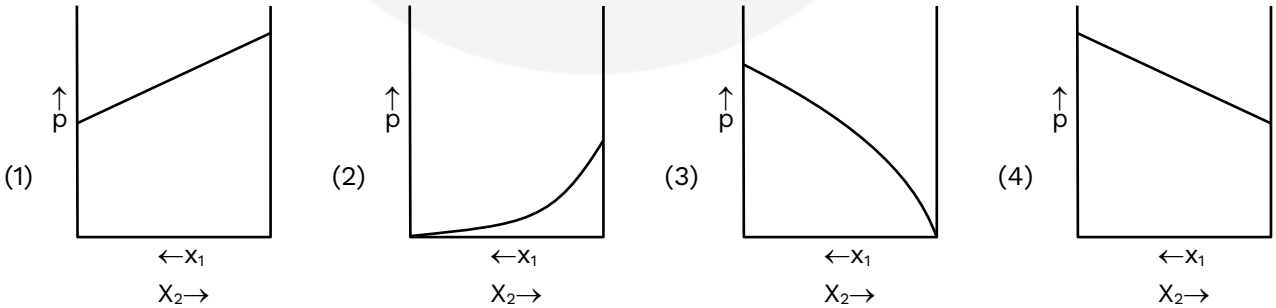
(3) At specific composition methanol-acetone mixture will form minimum boiling azeotrope and will show negative deviation from Raoult's law.

(4) At specific composition methanol-acetone mixture will form maximum boiling azeotrope and will show negative deviation from Raoult's law

8. Which of the following binary mixtures will have same composition in liquid and vapour phase?

(1) Benzene – Toluene
(2) Water-Nitric acid
(3) Water-Ethanol
(4) n-Hexane – n-Heptane

9. For a binary ideal liquid solution, the variation in total vapour pressure versus composition of solution is given by which of the curves?



10. If two liquids A and B form minimum boiling azeotrope at some specific composition then .....

(1) A-B interactions are stronger than those between A-A or B-B.

(2) Vapour pressure of solution increases because more number of molecules of liquids A and B can escape from the solution.

(3) Vapour pressure of solution decreases because less number of molecules of only one of the liquids escape from the solution.

(4) A-B interactions are weaker than those between A-A or B-B.

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NEET-CHEMISTRY **ELP NO.-8** **SOLUTION**

1. Henry's Law Constant for CO_2 in water is 1.67×10^8 Pa at 298K. Calculate the quantity of CO_2 in 1 L of soda water when packed under 2.5 atm CO_2 pressure at 298 K.

(1) 5.65 gL^{-1} (2) 4.56 gL^{-1} (3) 3.65 gL^{-1} (4) 6.35 gL^{-1}

2. Methanol and C_2H_5OH form an ideal solution. Solution is prepared by mixing 32 g of CH_3OH and 23 g of C_2H_5OH at 300K. At 300K $P°_{methanol}$ = 90 mm of Hg and $P°_{ethanol}$ = 51 mm of Hg. Calculate

(i) Total vapour pressure of solution.

(ii) Mole fraction of each component in vapour phase.

(1) 77 mm of Hg; Y_{CH_3OH} = 60/77; $Y_{C_2H_5OH}$ = 17/77

(2) 60 mm of Hg; Y_{CH_3OH} = 17/77; $Y_{C_2H_5OH}$ = 60/77

(3) 17 mm of Hg; Y_{CH_3OH} = 60/77; $Y_{C_2H_5OH}$ = 17/77

(4) 90 mm of Hg; Y_{CH_3OH} = 60/77; $Y_{C_2H_5OH}$ = 17/77

3. The vapour pressure of pure liquid A is 40 torr at 310 K. The vapour pressure of this liquid in solution with solid B is 32 torr. Calculate X_A in solution.

(1) 0.8 (2) 0.9 (3) 10.9 (4) 9.8

4. 1 mole heptane (V.P. = 92 mm of Hg) is mixed with 4 mole. Octane (V.P. = 31 mm of Hg), form an ideal solution. Find out the vapour pressure of solution.

(1) 43.2 mm of Hg (2) 50.3 mm of Hg

(3) 64.7 mm of Hg (4) 51.38 mm of Hg

5. At 88°C benzene has a vapour pressure of 900 torr and toluene has a vapour pressure of 360 torr. What is the mole fraction of benzene in the mixture with toluene that will be boil at 88°C at 1 atm pressure (benzene - toluene form an ideal solution).

(1) 0.38 (2) 0.74 (3) 0.91 (4) 0.85

6. Which of the gas will not follow Henry's law?

(1) HCl (2) He (3) O_2 (4) H_2

7. If solubility of gas 'X' is 0.5 gL^{-1} at 1 bar then its solubility at 3 bar pressure will be.

(1) 10.5 gL^{-1} (2) 1.5 gL^{-1} (3) 0.5 gL^{-1} (4) 0.9 gL^{-1}

8. Among the following that forms an ideal solution?

(1) Water and methanol (2) Acetone and ethanol

(3) Benzene and toluene (4) Water and HCl

9. On mixing 10 mL of acetone with 40 ml of chloroform the total volume of the solution is

(1) < 50 mL (2) > 50 mL

(3) = 50 mL (4) Cannot be predicted

10. The mixture of n-hexane and n-heptane is an example of

(1) Ideal solution (2) Non-ideal solution

(3) Dilute solution (4) None

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NEET-CHEMISTRY **ELP NO.-9** **SOLUTION**

1. Colligative properties depend on .....

(1) The nature of the solute particles dissolved in solution.

(2) The number of solute particles in solution.

(3) The physical properties of the solute particles dissolved in solution.

(4) The nature of solvent particles.

2. Which of the following aqueous solutions should have the highest boiling point?

(1) 1.0 M NaOH (2) 1.0 M Na_2SO_4 (3) 1.0 M NH_4NO_3 (4) 1.0 M KNO_3

3. The unit of ebulioscopic constant is .....

(1) K kg mol^{-1} or K $(molality)^{-1}$ (2) Mol kg K^{-1} or K^{-1} (molality)

(3) K mol Kg^{-1} or K^{-1} $(molality)^{-1}$ (4) K mol kg K^{-1} or K (molality)

4. In comparison to a 0.01 M solution of glucose, the depression in freezing point of a 0.01 M $MgCl_2$ solution is .....

(1) The same (2) About twice (3) About three times (4) About six times

5. An unripe mango placed in a concentrated salt solution to prepare pickle, shrivels because .....

(1) It gains water due to osmosis (2) It loses water due to reverse osmosis

(3) It gains water due to reverse osmosis (4) It loses water due to osmosis

6. At a given temperature, osmotic pressure of a concentrated solution of a substance .....

(1) Is higher than that of a dilute solution

(2) Is lower than that of a dilute solution

(3) Is same as that of a dilute solution

(4) Cannot be compared with osmotic pressure of dilute solution

7. Which of the following statements is false?

(1) Two different solutions of sucrose of same molality prepared in different solvents will have the same depression in freezing point.

(2) The osmotic pressure of a solution is given by the equation $\pi = CRT$ (where C is the molarity of the solution)

(3) Decreasing order of osmotic pressure for 0.01 M aqueous solutions of barium chloride, potassium chloride, acetic acid and sucrose is $BaCl_2 > KCl > CH_3COOH >$ sucrose.

(4) According to Raoult's law, the vapour pressure exerted by a volatile component of a solution is directly proportional to its mole fraction in the solution.

8. The values of Van't Hoff factors for KCl, NaCl and K_2SO_4, respectively, are .....

(1) 2, 2 and 2 (2) 2, 2 and 3 (3) 1, 1 and 2 (4) 1, 1 and 1

9. Which of the following statements is false?

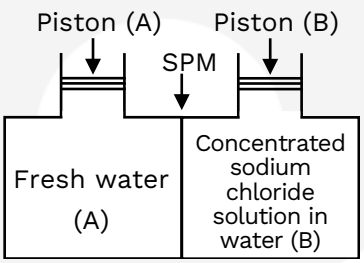
(1) Units of atmospheric pressure and osmotic pressure are the same.

(2) In reverse osmosis, solvent molecules move through a semipermeable membrane from a region of lower concentration of solute to a region of higher concentration.

(3) The value of molal depression constant depends on nature of solvent.

(4) Relative lowering of vapour pressure, is a dimensionless quantity.

10. Consider the Fig. and mark the correct option.



(1) Water will move from side (A) to side (B) if a pressure lower than osmotic pressure is applied on piston (B).

(2) Water will move from side (B) to side (A) if a pressure greater than osmotic pressure is applied on piston (B).

(3) Water will move from side (B) to side (A) if a pressure equal to osmotic pressure is applied on piston (B)

(4) Water will move from side (A) to side (B) if a pressure equal to osmotic pressure is applied on piston (A)

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NEET-CHEMISTRY **ELP NO.-10** **SOLUTION**

1. We have three aqueous solutions of CH_3COOH labelled as 'A', 'B' and 'C' with concentration 0.1M, 0.01M and 0.001M, respectively. The value of van't Hoff factor for these solutions will be in the order .....

(1) $i_A < i_B < i_C$ (2) $i_A > i_B > i_C$ (3) $i_A = i_B = i_C$ (4) $i_A < i_B > i_C$

2. Relative lowering of vapour pressure is a colligative property because .....

(1) It depends on the concentration of a non electrolyte solute in solution and does not depend on the nature of the solute molecules.

(2) It depends on number of particles of electrolyte solute in solution and does not depend on the nature of the solute particles.

(3) It depends on the concentration of a non electrolyte solute in solution as well as on the nature of the solute molecules.

(4) It depends on the concentration of an electrolyte or nonelectrolyte solute in solution as well as on the nature of solute molecules.

3. Van't Hoff factor i is given by the expression .....

(1) $i = \frac{\text{Normal molar mass}}{\text{Abnormal molar mass}}$ (2) $i = \frac{\text{Abnormal molar mass}}{\text{Normal molar mass}}$

(3) $i = \frac{\text{Observed colligative property}}{\text{Calculated colligative property}}$ (4) $i = \frac{\text{Calculated colligative property}}{\text{Observed colligative property}}$

4. Isotonic solutions have the same .....

(1) Solute (2) Osmotic pressure

(3) Boiling point (4) Freezing point

5. In isotonic solutions .....

(1) Solute and solvent both are same

(2) Osmotic pressure is same

(3) Solute and solvent may or may not be same

(4) Solute is always same solvent may be different

6. Colligative properties are observed when .....

(1) A non volatile solid is dissolved in a volatile liquid.

(2) A non volatile liquid is dissolved in another volatile liquid.

(3) A gas is dissolved in non volatile liquid.

(4) A volatile liquid is dissolved in another volatile liquid.

7. Match the items given in Column I with expressions given in Column II.

	Column I		Column II
(i)	Raoult's law	(a)	$\Delta T_f = K_f m$
(ii)	Henry's law	(b)	$\pi = CRT$
(iii)	Elevation of boiling point	(c)	$p = x_1 p_1^o + x_2 p_2^o$
(iv)	Depression in freezing point	(d)	$\Delta T_b = K_b m$
(v)	Osmotic pressure	(e)	$p = K_H.x$

8. **Assertion :** When NaCl is added to water a depression in freezing point is observed.

Reason : The lowering of vapour pressure of a solution causes depression in the freezing point.

(1) Both Assertion & Reason True & the Reason is a correct explanation of the Assertion.

(2) Both Assertion & Reason True but Reason in not a correct explanation of the Assertion.

(3) Assertion is True but the Reason is False.

(4) Both Assertion & Reason are false.

9. **Assertion :** When a solution is separated from the pure solvent by a semipermeable membrane, the solvent molecules pass through it from pure solvent side to the solution side.

Reason : Diffusion of solvent occurs from a region of high concentration solution to a region of low concentration solution.

(1) Both Assertion & Reason True & the Reason is a correct explanation of the Assertion.

(2) Both Assertion & Reason True but Reason in not a correct explanation of the Assertion.

(3) Assertion is True but the Reason is False.

(4) Both Assertion & Reason are false.

10. Match the items given in Column I and Column II.

	Column I		Column II
(i)	Saturated solution	(a)	Solution having same osmotic pressure at a given temperature as that of given solution.
(ii)	Binary solution	(b)	A solution whose osmotic pressure is less than that of another.
(iii)	Isotonic solution	(c)	A solution whose osmotic pressure is more than that of another.
(iv)	Hypotonic solution	(d)	A solution which contains maximum amount of solute that can be dissolved in a given amount of solvent at a given temperature.
(v)	Solid solution	(e)	A solution whose osmotic pressure is more than that of another.
(vi)	Hypertonic solution	(f)	A solution in solid phase.

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ELP

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NEET-CHEMISTRY **ELP NO.-11** **SOLUTION**

1. The vapour pressure of benzene at 90°C is 1020 torr. A solution of 5 g of a solute in 58.5 g benzene has vapour pressure 990 torr. The molecular weight of the solute is?

(1) 220 (2) 300 (3) 420 (4) 120

2. A 5% (w/V) solution of cane sugar is isotonic with 0.877% (w/V) solution of unknown solute. Find out molecular weight of unknown solute.

(1) 60 (2) 80 (3) 90 (4) 75

3. 0.15 g of a substance dissolved in 15 g of solvent boiled at a temperature higher by 0.216°C than that of the pure solvent. What is the molar mass of the substance. [K_b for solvent = 2.16°Cm^{-1}]

(1) 150 (2) 75 (3) 120 (4) 100

4. The rise in boiling point of a solution containing 1.8 g glucose in 100 g of a solvent is 0.1°C. The molal elevation constant (°C m^{-1}) of the liquid is:

(1) 3 (2) 2 (3) 1 (4) 4

5. If freezing point of a solution prepared from 1.25 g of a non electrolyte and 20 g of water is 271.9 K, the molar mass of the solute will be

(1) 110 (2) 105.6 (3) 120 (4) 220

6. Molal depression constant for water is 1.86°Cm^{-1}. The freezing point of a 0.05 molal solution of a non electrolyte in water is:

(1) -0.093 °C (2) -0.085 °C (3) -0.078 °C (4) -0.058 °C

7. A cane sugar solution has an osmotic pressure of 2.46 atm at 300 K. What is the strength of the solution.

(1) 0.1 M (2) 0.2 M (3) 0.7 M (4) 0.4 M

8. What is the osmotic pressure of 12% solution of cane sugar (molecular weight 342) at 17°C.

(1) 9.5 atm (2) 8.35 atm (3) 6.54 atm (4) 10.3 atm

9. A solution containing 8.6 g urea in one litre was found to be isotonic with 0.5% (weight/volume) solution of an organic, non-volatile solute. Calculate molar mass organic compound.

(1) 45.3 (2) 34.9 (3) 50.5 (4) 90.4

10. An example of colligative property

(1) Freezing point (2) Boiling point (3) Vapour pressure (4) Osmotic pressure

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ELP

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NEET-CHEMISTRY **ELP NO.-12** **SOLUTION**

1. The freezing point order of the solution of glucose is

(1) 10% > 3%> 2%> 1% (2) 1% > 2% > 3% > 10%

(3) 1% > 3% > 10% > 2% (4) 10% > 1% > 3% > 2%

2. In cold countries, ethylene glycol is added to water in the radiators of cars during winters. It result in reducing.

(1) Viscosity (2) Specific heat (3) Freezing point (4) Boiling point

3. Calculate the molal depression constant of a solvent, which has freezing point 16.6°C and latent heat of fusion 180.75 Jg^{-1}.

(1) 2.68 (2) 3.86 (3) 4.68 (4) 2.86

4. The osmotic pressure of a solution at 0°C is 4 atm. What will be its osmotic pressure at 546 K under similar condition?

(1) 4 atm (2) 2 atm (3) 8 atm (4) 1 atm

5. A 5% solution of anhydrous $CaCl_2$ at 0°C developed 15 atm osmotic pressure. What is the degree of dissociation of $CaCl_2$?

(1) 24.3% (2) 48.3% (3) 55.4% (4) 40.5%

6. Calculate the osmotic pressure of 20% (w/Vol.) anhydrous $CaCl_2$ solution at 0°C assuming 100% ionization.

(1) 160.5 atm (2) 192.3 atm (3) 152.3 atm (4) 121.1 atm

7. Calculate the percentage degree of dissociation of an electrolyte AB_2(normal molar mass = 164) in H_2O if observed molar mass is 65.6.

(1) 50% (2) 25% (3) 75% (4) None

8. Which of the following solution will have highest freezing point.

(1) 1 M urea (2) 1M Na_2SO_4 (3) 1M NaCl (4) 1M $Al_2(SO_4)_3$

9. A 1.17% solution of NaCl is isotonic with 7.2% solution of glucose calculate the value i of NaCl.

(1) 1 (2) 2 (3) 3 (4) 4

10. Van't hoff factor of Hg_2Cl_2 in is its aqueous solution will be (Hg_2Cl_2 is 80% ionized in the solution).

(1) 1.6 (2) 2.6 (3) 3.6 (4) 4.6

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ELP

Educator Led Practice

NEET-CHEMISTRY | **ELP NO.- 1** | **ELECTROCHEMISTRY**

1. The resistance of a 1N solution of salt is 50 Ω. Calculate the equivalent conductance of the solution, if the two platinum electrodes in solution are 2.1 cm apart and each having an area of 4.2cm^2.

(1) 20 Ω^{-1} cm^2 eq^{-1} (2) 10 Ω^{-1} cm^2 eq^{-1}

(3) 30 Ω^{-1} cm^2 eq^{-1} (4) 40 Ω^{-1} cm^2 eq^{-1}

2. Which of the following have maximum molar conductivity.

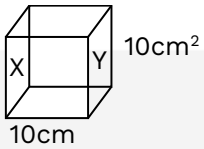
(i) 0.08 M solution and its specific conductivity is 2×10^{-2} Ω^{-1} cm^{-1}.

(ii) 0.1 M solution and its resistivity is 50 Ω cm.

(1) (i) (2) (ii)

(3) Both have same molar conductivity (4) None

3. The conductance of a salt solution (AB) measured by two parallel electrodes of area 100 cm^2 separated by 10 cm was found to be 0.0001 Ω^{-1}. If volume enclosed between two electrodes contain 0.5 mol of salt. What is the molar conductivity (Scm^2 mol^{-1}) of salt at same concentration.



(1) 0.001 (2) 0.02 (3) 2×10^{-5} (4) None of these

4. Calculate Λ_m^∞ of oxalic acid, given that

Λ_{eq}^∞ $Na_2C_2O_4$ = 400 Ω^{-1} cm^2 eq^{-1}

Λ_m^∞ H_2SO_4 = 700 Ω^{-1} cm^2 mol^{-1}

Λ_{eq}^∞ Na_2SO_4 = 450 Ω^{-1} cm^2 eq^{-1}

(1) 600 Ω^{-1} cm^2 mol^{-1} (2) 800 Ω^{-1} cm^2 mol^{-1}

(3) 900 Ω^{-1} cm^2 mol^{-1} (4) 100 Ω^{-1} cm^2 mol^{-1}

5. Equal volumes of 0.015 M CH_3COOH & 0.015 M NaOH are mixed together. What would be the molar conductivity of mixture if conductivity of CH_3COONa is 6.3×10^{-4} S cm^{-1}.

(1) 8.4 S cm^2 mol^{-1} (2) 84 S cm^2 mol^{-1}

(3) 4.2 S cm^2 mol^{-1} (4) 42 S cm^2 mol^{-1}

6. The dissociation constant of n-butyric acid is 1.6×10^{-5} and the molar conductivity at infinite dilution is 380×10^{-4} S m^2 mol^{-1}. The specific conductance of the 0.01 M acid solution is

(1) 1.52×10^{-5} S m^{-1}
(2) 1.52×10^{-2} S m^{-1}
(3) 1.52×10^{-3} S m^{-1}
(4) None

7. The resistance of 1 N solution of CH_3COOH is 250 Ω, when measured in a cell of cell constant 1.15 cm^{-1}. The equivalent conductance will be.

(1) 4.6 Ω^{-1} cm^2 eq^{-1}
(2) 9.2 Ω^{-1} cm^2 eq^{-1}
(3) 18.4 Ω^{-1} cm^2 eq^{-1}
(4) 0.023 Ω^{-1} cm^2 eq^{-1}

8. The specific conductivity of N/10 KCl solution at 20°C is 0.012 Ω^{-1} cm^{-1} and the resistance of the cell containing this solution at 20°C is 56 Ω. The cell constant is

(1) 4.616 cm^{-1}
(2) 0.672 cm^{-1}
(3) 2.173 cm^{-1}
(4) 3.324 cm^{-1}

9. Molar conductances of $BaCl_2$, H_2SO_4 and HCl at infinite dilutions are x_1, x_2 and x_3, respectively. Equivalent conductance of $BaSO_4$ at infinite dilution will be:

(1) $\frac{[x_1 + x_2 - x_3]}{2}$
(2) $\frac{[x_1 - x_2 - x_3]}{2}$
(3) $2(x_1 + x_2 - x_3)$
(4) $\frac{[x_1 + x_2 - 2x_3]}{2}$

10. The ionization constant of a weak electrolyte is 25×10^{-6} while the equivalent conductance of its 0.01 M solution is 19.6 S cm^2 eq^{-1}. The equivalent conductance of the electrolyte at infinite dilution (in S cm^2 eq^{-1}) will be

(1) 39.2
(2) 78.4
(3) 392
(4) 196

11. Which has maximum conductivity:

(1) $[Cr(NH_3)_3 Cl_3]$
(2) $[Cr(NH_3)_4 Cl_2]Cl$
(3) $[Cr(NH_3)_5Cl]Cl_2$
(4) $[Cr(NH_3)_6]Cl_3$

12. The conductivity of a saturated solution of Ag_3PO_4 is 9×10^{-6} S m^{-1} and its equivalent conductivity is 1.50×10^{-4} S m^2 eq^{-1}. The Ksp of Ag_3PO_4 is

(1) 4.32×10^{-18}
(2) 1.8×10^{-9}
(3) 8.64×10^{-13}
(4) None of these

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ELP

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NEET-CHEMISTRY | **ELP NO.- 2** | **ELECTROCHEMISTRY**

1. Which of the statements about solutions of electrolytes is not correct?
(1) Conductivity of solutions depends upon size of ions.
(2) Conductivity depends upon viscosity of solution.
(3) Conductivity does not depend upon solvation of ions present in solution.
(4) Conductivity of solution increases with temperature.

2. The cell constant of a conductivity cell
(1) Changes with change of electrolyte.
(2) Changes with change of concentration of electrolyte
(3) Changes with temperature of electrolyte
(4) Remains constant for a cell.

3. $\Lambda^0_{m(NH_4OH)}$ is equal to
(1) $\Lambda^0_{m(NH_4OH)} + \Lambda^0_{m(NH_4Cl)} - \Lambda^0_{(HCl)}$
(2) $\Lambda^0_{m(NH_4Cl)} + \Lambda^0_{m(NaOH)} - \Lambda^0_{(NaCl)}$
(3) $\Lambda^0_{m(NH_4Cl)} + \Lambda^0_{m(NaCl)} - \Lambda^0_{(NaOH)}$
(4) $\Lambda^0_{m(NaOH)} + \Lambda^0_{m(NaCl)} - \Lambda^0_{(NH_4Cl)}$

4. Conductivity of an electrolytic solution depends on
(1) Nature of electrolyte
(2) Concentration of electrolyte
(3) Power of AC source.
(4) Distance between the electrodes

5. $\Lambda^0_m(H_2O)$ is not equal to
(1) $\Lambda^0_{m(HCl)} + \Lambda^0_{m(NaOH)} - \Lambda^0_{m\ (NaCl)}$
(2) $\Lambda^0_{m(HNO_3)} + \Lambda^0_{m(NaNO_3)} - \Lambda^0_{m\ (NaOH)}$
(3) $\Lambda^0_{(HNO_3)} + \Lambda^0_{m(NaOH)} - \Lambda^0_{m\ (NaNO_3)}$
(4) $\Lambda^0_{m\ (NH_4OH)} + \Lambda^0_{m(HCl)} - \Lambda^0_{m\ (NH_4Cl)}$

6. Conductivity k, is equal to
(1) $\frac{1}{R}\frac{\ell}{A}$
(2) $\frac{G^*}{R}$
(3) Λ_m
(4) $\frac{\ell}{A}$

7. Molar conductivity of ionic solution depends on
(1) Temperature
(2) Distance between electrodes.
(3) Concentration of electrolytes in solution.
(4) Surface area of electrodes.

8. Match the terms given in column I with the units given in column II.

Column I	**Column II**
(i) $\wedge_m$	(a) S cm^{-1}
(ii) E_{cell}	(b) m^{-1}
(iii) k	(c) S cm^2 mol^{-1}
(iv) G^*	(d) V

(1) (i) → (c), (ii) → (d), (iii) → (a) (iv) → (b)
(2) (i) → (b), (ii) → (c), (iii) → (a), (e) (iv) → (d)
(3) (i) → (d), (ii) → (b), (iii) → (c), (iv) → (a)
(4) (i) → (a), (ii) → (d), (iii) → (c), (iv) → (b)

9. Match the terms given in column I with the items given in column II.

Column I	**Column II**
(i) $\wedge_m$	(a) Intensive property
(ii) E^o_{cell}	(b) Depends on number of ions/volume
(iii) k	(c) Extensive property
(iv) $\Delta_r G_{cell}$	(d) Increases with dilution

(1) (i) → (c), (ii) → (d), (iii) → (a) (iv) → (b)
(2) (i) → (b), (ii) → (c), (iii) → (a), (e) (iv) → (d)
(3) (i) → (d), (ii) → (a), (iii) → (b), (iv) → (c)
(4) (i) → (a), (ii) → (d), (iii) → (c), (iv) → (b)

10. Match the items of column I and column II.

Column I	**Column II**
(i) k	(a) I × t
(ii) Λ_m	(b) Λ_m / Λ^0_m
(iii) α	(c) $\frac{k \times 1000}{M}$
(iv) Q	(d) $\frac{G^*}{R}$

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

11. **Assertion:** Conductivity of all electrolytes decreases on dilution.

Reason: On dilution number of ions per unit volume decreases.

(1) Both Assertion & Reason True & the Reason is a correct explanation of the Assertion.
(2) Both Assertion & Reason True but Reason in not a correct explanation of the Assertion.
(3) Assertion is True but the Reason is False.
(4) Both Assertion & Reason are False.

12. **Assertion:** Λ_m for weak electrolytes shows a sharp increase when the electrolytic solution is diluted.

Reason: For weak electrolytes degree of dissociation increases with dilution of solution.

(1) Both Assertion & Reason True & the Reason is a correct explanation of the Assertion.
(2) Both Assertion & Reason True but Reason in not a correct explanation of the Assertion.
(3) Assertion is True but the Reason is False.
(4) Both Assertion & Reason are False.

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NEET-CHEMISTRY | **ELP NO.- 3** | **ELECTROCHEMISTRY**

1. Write cell representation for the following redox reaction,

$Sn^{2+}(aq) + 2Ag^{+}(aq) \rightarrow Sn^{4+}(aq) + 2Ag(s)$.

(1) $Pt \,||\, Sn^{2+}(aq), Sn^{4+} \,||\, Ag^{+}(aq) \,|\, Ag(s)$

(2) $Ag^{+}(aq) \,|\, Ag(s) \,||\, Sn^{4+}, Sn^{2+}(aq) \,|\, Pt$

(3) $Pt \,|\, Sn^{4+} \,|\, Sn^{2+} \,||\, Ag^{+}(aq).Ag(s)$

(4) $Pt \,|\, Sn^{2+} \,|\, Sn^{4+} \,||\, Ag(s) \,|\, Ag^{+}(aq)$

2. Calculate the EMF of a Daniel cell when the concentration of $ZnSO_4$ and $CuSO_4$ are 0.001 M and 0.1 M respectively. The standard EMG of the cell is 1.1V.

(1) 1.90 V (2) 1.159 V (3) 1.32 V (4) 2.4 V

3. Calculate E^0 and E for the cell $Sn|Sn^{2+}$ (1M) || Pb^{2+} (10^{-3}M) | Pb, E^0 (Sn^{2+} | Sn) = −0.14V, E^0 (Pb^{2+} | Pb) = −0.13V. Is cell representation correct?

(1) $E^0_{Cell} = 0.01V$, $E_{Cell} = -0.08\,V$, Cell will work

(2) $E^0_{Cell} = 0.08\,V$, $E_{Cell} = 0.01V$, Cell will work

(3) $E^0_{Cell} = -0.08\,V$, $E_{Cell} = 0.01V$, Cell will not work

(4) $E^0_{Cell} = 0.01V$, $E_{Cell} = -0.08\,V$, Cell will not work

4. Calculate the equilibrium constant for the reaction $Fe^{2+} + Ce^{4+} \rightleftharpoons Fe^{3+} + Ce^{3+}$,

$\left[\text{Given}: E^0_{Ce^{4+}/Ce^{3+}} = 1.44\ V; E^0_{Fe^{3+}/Fe^{2+}} = 0.68V\right]$

Take $\frac{2.303RT}{F}$ = 0.06 at 25°C, log 4.68 = 0.67.

(1) 4.64×10^{12} (2) 4.64×10^{14} (3) 5.3×10^{14} (4) 5.3×10^{12}

5. The 0.1 M copper sulphate solution in which copper electrode is dipped at 25°C. Calculate the electrode potential of copper electrode [Given $E^0_{Cu2+/Cu}$ = 0.34V]

(1) 0.29 V (2) 0.31 V (3) 0.38 (4) 0.42 V

6. The EMF of the cell Cr | Cr^{+3} (0.1M) || Fe^{2+} (0.01M)

$\left(\text{Given} E^\circ_{Cr^{3+}/Cr} = -0.75V, E^\circ_{Fe^{2+}/Fe} = -0.45V\right)$.

(1) 0.19 V (2) 0.Ω V (3) 0.26 V (4) 0.30 V

7. For the cellPt | H_2 (0.4 atm) | H^+ (pH = 1) || H^+ (pH = 2) | H_2 (0.1 atm) | Pt. The measured potential at 25°C is

(1) −0.1 V (2) −0.5 V (3) −0.041 V (4) −0.030 V

8. If $E°_{Au^+/Au}$ is 1.69 V & $E°_{Au^{3+}/Au}$ is 1.40 V, then $E°_{Au^{3+}/Au^+}$ will be.

(1) 1.19 V (2) 2.945 V (3) 1.255 V (4) none

9. Calculate $E°_{Cell}$ for following cell

$Zn(s) \mid Zn^{+2}_{(aq.)} \parallel Ag^+_{(aq)} \mid Ag(s)$ $E°_{Zn^{+2}/Zn} = -0.76V; E°_{Ag^+/Ag} = 0.80V$.

(1) 0.04 V (2) −1.56 V (3) 1.56 V (4) 0.84 V

10. Standard EMF of a galvanic cell involving $2e^-$ transfer is found to be 0.591 V at 25°C. Calculate equilibrium constant for cell reaction

(1) 20^{10} (2) 10^{20} (3) 10^{200} (4) 200^{10}

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NEET-CHEMISTRY | **ELP NO.- 4** | **ELECTROCHEMISTRY**

1. Calculate cell potential at 298 K for following galvanic cell

$Cd(s) \mid Cd^{2+}(aq.)\ (0.1M) \parallel H^{+}_{(aq.)}\ (0.1M) \mid H_2\ (g,\ 0.5\ atm) \mid Pt.$

$E^{\circ}_{Cd^{+2}/Cd} = -0.40V$

(1) 0.38 (2) −0.38 (3) 0.36 (4) −0.36

2. Calculate E°_{Cell} of following galvanic cell

$Ca(s) \mid Ca^{+2}_{(aq.)} \parallel Fe^{2+}_{(aq.)} \mid Fe\ (s)$

$E^{\circ}_{Ca^{+2}/Ca} = -2.87V;\ E^{\circ}_{Fe/Fe^{+2}} = 0.41V$.

(1) 2.46 V (2) −2.46 V (3) 3.28 V (4) −3.28 V

3. Given $E^{\circ}_{Ag^{+}/Ag} = 0.80V,\ E^{\circ}_{Mg^{2+}/Mg} = -2.37V, E^{\circ}_{Cu^{2+}/Cu} = 0.34V,\ E^{\circ}_{Hg^{2+}/Hg} = 0.79V,$.

Which of the following statement is correct

(1) $AgNO_3$ can be stored in copper vessel (2) $Mg(NO_3)_2$ can not be stored in copper vessel

(3) $CuCl_2$ can be stored in silver vessel (4) $HgCl_2$ can be stored in copper vessel

4. $1/2H_2(g) + AgCl(s) \longrightarrow H^{+}(aq) + Cl^{-}(aq) + Ag(s)$ occurs in the galvanic cell.

(1) Ag/AgCl(s) | KCl(sol) || $AgNO_3$ (sol) | Ag (2) Pt/H_2(g) | HCl(sol) || $AgNO_3$ (sol) | Ag

(3) Pt/H_2(g) | HCl(sol) || Cl^{-} | AgCl (sol) | Ag (4) Pt/H_2(g) | KCl(sol) || AgCl (sol) | Ag

5. Which cell will measure standard electrode potential of copper electrode.

(1) Pt(s) | H_2 (g, 0.1 bar) | H^{+} (aq., 1M) || Cu^{2+} (aq.,1M) | Cu

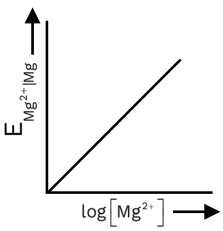
(2) Pt(s) | H_2 (g, 1 bar) | H^{+} (aq., 1M) || Cu^{2+} (aq.,2M) | Cu

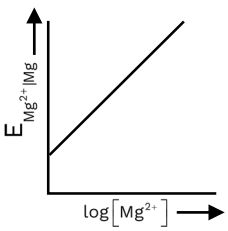
(3) Pt(s) | H_2 (g, 1 bar) | H^{+} (aq., 1M) || Cu^{2+} (aq.,1M) | Cu

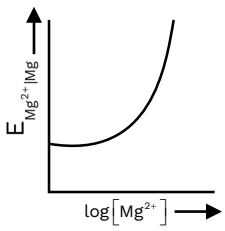
(4) Pt(s) | H_2 (g, 1 bar) | H^{+} (aq., 0.1M) || Cu^{2+} (aq.,1M) | Cu

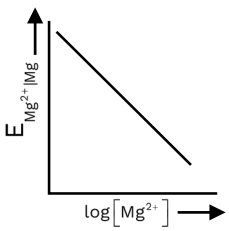
6. Electrode potential for Mg electrode varies according to the equation.

$E_{Mg^{2+}|Mg} = E^{\Theta}_{Mg^{2+}|Mg} - \frac{0.059}{2}\log\frac{1}{[Mg^{2+}]}$. The graph of $E_{Mg^{2+}|Mg}$ vs $\log[Mg^{2+}]$ is.

(1) 

(2) 

(3) 

(4) 

7. Which of the following statement is correct ?

(1) E_{cell} and $\Delta_r G$ of cell reaction both are extensive properties.

(2) E_{cell} and $\Delta_r G$ of cell reaction both are intensive properties.

(3) E_{cell} is an intensive property while Δ_r G of cell reaction is an extensive property.

(4) E_{cell} is an extensive property while Δ_r G of cell reaction is an intensive property.

8. The difference between the electrode potentials of two electrodes when no current is drawn through the cell is called_____.

(1) Cell potential (2) Cell emf

(3) Potential difference (4) Cell voltage

9. In the electrolysis of aqueous sodium chloride solution which of the half cell reaction will occur at anode?

(1) $Na^+(aq) + e^- \longrightarrow Na(s); \quad E^{\Theta}_{cell} = -2.71V$

(2) $2H_2O(l) \longrightarrow O_2(g) + 4H^+(aq) + 4e^-; \quad E^{\Theta}_{cell} = 1.23V$

(3) $H^+(aq) + e^- \longrightarrow \frac{1}{2}H_2(g); \quad E^{\Theta}_{cell} = 0.0V$

(4) $Cl^-(aq) \longrightarrow \frac{1}{2}Cl_2(g) + e^-; \quad E^{\Theta}_{cell} = 1.36V$

10. E^{Θ}_{cell} for some half cell reactions are given below. On the basis of these mark the correct answer.

(a) $H^+(aq) + e^- \longrightarrow \frac{1}{2}H_2(g); \quad E^{\Theta}_{cell} = 0.0V$

(b) $2H_2O(l) \longrightarrow O_2(g) + 4H^+(aq) + 4e^-; \quad E^{\Theta}_{cell} = 1.23V$

(c) $2SO_4^{2-}(aq) \longrightarrow S_2O_8^{2-}(g) + 2e^-; \quad E^{\Theta}_{cell} = 1.96V$

(A) In dilute sulphuric acid solution, hydrogen will be reduced at cathode

(B) In concentrated suphuric acid solution, water will be oxidized at anode.

(C) In dilute sulphuric acid solution, water will be oxidized at anode.

(D) In dilute suphuric acid solution, SO_4^{2-} ion will be oxidized to tetrathionate ion at anode.

(1) A, C (B) A, B (3) B, C (4) B, C, D

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NEET-CHEMISTRY | **ELP NO.- 5** | **ELECTROCHEMISTRY**

1. Using the data given below find out the strongest reducing agent.

$E^{\Theta}_{Cr_2O_7^{2-}/Cr^{3+}} = 1.33\,V$ $E^{\Theta}_{Cl_2/Cl^-} = 1.36\,V$

$E^{\Theta}_{MnO_4^-/Mn^{2+}} = 1.51\,V$ $E^{\Theta}_{Cr^{3+}/Cr} = -0.74\,V$

(1) Cl^- (2) Cr (3) Cr^{3+} (4) Mn^{2+}

2. Using the data given below find out which of the following is the strongest oxidizing agent.

$E^{\Theta}_{Cr_2O_7^{2-}/Cr^{3+}} = 1.33\,V$ $E^{\Theta}_{Cl_2/Cl^-} = 1.36\,V$

$E^{\Theta}_{MnO_4^-/Mn^{2+}} = 1.51\,V$ $E^{\Theta}_{Cr^{3+}/Cr} = -0.74\,V$

(1) Cl^- (2) Mn^{2+} (3) MnO_4^- (4) Cr^{3+}

3. Using the data given below find out in which option the order of reducing power is correct.

$E^{\Theta}_{Cr_2O_7^{2-}/Cr^{3+}} = 1.33\,V$ $E^{\Theta}_{Cl_2/Cl^-} = 1.36\,V$

$E^{\Theta}_{MnO_4^-/Mn^{2+}} = 1.51\,V$ $E^{\Theta}_{Cr^{3+}/Cr} = -0.74\,V$

(1) $Cr^{3+} < Cl^- < Mn^{2+} < Cr$ (2) $Mn^{2+} < Cl^- < Cr^{3+} < Cr$

(3) $Cr^{3+} < Cl^- < Cr_2O_7^{2-} < MnO_4^-$ (4) $Mn^{2+} < Cr^{3+} < Cl^- < Cr$

4. Use the data given below and find out the most stable ion in its reduced form.

$E^{\Theta}_{Cr_2O_7^{2-}/Cr^{3+}} = 1.33\,V$ $E^{\Theta}_{Cl_2/Cl^-} = 1.36\,V$

$E^{\Theta}_{MnO_4^-/Mn^{2+}} = 1.51\,V$ $E^{\Theta}_{Cr^{3+}/Cr} = -0.74\,V$

(1) Cl^- (2) Cr^{3+} (3) Cr (4) Mn^{2+}

5. Use the data given below find out the most stable oxidized species.

$E^{\Theta}_{Cr_2O_7^{2-}/Cr^{3+}} = 1.33\,V$ $E^{\Theta}_{Cl_2/Cl^-} = 1.36\,V$

$E^{\Theta}_{MnO_4^-/Mn^{2+}} = 1.51\,V$ $E^{\Theta}_{Cr^{3+}/Cr} = -0.74\,V$

(1) Cr^{3+} (2) MnO_4^- (3) $Cr_2O_7^{2-}$ (4) Mn^{2+}

6. $E^{\Theta}_{Cell} = 1.1$ V for Daniel cell. Which of the following expressions are correct description of state of equilibrium in this cell?

(A) $1.1 = K_c$ (B) $\frac{2.303RT}{2F}\log K_c = 1.1$

(C) $\log K_c = \frac{2.2}{0.059}$ (D) $\log K_c = 1.1$

(1) B, C (2) A, B (3) C, D (4) A, D

7. For the given cell, $Mg \mid Mg^{2+} \parallel Cu^{2+} \mid Cu$.

(A) Mg is cathode

(B) Cu is cathode

(C) The cell reaction is $Mg + Cu^{2+} \longrightarrow Mg^{2+} + Cu$

(D) Cu is the oxidizing agent

(1) A, C (2) B, C (3) A, C, D (4) A, B

8. Match the items of column I and Column II on the basis of data given below.

$E^{\Theta}_{F_2/F^-} = 2.87V, E^{\Theta}_{Li^+/Li} = -3.5V, E^{\Theta}_{Au^{3+}/Au} = 1.4V, E^{\Theta}_{Br_2/Br^-} = 1.09V$

Column I	**Column II**
(i) F_2	(a) Metal is the strongest reducing agent
(ii) Li	(b) Metal ion which is the weakest oxidizing agent
(iii) Au^{3+}	(c) Non metal which is the best oxidizing agent
(iv) Br^-	(d) Unreactive metal
(v) Au	(e) Anion that can be oxidized by Au^{3+}
(vi) Li^+	(f) Anion which is the weakest reducing
(vii) F^-	(g) Metal ion which is an oxidizing agent

(1) i → c, ii → a, iii → g, iv → e, v → d, vi → b, vii → g, f

(2) i → a, ii → c, iii → g, iv → e, v → d, vi → b, vii → g, f

(3) i → c, ii → g, iii → a, iv → e, v → d, vi → b, vii → g, f

(4) i → c, ii → a, iii → e, iv → g, v → d, vi → b, vii → g, f

9. **Assertion:** Cu is less reactive than hydrogen.

Reason: $E^{\Theta}_{Cu^{2+}/Cu}$ is negative.

(1) Both assertion and reason are true and the reason is the correct explanation of assertion.

(2) Both assertion and reason are true and the reason is not the correct explanation of assertion.

(3) Assertion is true but the reason is false.

(4) Both assertion and reason are false.

(5) Assertion is false but reason is true.

10. **Assertion:** E_{cell} should have a positive value for the cell to function.

Reason: $E_{cathode} < E_{anode}$.

(1) Both assertion and reason are true and the reason is the correct explanation of assertion.

(2) Both assertion and reason are true and the reason is not the correct explanation of assertion.

(3) Assertion is true but the reason is false.

(4) Both assertion and reason are false.

(5) Assertion is false but reason is true.

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NEET-CHEMISTRY **ELP NO.- 6** **ELECTROCHEMISTRY**

1. **Assertion:** Current stops flowing when $E_{cell} = 0$.

Reason: Equilibrium of the cell reaction is attained.

(1) Both assertion and reason are true and the reason is the correct explanation of assertion.

(2) Both assertion and reason are true and the reason is not the correct explanation of assertion.

(3) Assertion is true but the reason is false.

(4) Both assertion and reason are false.

(5) Assertion is false but reason is true.

2. **Assertion:** $E_{Ag^+/Ag}$ increases with increase in concentration of Ag^+ ions.

Reason: $E_{Ag^+/Ag}$ has a positive value.

(1) Both assertion and reason are true and the reason is the correct explanation of assertion.

(2) Both assertion and reason are true and the reason is not the correct explanation of assertion.

(3) Assertion is true but the reason is false.

(4) Both assertion and reason are false.

(5) Assertion is false but reason is true.

3. **Assertion:** Copper sulphate can be stored in zinc vessel.

Reason: Zinc is less reactive than copper.

(1) Both assertion and reason are true and the reason is the correct explanation of assertion.

(2) Both assertion and reason are true and the reason is not the correct explanation of assertion.

(3) Assertion is true but the reason is false.

(4) Both assertion and reason are false.

(5) Assertion is false but reason is true.

4. Which of the following statement is not correct about an inert electrode in a cell?

(1) It does not participate in the cell reaction.

(2) It provides surface either for oxidation or for reduction reaction.

(3) It provides surface for conduction of electrons.

(4) It provides surface for redox reaction.

5. An electrochemical cell can behave like an electrolytic cell when _____.

(1) $E_{cell} = 0$ (2) $E_{cell} > E_{ext}$ (3) $E_{ext} > E_{cell}$ (4) $E_{cell} = E_{ext}$

6. The quantity of charge required to obtain one mole of aluminium from Al_2O_3 is _____.

(1) 1F (2) 6F (3) 3F (4) 2F

7. What will happen during the electrolysis of aqueous solution of $CuSO_4$ by using platinum electrodes?

(1) Copper will deposit at cathode.
(2) Copper will deposit at anode.
(3) Oxygen will be released at anode.
(4) Copper will dissolve at anode.

8. What will happen during the electrolysis of aqueous solution of $CuSO_4$ in the presence of Cu electrodes?

(1) Copper will deposit at cathode.
(2) Copper will dissolve at anode.
(3) Oxygen will be released at anode.
(4) Copper will deposit at anode.

9. **Assertion:** Electrolysis of NaCl solution gives chlorine at anode instead of O_2.

Reason: Formation of oxygen at anode requires overvoltage.

(1) Both assertion and reason are true and the reason is the correct explanation of assertion.
(2) Both assertion and reason are true and the reason is not the correct explanation of assertion.
(3) Assertion is true but the reason is false.
(4) Both assertion and reason are false.
(5) Assertion is false but reason is true.

10. The positive value of the standard electrode potential of Cu^{2+}/Cu indicates that _____.

(1) This redox couple is a stronger reducing agent than the H^+/H_2 couple.
(2) This redox couple is a stronger oxidizing agent than H^+/H_2.
(3) Cu can displace H_2 from acid.
(4) Cu cannot displace H_2 from acid.

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NEET-CHEMISTRY **ELP NO.- 7** **ELECTROCHEMISTRY**

1. How much electric charge is required to oxidise:

(a) 1 mole of H_2O to O_2 (b) 1 mole of FeO to Fe_2O_3?

(1) 1.93×10^5C, 96500C (2) 96500C, 1.93×10^5C

(3) 1.5×10^6C, 96500C (4) 96500C, 2.7×10^9C

2. One mole of electron passes through each of the solution of the solution of $AgNO_3$, $CuSO_4$ and $AlCl_3$ when Ag, Cu and Al are deposited at cathode. The molar ratio of Ag. Cu and Al deposited are

(1) 1 : 1 : 1 (2) 6 : 3 : 2 (3) 6 : 3 : 1 (4) 1 : 3 : 6

3. Exactly 0.4 faraday electric charge is passed through three electrolytic cell in a series, first containing $AgNO_3$. Second $CuSO_4$ and third $FeCl_3$ solution. How many grams of each metal will be deposited assuming only cathodic reaction in each cell.

(1) Ag → 12.7g, Cu → 43.2g, Fe → 7.47g (2) Ag → 43.2g, Cu → 12.7g, Fe → 7.47g

(3) Ag → 51.4g, Cu → 71.2g, Fe → 3.42g (4) Ag → 3.42g, Cu → 7.2g, Fe → 4.5g

4. An electric current of 100 ampere is passed through a molten liquid of sodium chloride for 5 hours. Calculate the volume of chlorine gas liberated at the electrode at NTP.

(1) 195.5L (2) 186.7L (3) 220.5L (4) 208.91L

5. How long a current of 2 A has to be passed through a solution of $AgNO_3$ to coat a metal surface of 80 cm^2 with 5 μm thick layer ? Density of silver = 10.8 g/cm^3.

(1) 184 sec (2) 214 sec (3) 193 sec (4) 196 sec

6. 1 litre of 1 M $CuSO_4$ solution is electrolyzed. After passing 2 F charge, the molarity of $CuSO_4$ will be

(1) M/2 (2) M/4 (3) M (4) zero

7. Same quantity of current is passed through molten NaCl and molten Al_2O_3. If 4.6 g of Na was deposited in one cell, the mass of Al deposited in other cell is :-

(1) 0.9 g (2) 1.8 g (3) 2.7 g (4) 3.6 g

8. A certain current liberates 0.5 g of hydrogen in 2 hr. How many grams of copper can be deposited by the same current flowing for the same time in a copper sulphate solution?

(1) 12.7 g (2) 15.9 g (3) 31.8 g (4) 63.5g

9. A quantity of electric charge that brings about the deposition of 4.5 g Al from Al^{+3} at the cathode will also produce the following volume (STP) of H_2 (g) from H^+ at the cathode

(1) 44.8 L (2) 22.4 L (3) 11.2 L (4) 5.6 L

10. A current of 9.65 ampere is passed through the aqueous solution of NaCl using suitable electrodes for 1000 s. The amount of NaOH formed during electrolysis is

(1) 2.0 g (2) 4.0 g (3) 6.0 g (4) 8.0 g

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NEET-CHEMISTRY **ELP NO.- 8** **ELECTROCHEMISTRY**

1. If 0.224 L of H_2 gas is formed at the cathode, the volume of O_2 gas formed at the anode under identical conditions, is

(1) 0.224 L (2) 0.448 L (3) 0.112 L (4) 1.12 L

2. While charging the lead storage battery _____.

(1) $PbSO_4$ anode is reduced to Pb.
(2) $PbSO_4$ cathode is reduced to Pb.
(3) $PbSO_4$ cathode is oxidized to Pb.
(4) $PbSO_4$ anode is oxidized to PbO_2.

3. Match the items of Column I and Column II.

Column I	**Column II**
(i) Lead storage battery	(a) Maximum efficiency
(ii) Mercury cell	(b) Prevented by galvanization
(iii) Fuel cell	(c) Gives steady potential
(iv) Rusting	(d) Pb is anode, PbO_2 is cathode

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

4. Match the items of Column I and Column II.

Column I	**Column II**
(1) Lechlanche cell	(a) Cell reaction $2H_2 + O_2 \rightarrow 2H_2O$
(2) Ni-Cd cell	(b) Does not involve any ion in solution and is used in hearing aids.
(3) Fuel cell	(c) Rechargeable
(4) Mercury cell	(d) Reaction at anode, $Zn \rightarrow Zn^{2+} + 2e^-$
	(e) Converts energy of combustion into electrical energy

(1) (i) → (d), (ii) → (c), (iii) → (a), (e) (iv) → (b)
(2) (i) → (b), (ii) → (c), (iii) → (a), (e) (iv) → (d)
(3) (i) → (c), (ii) → (d), (iii) → (a), (e) (iv) → (b)
(4) (i) → (a), (e) (ii) → (d), (iii) → (c), (iv) → (b)

5. **Assertion:** Mercury cell does not give steady potential.
Reason: In the cell reaction, ions are not involved in solution

(1) Both assertion and reason are true and the reason is the correct explanation of assertion.
(2) Both assertion and reason are true and the reason is not the correct explanation of assertion.
(3) Assertion is true but the reason is false.
(4) Both assertion and reason are false.
(5) Assertion is false but reason is true.

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NEET–CHEMISTRY **ELP NO.–1** **CHEMICAL KINETICS**

1. The concentration of a reactant decreases from 0.2 M to 0.1 M in 10 minutes. The rate of the reaction is:

(1) 0.01 M (2) 10^{-2} mol min^{-1} (3) 0.01 mol dm^{-3} min^{-1} (4) 1 mol dm^{-3} min^{-1}

2. In the reaction, A + 2B → 6C + 2D if $-\frac{\Delta[A]}{\Delta t}$ is 2.6×10^{-2} Ms^{-1}, what will be the value of $-\frac{\Delta[B]}{\Delta t}$?

(1) 8.5×10^{-2} Ms^{-1} (2) 2.6×10^{-2} Ms^{-1} (3) 5.2×10^{-2} Ms^{-1} (4) 7.5×10^{-2} Ms^{-1}

3. In the following reaction, how is the rate of appearance of the underlined product related to the rate of disappearance of the underlined reactant $\underline{BrO_3^-}(aq)+5Br^-(aq)+6H^+(aq) \rightarrow \underline{3Br_2}(\ell)+3H_2O(aq)$

(1) $(-)\frac{\Delta[BrO_3^-]}{\Delta t}=\frac{\Delta[Br_2]}{\Delta t}$ (2) $(-)\frac{1}{3}\frac{\Delta[BrO_3^-]}{\Delta t}=\frac{\Delta[Br_2]}{\Delta t}$

(3) $(-)\frac{\Delta[BrO_3^-]}{\Delta t}=\frac{1}{3}\frac{\Delta[Br_2]}{\Delta t}$ (4) None of these

4. In a reaction 2A + B → A_2B, the reactant A will disappear at :

(1) Half the rate that B will decrease

(2) The same rate that B will decrease

(3) Twice the rate that B will decrease

(4) The same rate that A_2B will form

5. The term $\left(-\frac{dc}{dt}\right)$ in a rate equation refers to the

(1) Concentration of the reactant

(2) Decrease in concentration of the reactant with time

(3) Increase in concentration of the reactant with time

(4) Velocity constant of the reaction

6. A gaseous hypothetical chemical equation 2A → 4B + C is carried out in a closed vessel. The concentration of B is found to increases by 5×10^{-3} mol/litr in 10 sec. the rate of appearance of B is

(1) 5×10^{-4} mol $lit^{-1}s^{-1}$ (2) 5×10^{-5} mol $lit^{-1}s^{-1}$

(3) 6×10^{-4} mol $lit^{-1}s^{-1}$ (4) 5×10^{-6} mol $lit^{-1}s^{-1}$

7. For the reaction $2N_2O_{5(g)} \rightarrow 4NO_{2(g)} + O_{2(g)}$, if concentration of NO_2 in 100 sec. is increased by 5.2×10^{-3} M. Then rate of reaction will be :

(1) 1.3×10^{-5} M/s (2) 5×10^{-4} M/s (3) 7.6×10^{-4} M/s (4) 2×10^{-3} M/s

8. In the synthesis of ammonia from nitrogen and hydrogen gases. If 6×10^{-2} mole of hydrogen disappears in 10 min the number of moles of ammonia formed in 0.3 min is

(1) 1.8×10^{-2} (2) 1.2×10^{-3} (3) 4×10^{-2} (4) 3.6×10^{-2}

9. For the reaction $N_2O_{5(g)} \rightarrow 2NO_{2(g)} + \frac{1}{2}O_2(g)$, the rate of disappearance of N_2O_5 is given as 6.25×10^{-3} mol $L^{-1}s^{-1}$. The rate of formation of NO_2 and O_2 is given respectively as

(1) 1.25×10^{-2} mol $L^{-1}s^{-1}$ and 6.25×10^{-3} mol $L^{-1}s^{-1}$

(2) 6.25×10^{-3} mol $L^{-1}s^{-1}$ and 6.25×10^{-3} mol $L^{-1}s^{-1}$

(3) 1.25×10^{-2} mol $L^{-1}s^{-1}$ and 3.125×10^{-3} mol $L^{-1}s^{-1}$

(4) 6.25×10^{-2} mol $L^{-1}s^{-1}$ and 6.25×10^{-3} mol $L^{-1}s^{-1}$

10. For the reaction, $2A + B \rightarrow 3C + D$ which of the following **does not** express the reaction rate?

(1) $\frac{d[D]}{dt}$ (2) $-\frac{d[A]}{2dt}$ (3) $\frac{d[C]}{dt}$ (4) $-\frac{d[B]}{dt}$

11. For the reaction: $2N_2O_5 \rightarrow 4NO_2 + O_2$. If the concentration of NO_2 increases by 1.6×10^{-2} M in 4 s. Calculate rate of formation of NO_2, rate of formation of O_2, rate of disappearance of N_2O_5 & rate of reaction respectively.

(1) 4.0×10^{-3} M/s, 1.0×10^{-3} M/s, 2.0×10^{-3} M/s & 1.0×10^{-3} M/s

(2) 8.0×10^{-3} M/s, 4.0×10^{-3} M/s, 2.0×10^{-3} M/s & 2.0×10^{-3} M/s

(3) 2.0×10^{-3} M/s, 2.0×10^{-3} M/s, 2.0×10^{-3} M/s & 3.0×10^{-3} M/s

(4) 1.0×10^{-3} M/s, 1.0×10^{-3} M/s, 2.0×10^{-3} M/s & 1.0×10^{-3} M/s

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NEET–CHEMISTRY **ELP NO.–2** **CHEMICAL KINETICS**

1. The rate of reaction is expressed in different ways as follows:

$$+\frac{1}{2}\frac{d[C]}{dt} = -\frac{1}{3}\frac{d[D]}{dt} = \frac{1}{4}\frac{d[A]}{dt} = -\frac{d[B]}{dt}$$

The reaction is:

(1) $4A + B \rightarrow 2C + 3D$ (2) $B + 3D \rightarrow 4A + 2C$

(3) $A + B \rightarrow C + D$ (4) $B + D \rightarrow A + C$

2. For the reaction $2SO_2(g) + O_2(g) \rightarrow 2SO_3(g)$ under certain conditions of temperature and partial pressure of the reactants, the rate of formation of SO_3 is 0.001 kg h^{-1}. The rate of conversion of O_2 under the same conditions is:

(1) 5×10^{-4} kg/hr (2) 1×10^{-3} kg/hr (3) 4×10^{-4} kg/hr (4) 2×10^{-4} kg/hr

3. $2H_2O \rightarrow 2H_2 + O_2$, during the decomposition of H_2O to give oxygen & hydrogen, 48 g O_2 is formed per minute at a certain point of time. The rate of disappearance of water at this point is.

(1) 0.75 mol min^{-1} (2) 1.5 mol min^{-1} (3) 2.25 mol min^{-1} (4) 3.0 mol min^{-1}

4. For the reaction, $2N_2O_5 \rightarrow 4NO_2 + O_2$ rate of reaction is

(1) $\frac{1}{2}\frac{d}{dt}[N_2O_5]$ (2) $2\frac{d}{dt}[N_2O_5]$ (3) $\frac{1}{4}\frac{d}{dt}[NO_2]$ (4) $4\frac{d}{dt}[NO_2]$

5. For the reaction $2A \longrightarrow B + 3C$; if $-\frac{d[A]}{dt} = k_1[A]^2$; $\frac{d[B]}{dt} = k_2[A]^2$; $\frac{d[C]}{dt} = k_3[A]^2$, the correct relation between k_1, k_2 and k_3 is:

(1) $k_1 = k_2 = k_3$ (2) $2k_1 = k_2 = 3k_3$ (3) $4k_1 = k_2 = 3k_3$ (4) $\frac{k_1}{2} = k_2 = \frac{k_3}{3}$

6. For a reaction

$AB_5 \longrightarrow AB + 4B$

The rate can be expressed in following ways

$$-\frac{d[AB_5]}{dt} = K[AB_5] \; ; \; \frac{d[B]}{dt} = K_1[AB_5]$$

So the correct relation between K and K_1 is-

(1) $K_1 = K$ (2) $K_1 = 2K$ (3) $K_1 = 4K$ (4) $2K_1 = K$

7. For the reaction : $aA \rightarrow bB$;

$$\log\left[\frac{-dA}{dt}\right] = \log\left[\frac{dB}{dt}\right] + 0.6$$, then a : b is :

(1) 3.98 (2) 2.18 (3) 1.48 (4) 0

8. For the reaction $aA + bB \longrightarrow cC$, if, $-3\frac{d[A]}{dt} = -\frac{d[B]}{dt} = 1.5\frac{d[C]}{dt}$, then a, b and c respectively are:

(1) 3, 1, 2 (2) 2, 1, 3 (3) 1, 3, 2 (4) 6, 2, 3

9. For the reaction, $Cl_2 + 2I^- \rightarrow I_2 + 2Cl^-$, the initial concentration of I^- was 0.20 mol lit^{-1} and the concentration after 20 min was 0.18 mol lit^{-1}. Then, the rate of formation of I_2 in mol lit^{-1} min^{-1} would be:

(1) 1×10^{-3} (2) 5×10^{-4} (3) 1×10^{-4} (4) 5×10^{-3}

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1. For a chemical reaction A $\rightarrow$ products, the rate of reaction doubles when the concentration of A is increased by 4 times. The order of reaction is -

(1) 4 (2) 0 (3) 1/2 (4) 1

2. The rate law for the reaction

RCl + NaOH (aq.) $\rightarrow$ ROH + NaCl is given by,

Rate = k_1 [RCl]. The rate of the reaction will be -

(1) Doubled on doubling the concentration of NaOH

(2) Halved on reducing the concentration of RCl to one half

(3) Decreased on increasing the temperature of the reaction

(4) Unaffected by increasing the temperature of the reaction

3. The rate of reaction between A and B increases by a factor of 100, when the concentration of A is increased by 10 times, the order of reaction with respect to A is -

(1) 10 (2) 1 (3) 4 (4) 2

4. Consider a gaseous reaction, the rate of which is given by k[A] [B]. The volume of the reaction vessel containing these gases is suddenly reduced to $\frac{1}{4}$th of the initial volume. The rate of the reaction as compared with original rate is -

(1) $\frac{1}{16}$ times (2) 16 times (3) 4 times (4) 8 times

5. For the reaction A + B $\rightarrow$ C + D doubling the concentration of both the reactants increases the reaction rate by 8 time and doubling the initial concentration of only B simply doubles the reaction rate. The rate law for the reaction is -

(1) $r = k [A] [B]^2$ (2) $r = k [A] [B]$ (3) $r = k [B]^{1/2} [B]$ (4) $r = k [A]^2 [B]$

6. For a reaction: 2A + 2B + C $\rightarrow$ products,

with the help of the following table, find order with respect to A, B, C:

Initial concentrations (M)			rate of reaction
[A]	[B]	[C]	
0.010	0.005	0.010	5×10^{-3}
0.010	0.005	0.015	5×10^{-3}
0.010	0.010	0.010	1×10^{-2}
0.005	0.005	0.010	2.5×10^{-3}

(1) 3, 2, 0 (2) 1, 1, 0 (3) 3, 2, 1 (4) 2, 2, 1

7. For a chemical reaction: A $\longrightarrow$ B, the rate of reaction increases by a factor of 2.25 when the concentration of A is increased by 1.5 times. The order of reaction with respect to A is:

(1) 1 (2) 1.5 (3) 2 (4) –1

8. Reaction: 2A + B $\longrightarrow$ C, occurs in a single step. Starting with 3 mol of A and 2 mol of B, when 1 mol of C has been formed, the ratio of present rate to the original rate will be:

(1) 1/18 (2) 1/9 (3) 1/3 (4) 1/6

9. For the reaction, A + B $\longrightarrow$ C:

	[A]	[B]	$-\frac{d[A]}{dt}$
1.	1.0 M	1.0 M	0.25 M min^{-1}
2.	2.0 M	1.0 M	0.50 M min^{-1}
3.	1.0 M	2.0 M	0.25 M min^{-1}

Hence, rate law is:

(1) k[A] [B] (2) k[A] $[B]^{1/2}$ (3) k[A] (4) k[B]

10. For the irreversible process,

A + B $\longrightarrow$ products, the rate is first-order w.r.t. A and second-order w.r.t. B. If 1.0 mol each of A and B introduced into a 1.0 L vessel, and the initial rate was 1.0×10^{-2} mol L^{-1} s^{-1}, calculate rate when half reactants have been turned into products:

(1) 1.25×10^{-3} mol L^{-1} s^{-1} (2) 1.0×10^{-2} mol L^{-1} s^{-1}

(3) 2.50×10^{-3} mol L^{-1} s^{-1} (4) 2.0×10^{-2} mol L^{-1} s^{-1}

NEET–CHEMISTRY **ELP NO.–4** **CHEMICAL KINETICS**

1. For the reaction: $H_2(g) + Br_2(g) \rightarrow 2HBr(g)$

the experimental data suggested that $r = k[H_2][Br_2]^{1/2}$. The molecularity and order of the reaction are respectively:

(1) 2, 3/2 (2) 3/2, 3/2 (3) Not defined, 3/2 (4) 1, 1/2

2. For elementary reaction $aA + bB \longrightarrow P$; $dx/dt = k[A]^a.[B]^b$

If conc. of A is doubled, rate is doubled. If B doubled, rate becomes four times. Which is correct?

(1) $\frac{-d[A]}{dt} = \frac{-d[B]}{dt}$ (2) $\frac{-d[A]}{dt} = \frac{-2d[B]}{dt}$ (3) $\frac{-2d[A]}{dt} = \frac{-d[B]}{dt}$ (4) None of these

3. For a single step reaction:

$aA + bB \rightarrow$ Products,

which of the following is incorrect?

(1) Rate of reaction $r = k[A]^x[B]^y$, where $x \neq a$ and $y \neq b$

(2) Rate law is $r = k[A]^a[B]^b$

(3) According to law of mass action $r \propto [A]^a[B]^b$

(4) None of these

4. $2P + Q + 3R \longrightarrow S + T$.

Mechanism

(i) $P + Q \rightleftharpoons A$ (fast)

(ii) $A + R \rightarrow B$ (slow)

(iii) $B + Q \rightarrow S + T$ (fast)

The rate law of the reaction is:

(1) $r = k[P]\,[Q]$ (2) $r = k[P]^2[Q][R]^3$ (3) $r = k[P]^{1/2}[Q][R]^{1/3}$ (4) $r = k[P][Q][R]$

5. For a chemical reaction: Y + 2Z → Product. Rate controlling step is

$$Y + \frac{1}{2}Z \longrightarrow Q$$

If the concentration of Z is doubled, the rate of reaction will

(1) Remain the same (2) Become four times

(3) Become 1.414 times (4) Become double

6. The rate constant for a reaction is 10.8 x 10^{-5} mol lit^{-1} sec^{-1}. The reaction is–

(1) First order (2) Zero order (3) Second order (4) Half order

7. **Assertion:** Order of the reaction can be zero or fractional.

Reason: We cannot determine order from balanced chemical equation.

In the following questions a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices.

(1) Both assertion and reason are correct and the reason is correct explanation of assertion.

(2) Both assertion and reason are correct but reason does not explain assertion.

(3) Assertion is correct but reason is incorrect.

(4) Both assertion and reason are incorrect.

(5) Assertion is incorrect but reason is correct.

8. **Assertion:** Order and molecularity are same.

Reason: Order is determined experimentally and molecularity in some of the cases is the sum of the stoichiometric coefficient of rate determining elementary step.

In the following questions a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices.

(1) Both assertion and reason are correct and the reason is correct explanation of assertion.

(2) Both assertion and reason are correct but reason does not explain assertion.

(3) Assertion is correct but reason is incorrect.

(4) Both assertion and reason are incorrect.

(5) Assertion is incorrect but reason is correct.

9. For a hypothetical reaction aA + bB → Product, the rate law is: rate = $K[A]^x[B]^y$. then:

(1) (a + b) = (x + y) (2) (a + b) < (x + y) (3) (a + b) > (x + y) (4) Any of these

10. Calculate the order of the reaction A → Product. From the following data.

[A] Moles/L	d[product]/dt (moles/L/S)
0.0025	10.0×10^{-5}
0.005	5.0×10^{-5}
0.01	2.5×10^{-5}

(1) 1 (2) 2 (3) –1 (4) –2

NEET–CHEMISTRY **ELP NO.–5** **CHEMICAL KINETICS**

1. Rate law for the reaction A + 2B → C is found to be

Rate = k[A] [B]

Concentration of reactant 'B' is doubled, keeping the concentration of 'A' constant, the value of rate constant will be _____.

(1) The same (2) Doubled (3) Quadrupled (4) Halved

2. Compounds 'A' and 'B' react according to the following chemical equation.

A(g) + 2B(g) → 2C (g)

Concentration of either 'A' or 'B' were changed keeping the concentrations of one of the reactants constants and rates were measured as a function of initial concentration. Following results were obtained. Choose the correct option for the rate equations for this reaction.

Experiment	Initial concentration of [A]/mol L^{-1}	Initial concentration of [B]/(mole L^{-1})	Initial rate of formation of [C] (mol L^{-1} s^{-1})
1.	0.30	0.30	0.10
2.	0.30	0.60	0.40
3.	0.60	0.30	0.20

(1) Rate = k $[A]^2$ [B] (2) Rate = k [A] $[B]^2$

(3) Rate = k [A] [B] (4) Rate = k$[A]^2$ $[B]^0$

3. Which of the following statements are applicable to a balanced chemical equation of an elementary reaction?

(1) Order is same as molecularity (2) Order is less than the molecularity

(3) Order is greater than the molecularity (4) Molecularity can never be zero

4. For a complex reaction _____.

(1) Order of overall reaction is same as molecularity.

(2) Order of overall reaction is less than the molecularity of the slowest step.

(3) Order of overall reaction is greater than molecularity of the slowest step.

(4) Molecularity of the slowest step is never zero or non integer.

5. Match the items of Column I and Column II.

Column I	Column II
(i) Mathematical expression for rate of reaction	(a) Rate constant
(ii) Rate of reaction for zero order reaction is equal to	(b) Rate law
(iii) Units of rate constant for zero order reaction is same as that of	(c) Order of slowest step
(iv) Order of a complex reaction is determined by determined by	(d) Rate of reaction

6. The rate law for the dimerization of NO_2 is $-d[NO_2]/dt = k[NO_2]^2$. Which of the following changes will change the value of the specific rate constant?

(1) Doubling the total pressure on the system

(2) Doubling the volume of the container

(3) Adding more O_2 to the reaction mixture

(4) Changing the temperature

7. The rate law for a reaction between the substances A and B is given by

$$\text{Rate} = k[A]^n[B]^m$$

On doubling the concentration of A and halving the concentration of B, the ratio of the new rate to the earlier rate of the reaction will be.

(1) m + n (2) (n – m) (3) $2^{(n-m)}$ (4) $\frac{1}{2^{(m+n)}}$

8. A hypothetical reaction, $A_2 + B_2 \rightarrow 2AB$, follows the mechanism as given below:

$A_2 \rightleftharpoons A + A$ (Fast)

$A + B_2 \rightarrow AB + B$ (Slow)

$A + B \rightarrow AB$ (Fast)

The overall order of reaction is

(1) Zero (2) 1 (3) $1\frac{1}{2}$ (4) 2

NEET–CHEMISTRY **ELP NO.–6** **CHEMICAL KINETICS**

1. In the following reaction A $\rightarrow$ B, rate constant is 0.001 Ms^{-1}. If we start with 1 M of A then conc. of A and B after 10 minutes are respectively:

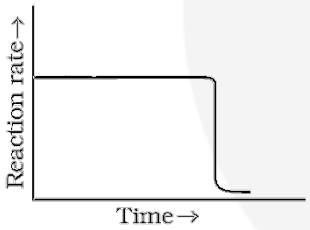
(1) 0.5 M, 0.5 M (2) 0.6 M, 0.4 M (3) 0.4 M, 0.6 M (4) None of these

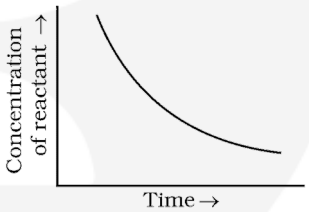
2. For the zero order reaction A $\rightarrow$ B + C; initial concentration of A is 0.1 M. If A = 0.08 M after 10 minutes, then it's half-life and completion time are respectively:

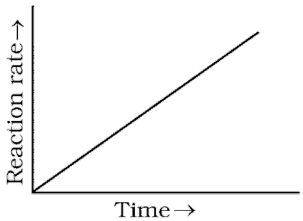
(1) 10 min; 20 min (2) 2×10^{-3} min; 4×10^{-3} min

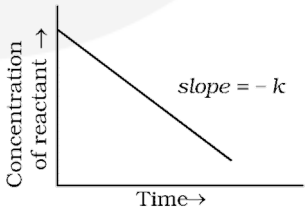
(3) 25 min; 50 min (4) 250 min; 500 min

3. Which of the following graphs is correct for a zero order reaction? (more than one are correct)

(1)


(2)


(3)


(4)


4. **Assertion:** If in a zero order reaction, the concentration of the reactant is doubled, the half-life period is also doubled.

Reason: For a zero order reaction, the rate of reaction is independent of initial concentration.

(1) Both assertion and reason are true and reason is the correct explanation of assertion.

(2) Both assertion and reason are true but reason is not the correct explanation of assertion.

(3) Assertion is true but reason is false.

(4) Both assertion and reason are false.

5. **Assertion:** The rate constant for zero order reaction is directly proportional to initial concentration.

Reason: $t_{1/2}$ for zero order reaction is directly proportional to initial concentration.

(1) Both assertion and reason are true and reason is the correct explanation of assertion.

(2) Both assertion and reason are true but reason is not the correct explanation of assertion.

(3) Assertion is true but reason is false.

(4) Assertion is false and reason is true

6. For a zero order reaction, the plot of conc. (a – x) vs time is linear with -

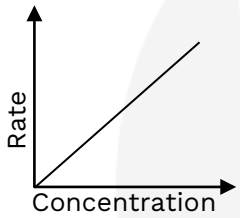
(1) + ve slope and zero intercept (2) – ve slope and zero intercept

(3) + ve slope and non-zero intercept (4) – ve slope and non-zero intercept

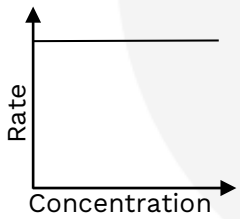
7. Match the graph given in Column I with the order of reaction given in Column II. More than one item in Column I may link to the same item of Column II.

Column I **Column II**

(1)

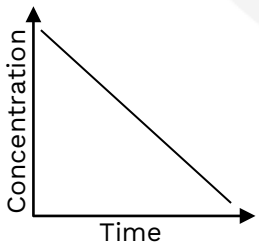


(2)



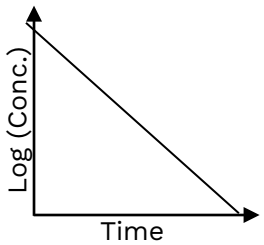
(a) Ist order

(3)



(b) Zero order

(4)

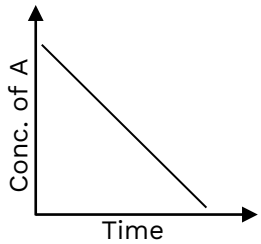


8. For a general reaction A → B, plot of concentration of A vs time is given in Fig. Answer the following question on the basis of this graph.

(i) What is the order of the reaction?

(ii) What is the slope of the curve?

(iii) What are the units of rate constant?



(1) (i) Zero (ii) –k (iii) mol/L/s

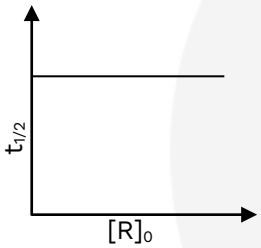
(2) (i) One (ii) k (iii) mol/L/s

(3) (i) Zero (ii) k (iii) mol/L/s

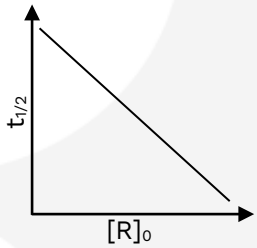
(4) (i) Zero (ii) –k (iii) mol/L^2/s

9. Which of the following graphs is correct for a first order reaction?

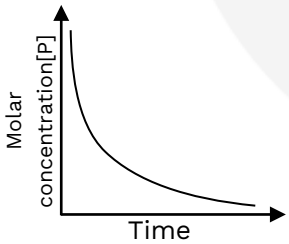
(1)



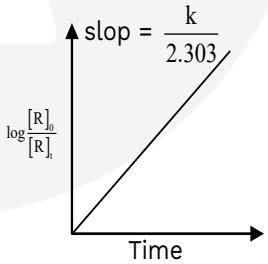
(2)



(3)



(4)



10. A first order reaction is 50% completed in 1.26×10^{14} s. How much time would it take for 100% completion?

(1) 1.26×10^{15} s (2) 2.52×10^{14} s (3) 2.52×10^{28} s (4) Infinite

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ELP

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NEET–CHEMISTRY **ELP NO.–7** **CHEMICAL KINETICS**

1. The half life period of first order is $t_{1/2}$. The half life period will –

(1) Increases with increase in temp (2) Decrease with increase in temp

(3) Remains unaffected (4) None of these

2. The rate constant for a first order reaction whose half life is 480 sec. –

(1) 1.44×10^{-3} sec^{-1} (2) 1.44 sec^{-1}

(3) 0.72×10^{-3} sec^{-3} (4) 2.88×10^{-3} sec^{-3}

3. In the first order reaction, the concentration of the reactants is reduced to 25% in one hour. The half life period of the reaction is -

(1) 2 Hr. (2) 4 Hr. (3) 1/2 Hr. (4) 1/4 Hr.

4. In a first order reaction, 75% of the reactant disappeared in 1.386 hours. Calculate the rate constant of the reaction -

(1) 3.6×10^{-3} sec^{-1} (2) 2.8×10^{-4} sec^{-1} (3) 7.2×10^{-3} sec^{-1} (4) 1.8×10^{-3} sec^{-1}

5. **Assertion:** For a first order reaction, the concentration of the reactant decreases exponentially with time.

Reason: For first order reaction, $C_t = C_0 e^{-kt}$

(1) Both assertion and reason are true and reason is the correct explanation of assertion.

(2) Both assertion and reason are true but reason is not the correct explanation of assertion.

(3) Assertion is true but reason is false.

(4) Both assertion and reason are false.

6. Which of the following expressions in correct for zero order and first order reactions respectively (where a is initial concentration)?

(1) $t_{1/2} \propto a; t_{1/2} \propto \frac{1}{a}$ (2) $t_{1/2} \propto a; t_{1/2} \propto a^0$ (3) $t_{1/2} \propto a^0; t_{1/2} \propto a$ (4) $t_{1/2} \propto a; t_{1/2} \propto \frac{1}{a^2}$

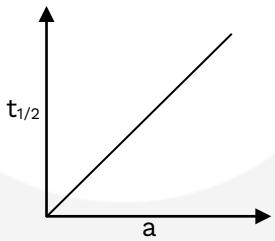
7. For an elementary reaction, X(g) → Y(g) + Z(g) the half life period is 10 min. In what period of time the concentration of X will be reduced to 10% of original concentration?

(1) 20 min (2) 33 min (3) 15 min (4) 25 min

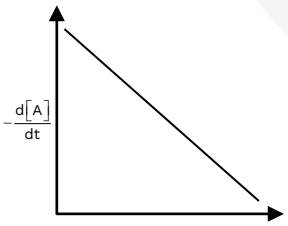
8. A first order reaction is 75% completed in 100 min. How long will it take for it's 87.5% completion?

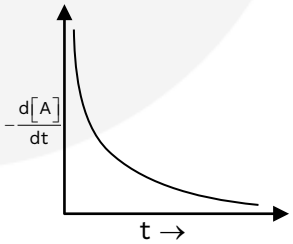
(1) 125 min (2) 150 min (3) 175 min (4) 200 min

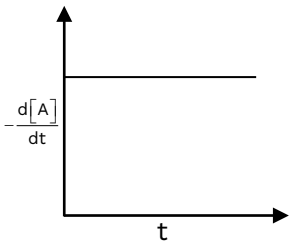
9. Consider the reaction A → B, graph between half life ($t_{1/2}$) and initial concentration (a) of the reactant is

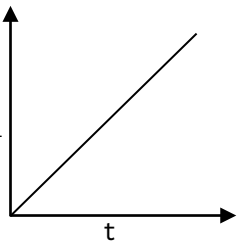


Hence graph between $-\frac{d[A]}{dt}$ and time will be:

(1)


(2)


(3)


(4)


10. A first order reaction is 90% complete in 40 min. Calculate the Half life of the reaction.

(1) 13.03 min. (2) 12.03 min. (3) 11.03 min. (4) 10.03 min.

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ELP

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NEET–CHEMISTRY **ELP NO.–8** **CHEMICAL KINETICS**

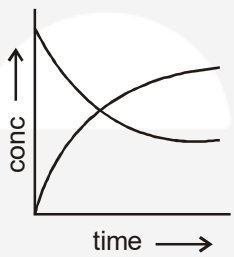
1. If $t_{0.5}$ = constant, confirms the order of the reaction as one. Then $a_o^2 \times t_{0.5}$ = constant confirms that the reaction is of –

(1) Second order (2) Zero order (3) Third order (4) None

2. The half life period for catalyst decomposition of AB_3 at 50 mm is found to be 4 hrs and at 100 mm it is 2.0 hrs? The order of reaction is -

(1) 3 (2) 1 (3) 2 (4) 0

3. At the point of intersection of the two curves shown for the reaction



$A \rightarrow nB$

the concentration of B is given by:

(1) $\frac{nA_0}{2}$ (2) $\frac{A_0}{n-1}$ (3) $\frac{nA_0}{n+1}$ (4) $\frac{(n-1)}{(n+1)}A_0$

4. If the fermentation of sugar in an enzymatic solution, that is 0.12 M, the concentration of the sugar is reduced to 0.06 M in 10 h and to 0.03 M in 20 h. What is the order of the reaction?

(1) 1 (2) 2 (3) 3 (4) 0

5. For a first order reaction, the ratio of time for the completion of 99.9% and half of the reaction is

(1) 8 (2) 10 (3) 9 (4) 12

6. 90% of a first order reaction was completed in 10 hours. When will 99.9% of the reaction complete?

(1) 30 hours (2) 60 hours (3) 35 hours (4) 40 hours

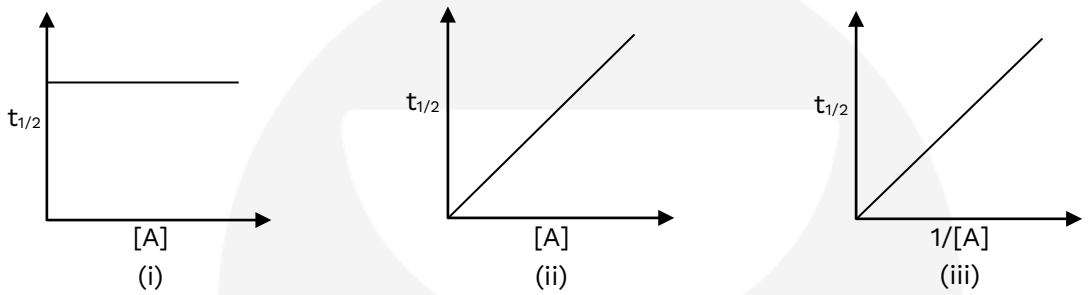
7. 20% of a first order reaction was completed in 5 min. When will 60% of the reaction complete?

(1) 10.20 min. (2) 20.55 min. (3) 22.22 min. (4) 25.25 min.

8. For the first order reaction, half life is 6 min. Calculate the rate constant of the reaction?

(1) 0.1215 min^{-1} (2) 0.1050 min^{-1} (3) 0.1155 min^{-1} (4) 0.1111 min^{-1}

9. Consider the plots, given below, for the types of reaction



These plots respectively correspond to the reaction orders:

(1) 0, 1, 2 (2) 1, 2, 0 (3) 1, 0, 2 (4) None of these

10. If the initial concentration of reactants are doubled then half life becomes half. Calculate order of the reaction?

(1) 2 (2) 3 (3) 2.2 (4) 0.2

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ELP

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NEET–CHEMISTRY **ELP NO.–9** **CHEMICAL KINETICS**

1. A reaction rate constant is given by:

$k = 1.2 \times 10^{14}\ e^{\frac{-25000}{RT}}\ sec^{-1}$.

It means –

(1) log k versus log T will give a straight line with a slope as 25000

(2) log k versus log T will give a straight line with a slope as –25000

(3) log k versus T will give a straight line with a slope as –25000

(4) log k versus 1/T will give a straight line with a slope as –25000/2.303R

2. Consider $A \underset{B.R.}{\overset{F.R.}{\rightleftharpoons}} B$ + heat, If activation energy for forward reaction is 100 kJ/mole then activation energy for backward reaction and heat of reaction is:

(1) 100, –200 (2) 80, –20 (3) 90, –220 (4) 140, –40

3. Which one of the following statements is incorrect?

(1) The temperature coefficient of a reaction is the ratio of the rate constant at any two temperatures

(2) The temperature coefficient of a reaction is the ratio of the rate constant at 298 K and 308 K

(3) The temperature coefficient of most of the reactions lies between 2 and 3

(4) In an endothermic reaction, activation energy of the forward is more than that of reverse reaction.

4. If E_f and Er are the activation energies of the forward and reverse reactions and the reaction is known to be exothermic, then

(1) E_f < Er (2) E_f > Er (3) E_f = Er (4) None of these

5. For the reaction A + B $\rightleftharpoons$ C + D the activation energy is 32 kJ mol^{-1}. For the reverse reaction the E_a is 58 kJ mol^{-1}. Determine (i) Nature of reaction (ii) ΔH

(1) Endothermic, 26 kJ (2) Endothermic, 32 kJ

(3) Exothermic, –32 kJ (4) Exothermic, –26 kJ

6. For an endothermic reaction.

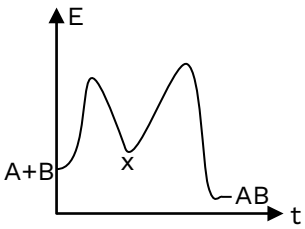
(1) $E_a > \Delta H$ (2) $E_a < \Delta H$ (3) $E_a = \Delta H$ (4) Any one of the above

7. For an exothermic reaction

(1) $E_a > \Delta H$ (2) $E_a < \Delta H$ (3) $E_a = \Delta H$ (4) Any one the above

8. An exothermic chemical reaction is occurring in two steps as follows

(i) $A + B \rightarrow X$ (slow) (ii) $X \rightarrow AB$ (fast)

(1)


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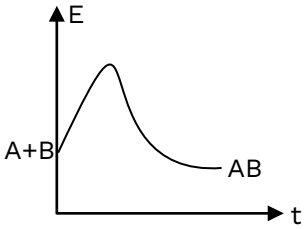

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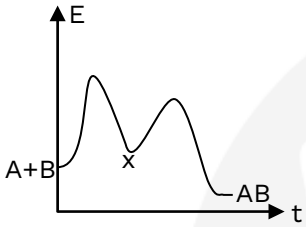

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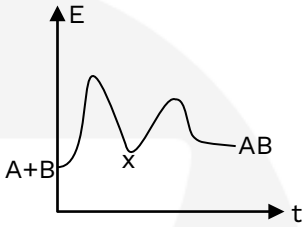

9. A reaction whose temperature is increased from 10 °C to 50 °C then increase in rate of reaction will be:

(1) 16 times (2) 18 times (3) 13 times (4) 15 times

10. For a reaction, temperature coefficient = 2, then calculate the activation energy (in kJ) of the reaction.

(1) 26.58 kJ (2) 27.85 kJ (3) 52.89 kJ (4) 110 kJ

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ELP

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NEET–CHEMISTRY **ELP NO.–10** **CHEMICAL KINETICS**

1. An exothermic reaction A → B has an activation energy of 17 kJ mol^{-1} of A. The enthalpy change of the reaction is -40 kJ. Calculate the activation energy for the reverse reaction B → A.

(1) 57 kJ (2) 7 kJ (3) 49 kJ (4) -17 kJ

2. For first order gaseous reaction log k when plotted against $\frac{1}{T}$, gives a straight line with a slope of -8000. Calculate the activation energy of the reaction.

(1) 72 k Cal (2) 36 k Cal (3) 100 k Cal (4) 15 k Cal

3. If temperature of a reaction is increased from 10°C to 100°C then how many times rate of reaction will become?

(1) 1024 times (2) 64 times (3) 256 times (4) 512 times

4. If temperature of reaction is increased from T_1 to T_2 then rate of reaction becomes?

(1) $(\mu)^{\Delta T/10}$ times (2) $(\mu)^{10/\Delta T}$ times (3) $10\ \frac{\mu}{\Delta T}$ times (4) $\frac{\mu\,\Delta T}{10}$ times

5. A reaction is carried out at 10°C. If temperature is increased by 50°C then how many times rate of reaction will become?

(1) 64 times (2) 16 times (3) 128 times (4) 32 times

6. For an endothermic reaction where ΔH represents the enthalpy of reaction in kJ mol^{-1}, the minimum value for the energy of activation will be

(1) Less than ΔH (2) More than ΔH (3) Equal to ΔH (4) Zero

7. The activation energy of the reaction, A + B $\rightarrow$ C + D + 38 kcal is 20 kcal, what would be the activation energy of the reaction, C + D $\rightarrow$ A + B

(1) 20 kcal (2) -20 kcal (3) 18 kcal (4) 58 kcal

8. $\frac{k_{55°}}{k_{54°}} > 1$, this means that

(1) Rate increases with the rise in temperature

(2) Rate decreases with rise in temperature

(3) Rate does not change wit rise in temperature

(4) None of the above

9. The plot of $\ell n\, k$ versus 1/T is linear with slope of

(1) $-\frac{E_a}{R}$ (2) $\frac{E_a}{R}$ (3) $\frac{E_a}{2.303R}$ (4) $-\frac{E_a}{2.303R}$

10. The role of a catalyst is to change.....

(1) Gibbs energy of reaction (2) Enthalpy of reaction

(3) Activation energy of reaction (4) Equilibrium constant

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NEET–CHEMISTRY | **ELP NO.–11** | **CHEMICAL KINETICS**

1. In the presence of a catalyst, the heat evolved or absorbed during the reaction .....

(1) Increases
(2) Decreases
(3) Remains unchanged
(4) May increases or decrease

2. Activation energy of a chemical reaction can be determined by .....

(1) Determining the rate constant at standard temperature.
(2) Determining the rate constants at two temperatures.
(3) Determining probability of collision.
(4) Using catalyst.

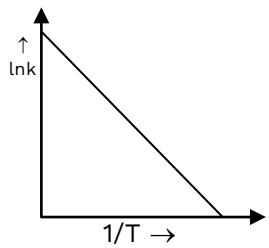
3. Consider a first order gas phase decomposition reaction given below:

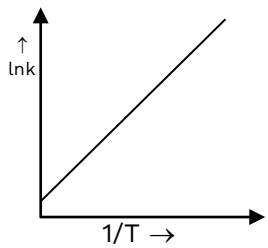
$$A(g) \rightarrow B(g) + C(g)$$

The initial pressure of the system before decomposition of A was p_i. After lapse of time 't', total pressure of the system increased by x units and became 'p_t'. The rate constant k for the reaction is given as .....

(1) $k = \frac{2.303}{t}\log\frac{p_i}{p_i - x}$
(2) $k = \frac{2.303}{t}\log\frac{p_i}{2p_i - p_t}$
(3) $k = \frac{2.303}{t}\log\frac{p_i}{2p_i + p_t}$
(4) $k = \frac{2.303}{t}\log\frac{p_i}{p_i + x}$

4. According to Arrhenius equation rate constant k is equal to A $e^{-Ea/RT}$. Which of the following options represents the graph of ln k vs $\frac{1}{T}$?

(1)


(2)


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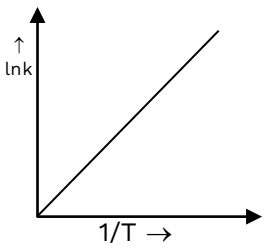

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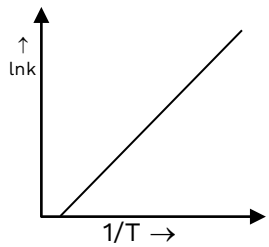

5. Consider the Arrhenius equation given below and mark the correct option.

$k = A\ e^{-Ea/RT}$

(1) Rate constant increases exponentially with increasing activation energy and decreasing temperature.

(2) Rate constant decreases exponentially with increasing activation energy and decreasing temperature.

(3) Rate constant increases exponentially with decreasing activation energy and decreasing temperature.

(4) Rate constant increases exponentially with decreasing activation energy and increasing temperature.

6. Which of the following statements is incorrect about the Collison theory of chemical reaction?

(1) It considers reacting molecules or atoms to be hard spheres and ignores their structural features.

(2) Number of effective collisions determines the rate of reaction.

(3) Collision of atoms or molecules possessing sufficient threshold energy results into the product formation.

(4) Molecules should collide with sufficient threshold energy and proper orientation for the collision to be effective.

7. Which of the following statement is not correct for the catalyst?

(1) It catalysis the forward and backward reaction to the same extent.

(2) It alters ΔG of the reaction.

(3) It is a substance that does not change the equilibrium constant of a reaction.

(4) It provides an alternate mechanism by reducing activation energy between reactants and products.

8. In the graph showing Maxwell Boltzman distribution of energy, ...

(1) Area under the curve must not change with increase in temperature.

(2) Area under the curve increases with increase in temperature.

(3) Area under the curve decreases with increase in temperature.

(4) With increase in temperature curve broadens and shifts to the right hand side.

9. **Assertion:** The enthalpy of reaction remains constant in the presence of a catalyst.

Reason: A catalyst participating in the reaction, forms different activated complex and lowers down the activation energy but the difference in energy of reactant and product remains the same.

(1) Both Assertion & Reason True & the Reason is a correct explanation of the Assertion.

(2) Both Assertion & Reason True but Reason in not a correct explanation of the Assertion.

(3) Assertion is True but the Reason is False.

(4) Assertion is False but the Reason is True.

10. **Assertion :** All collision of reactant molecules lead to product formation.

Reason : Only those collisions in which molecules have correct orientation and sufficient kinetic energy lead to compound formation.

(1) Both Assertion & Reason True & the Reason is a correct explanation of the Assertion.

(2) Both Assertion & Reason True but Reason in not a correct explanation of the Assertion.

(3) Assertion is True but the Reason is False.

(4) Assertion is False but the Reason is True.

11. **Assertion:** Rate constants determined from Arrhenius equation are fairly accurate for simple as well as complex molecules.

Reason: Reactant molecules undergo chemical change irrespective of their orientation during collision.

(1) Both Assertion & Reason True & the Reason is a correct explanation of the Assertion.

(2) Both Assertion & Reason True but Reason in not a correct explanation of the Assertion.

(3) Assertion is True but the Reason is False.

(4) Assertion is False but the Reason is True.

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NEET-CHEMISTRY **ELP NO.-1**

PRACTICALS RELATED TO PHYSICAL CHEMISTRY

1. How many millilitres of 0.1N H_2SO_4 solution will be required for complete reaction with a solution containing 0.125 g of pure Na_2CO_3 :

(1) 23.6 mL (2) 25.6 mL (3) 26.3 mL (4) 32.6 mL

2. One litre of a solution contains 18.9 g of HNO_3 and one litre of another solution contains 3.2 g of NaOH. In what volume ratio must these solutions be mixed to obtain a neutral solution?

(1) 3 : 8 (2) 8 : 3 (3) 15 : 4 (4) 4 : 15

3. 1 mol each of H_3PO_2, H_3PO_3 and H_3PO_4 will neutralise respectively x mol of NaOH, y mol of $Ca(OH)_2$ and z mol of $Al(OH)_3$ (assuming all as strong electrolytes). x, y, z are in the ratio of:

(1) 3 : 1.5 : 1 (2) 1 : 2 : 3 (3) 3 : 2 : 1 (4) 1 : 1 : 1

4. If 25 mL of a H_2SO_4 solution reacts completely with 1.06 g of pure Na_2CO_3, what is the normality of this acid solution:

(1) 1 N (2) 0.5 N (3) 1.8 N (4) 0.8 N

5. The mass of oxalic acid crystals ($H_2C_2O_4$. $2H_2O$) required to prepare 50 mL of a 0.2 N solution is:

(1) 4.5 g (2) 6.3 g (3) 0.63 g (4) 0.45 g

6. 1 mol e of MnO_4^{-2} disproportionate into MnO_4^- & MnO_2 in acidic medium. % by mass of Mn converted to MnO_4^- (Molar mass of Mn = 55 gm)

(1) 66.67 (2) 33.33 (3) 16.67 (4) 50

7. Volume V_1 mL of 0.1 M $K_2Cr_2O_7$ is needed for complete oxidation of 0.678 g N_2H_4 in acidic medium. The volume of 0.3 M $KMnO_4$ needed for same oxidation in acidic medium will be:

(1) $\frac{2}{5}V_1$ (2) $\frac{5}{2}V_1$ (3) 113 V_1 (4) Can't say

8. If 10 g of V_2O_5 is dissolved in acid and is reduced to V^{2+} by zinc metal, how many mole I_2 could be reduced by the resulting solution if it is further oxidised to VO^{2+} ions?

[Assume no change in state of Zn^{2+} ions] (V = 51, O = 16, I = 127):

(1) 0.11 mole of I_2 (2) 0.22 mole of I_2 (3) 0.055 mole of I_2 (4) 0.44 mole of I_2

9. H_2O_2 acts as a reducing agent in:

(1) $FeCl_2 + HCl + H_2O_2 \rightarrow FeCl_3 + H_2O$ (2) $Cl_2 + H_2O_2 \rightarrow HCl + O_2$

(3) $HI + H_2O_2 \rightarrow I_2 + H_2O$ (4) $H_2SO_3 + H_2O_2 \rightarrow H_2SO_4 + H_2O$

10. The number of moles of $Cr_2O_7^{2-}$ needed to oxidize 0.136 equivalents of $N_2H_5^+$ by the reaction $N_2H_5^+ + Cr_2O_7^{2-} \rightarrow N_2 + Cr^{3+} + H_2O$ is :

(1) 0.136 (2) 0.0 68 (3) 0.0227 (4) 0.272

11. A solution of $KMnO_4$ is reduced to MnO_2. The normality of solution is 0.6. The molarity is:

(1) 1.8M (2) 0.6M (3) 0.1M (4) 0.2M

12. As_2O_3 is oxidised to H_3AsO_4 by $KMnO_4$ in acidic medium. Volume of 0.02M $KMnO_4$ required for this purpose by 1m mol of As_2O_3 will b e

(1) 10 mL (2) 20 mL (3) 40 mL (4) 80 mL

13. In a redox reaction, the equivalent weight of HNO_2 is found to be 23.5. The reaction products might contain

(1) N_2O_3 (2) NO (3) NH_3 (4) HNO_3

14. What can be the maximum percentage of available chlorine possible in a given bleaching powder sample (Take formula of bleaching powder as $CaOCl_2$)?

(1) 52.9% (2) 55.9% (3) 58% (4) 60%

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NEET-CHEMISTRY **ELP NO.-2**

PRACTICALS RELATED TO PHYSICAL CHEMISTRY

1. Colloidal gold is prepared by-

(1) Mechanical dispersion (2) Peptisation

(3) Bredig's Arc method (4) Hydrolysis

2. Colloid of which one of the following can be prepared by electrical dispersion method as well as reduction method-

(1) Sulphur (2) Ferric hydroxide

(3) Arsenious sulphide (4) Gold

3. By which reaction colloidal solution formed-

(1) $Cu + HgCl_2 \rightarrow CuCl_2 + Hg$ (2) $2Mg + CO_2 \rightarrow 2MgO + C$

(3) $Cu + CuCl_2 \rightarrow 2CuCl$ (4) $2HNO_3 + 3H_2S \rightarrow 3S + H_2O + 2NO$

4. Which metal sol cannot be prepared by Bredig's Arc method

(1) K (2) Cu (3) Au (4) Pt

5. The stabilty of lyophobic colloid is due to-

(1) A layer of dispersion medium on their particles

(2) Charge on the particles

(3) The large size of their particles

(4) The smaller size of their particles

6. **Assertion :** An ordinary filter paper impregnated with collodion solution stops the flow of colloidal particles.

Reason : Pore size of the filter paper becomes more than the size of colloidal particle.

(1) Assertion and reason both are correct and the reason is correct explanation of assertion.

(2) Assertion and reason both are correct but reason does not explain assertion.

(3) Assertion is correct but reason is incorrect.

(4) Both assertion and reason are incorrect.

7. **Assertion:** Colloidal solutions show colligative properties.

Reason : Colloidal particles are large in size.

(1) Assertion and reason both are correct and the reason is correct explanation of assertion.

(2) Assertion and reason both are correct but reason does not explain assertion.

(3) Assertion is correct but reason is incorrect.

(4) Both assertion and reason are incorrect.

8. **Assertion :** Colloidal solutions do not show brownian motion.

Reason : Brownian motion is responsible for stability of sols.

(1) Assertion and reason both are correct and the reason is correct explanation of assertion.

(2) Assertion and reason both are correct but reason does not explain assertion.

(3) Assertion is correct but reason is incorrect.

(4) Assertion is incorrect but reason is correct.

9. **Assertion :** Coagulation power of Al^{3+} is more than Na^{+}.

Reason : Greater the valency of the flocculating ion added, greater is its power to cause precipitation (Hardy Schulze rule).

(1) Assertion and reason both are correct and the reason is correct explanation of assertion.

(2) Assertion and reason both are correct but reason does not explain assertion.

(3) Assertion is correct but reason is incorrect.

(4) Both assertion and reason are incorrect.

10. **Assertion :** Detergents with low CMC are more economical to use.

Reason : Cleansing action of detergents involves the formation of micelles. These are formed when the concentration of detergents becomes equal to CMC.

(1) Assertion and reason both are correct and the reason is correct explanation of assertion.

(2) Assertion and reason both are correct but reason does not explain assertion.

(3) Assertion is correct but reason is incorrect.

(4) Both assertion and reason are incorrect.

11. Match the items of Column I and Column II.

Column I	**Column II**
(i) Dialysis	(a) Cleansing action of soap
(ii) Peptisation	(b) Coagulation
(iii) Emulsification	(c) Colloidal sol formation
(iv) Electrophoresis	(d) Purification

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

12. Match the statement given in Column I with the phenomenon given in Column II.

Column I	**Column II**
(i) Dispersion medium moves in an electric field	(a) Osmosis
(ii) Solvent molecules pass through semi permeable membrane towards solvent side	(b) Electrophoresis
(iii) Movement of charged colloidal particles under the influence of applied electric potential towards oppositely charged electrodes	(c) Electroosmosis
(iv) Solvent molecules pass osmosis through semi permeable membranes towards solution side	(d) Reverse

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

13. Match the items given in Column I and Column II.

Column I	**Column II**
(i) Protective colloid	(a) $FeCl_3$ + NaOH
(ii) Liquid - liquid colloid	(b) Lyophilic colloids
(iii) Positively charged colloid	(c) Emulsion
(iv) Negatively charged colloid	(d) $FeCl_3$ + hot water

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

14. Which of the following statements are correct-

(i) Mixing two oppositely charged sols neutralises their charges and stabilises the colloid.

(ii) Presence of equal and similar charges on colloidal particles provides stability to the colloids.

(iii) Any amount of dispersed liquid can be added to emulsion without destabilising it.

(iv) Brownian movement stabilises sols.

(1) (i) and (ii) (2) (ii) and (iii)

(3) (ii) and (iv) (4) (i) and (iv)

15. Which of the following colloids cannot be coagulated easily?

(i) Lyophobic colloids. (ii) Irreversible colloids.

(iii) Reversible colloids. (iv) Lyophilic colloids.

(1) (i) and (ii) (2) (ii) and (iii) (3) (iii) and (iv) (4) (i) and (iv)

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NEET-CHEMISTRY **ELP NO.-3**

PRACTICALS RELATED TO PHYSICAL CHEMISTRY

1. What happens when a lyophilic sol is added to a lyophobic sol-

(i) Lyophobic sol is protected.

(ii) Lyophilic sol is protected.

(iii) Film of lyophilic sol is formed over lyophobic sol.

(iv) Film of lyophobic sol is formed over lyophilic sol.

(1) (i) and (ii) (2) (i) and (iii) (3) (iii) and (iv) (4) (i) and (iv)

2. Method by which lyophobic sol can be protected.

(1) By addition of oppositely charged sol.

(2) By addition of an electrolyte.

(3) By addition of lyophilic sol.

(4) By boiling.

3. Freshly prepared precipitate sometimes gets converted to colloidal solution by _____.

(1) Coagulation (2) Electrolysis (3) Diffusion (4) Peptisation

4. Which of the following electrolytes will have maximum coagulating value for AgI/Ag+ sol -

(1) Na_2S (2) Na_3PO_4 (3) Na_2SO_4 (4) NaCl

5. The combination of two layers of opposite charges around the colloidal particle is called Helmholtz electrical double layer. The potential difference between the fixed layer and the diffused layer of opposite charge is called-

(1) Electrode potential (2) Zeta potential

(3) Adsorption potential (4) Diffused potential

6. Which of the following is not a method for coagulation of lyophobic sols-

(1) By electrophoresis (2) By mixing oppositely charged sols

(3) By adding electrolyte (4) By adding a protective colloid

7. Which of the following is not an explanation for the origin of charge on the colloidal particles-

(1) Due to frictional electrification (2) Due to dissociation of surface molecules

(3) Due to electrophoresis (4) Due to selective adsorption of ions

8. When a small quantity of $FeCl_3$ solution is added to the fresh precipitate of $Fe(OH)_3$, a colloidal sol is obtained. The process through which this sol is formed is known as-

(1) Exchange of solvent (2) Chemical double decomposition

(3) Peptization (4) Electrophoresis

9. When an excess of a very dilute aqueous solution of KI is added to a very dilute aqueous solution of silver nitrate, the colloidal particles of silver iodide are associated with which of the following Helmholtz double layer-

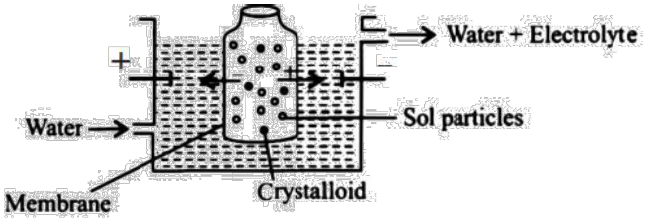
(1) $AgI/Ag^+ \vdots I^-$ (2) $AgI/K^+ \vdots NO_3^-$ (3) $AgI/NO_3^- \vdots Ag^+$ (4) $AgI/I^- \vdots K^+$

10. Substances which behave as normal electrolytes in solution at low concentration and exhibit colloidal properties at higher concentration are called-

(1) Lyophilic colloids (2) Lyophobic colloids

(3) Macromolecular colloids (4) Associated colloids

11. Which of the processes is being shown in the figure



(1) Electrodialysis (2) Dialysis (3) Electroosmosis (4) Electrophoresis

12. Lyophilic sols are

(1) Irreversible sols (2) They are prepared from inorganic compound

(3) Coagulated by adding electrolytes (4) Self–stabilizing

13. Lyophilic sols are more stable than lyophobic sols because their particles are

(1) Positively charged (2) Negatively charged

(3) All soluble (4) Attract each other

14. The disperse phase in colloidal iron (III) hydroxide and colloidal gold is positively and negatively charged, respectively. Which of the following statements is not correct

(1) Mixing the sols has no effect

(2) Coagulating in both sols can be brought about by electrophoresis

(3) Magnesium chloride solution coagulates, the gold sol more readily than the iron (III) hydroxide sol

(4) Sodium sulphate solution causes coagulation in both sols

15. Which one of the sols acts as protective colloid

(1) As_2S_3 (2) Gelatin (3) Au (4) $Fe(OH)_3$

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ELP

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NEET-CHEMISTRY **ELP NO.-1**

CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES

1. There are 10 neutrons in the nucleus of the element $_{Z}M^{19}$. It belongs to:

(1) f-block (2) s-block (3) d-block (4) p-block

2. The electronic configuration of an element is $1s^2$, $2s^2 2p^6$, $3s^2 3p^4$.The atomic number of element present just below the above element in periodic table is:

(1) 36 (2) 34 (3) 33 (4) 32

3. Atomic number of Ag is 47. In the same group the atomic number of elements placed above and below Ag will be:

(1) 37, 67 (2) 29, 79 (3) 39, 69 (4) 29, 65

4. Which of the following set of magic number correctly represent the magic no. for group-1:

(1) 2, 8, 20, 28, 50, 82, 126 (2) 2, 8, 8, 18, 18, 32

(3) 2, 2, 8, 8, 18, 32 (4) 2, 8, 18, 18, 32, 32

5. Which configuration represents a noble gas:

(1) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^{10}\ 4s^2$ (2) $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6$

(3) $1s^2\ 2s^2\ 2p^6\ 3p^6$ (4) $1s^2\ 2s^2\ 2p^6\ 3s^2$

6. From atomic no. 1 to atomic no. 110 how many elements contain e^- in f-subshell?

(1) 28 (2) 57 (3) 58 (4) 53

7. In first 100 elements of periodic table how many elements have e^- in 4d sub-shells:

(1) 30 (2) 20 (3) 60 (4) 62

8. Which of the following is not correct match?

(1) Latest Inert gas – Uuo (2) Latest pnicogen – Uup

(3) Next IIA metal – Ubn (4) Halogen – Uuu

9. If one orbital can accomodate 3 electrons instead of 2 then, what is maximum number of possible elements in 3rd period?

(1) 8 (2) 18 (3) 12 (4) 32

10. If Aufbau principle is not followed then Ca would belong to:

(1) s-block (2) p-block (3) d-block (4) f-block

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NEET-CHEMISTRY **ELP NO.-2**

CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES

1. The atom having the valence shell electronic configuration $4s^2\ 4p^2$ would be in:

(1) Group II A and period 3 (2) Group II B and period 4

(3) Group IV A and period 4 (4) Group IV A and period 3

2. The elements having the electronic configuration, [Kr] $4d^{10}$, $4f^{14}$, $5s^2$, $5p^6$, $5d^2$, $6s^2$ belongs to:

(1) s-block (2) p-block (3) d-block (4) f-block

3. An element has electronic configuration $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^4$. Predict their period, group and block:

(1) Period = 3rd, block = p, group = 16 (2) Period = 5th, block = s, group = 1

(3) Period = 3rd, block = p, group = 10 (4) Period = 4th, block = d, group = 12

4. What is the position of the element in the Modern periodic table satisfying the electronic configuration $(n-1)\ d^1\ ns^2$ for n = 4:

(1) 3rd period and 3rd group (2) 4th period and 4th group

(3) 3rd period and 2nd group (4) 4th period and 3rd group

5. Which of the following show diagonal relationship?

(1) B & Si (2) B & Al (3) B & Ga (4) B & C

6. The properties of lithium are more similar to magnesium although they are members of different groups because: –

(1) Both are alkaline earth metals (2) Both are s-block elements

(3) Both are of approximately same size (4) Both have same number of neutrons

7. First member of rare earth element is –

(1) Ce (2) Ac (3) U (4) La

8. According to soviet union of russia the name of element with atomic no. 104 should have been:-

(1) Rutherfordium (2) Kurchatovium (3) Seaborgium (4) Lawrencium

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NEET-CHEMISTRY **ELP NO.-3**

UPTO IDENTIFICATION OF PERIOD, GROUP & BLOCK

1. Choose the s-block element from the following:

(1) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 3d^5, 4s^1$ (2) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 3d^{10}, 4s^1$

(3) $1s^2, 2s^2, 2p^6, 3s^2, 3p^6, 4s^1$ (4) all of the above

2. If there were 10 periods in the periodic table then how many elements would this period can maximum comprise of.

(1) 50 (2) 72 (3) 32 (4) 98

3. The electronic configuration of an element is $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^4$. The atomic number and the group number of the element 'X' which is just below the above element in the periodic table are respectively.

(1) 24 & 6 (2) 24 & 15 (3) 34 & 16 (4) 34 & 8

4. The element with atomic number Z = 115 will be placed in:-

(1) 7th period, IA group (2) 8th period, IVA group

(3) 7th period, VA group (4) 6th period, VB group

5. In 6th period of the modern periodic table, electronic energy levels is in the order:-

(1) 6s, 4f, 5d, 6p (2) 6s, 6p, 4f, 5d (3) 4f, 5d, 6s, 6p (4) None

6. Out of first 100 elements no. of elements having electrons in 3d orbitals (in their complete electronic configuration) are :-

(1) 80 (2) 100 (3) 40 (4) 60

7. The atom having the valence shell electronic configuration $4s^2\ 4p^2$ would be in:-

(1) Group II A and period 3 (2) Group II B and period 4

(3) Group IV A and period 4 (4) Group IV A and period 3

8. The electronic configuration of transition elements is exhibited by :-

(1) $ns^{1-2}(n-1)d^{1-10}$ (2) $ns^2\ (n - 1)\ d^{10}$ (3) $(n - 1)d^{10}s^2$ (4) ns^2np^5

9. Which of the following electronic configurations in the outermost shell is characteristic of alkali metals

(1) $(n-1)\ s^2p^6\ ns^2p^1$ (2) $(n-1)\ s^2p^6d^{10}\ ns^1$ (3) $(n-1)\ s^2p^6\ ns^1$ (4) $ns^2np^6\ (n-1)d^{10}$

10. The fourteen elements collectively placed in 3rd group and 7th period are called :-

(1) Typical elements (2) Representative element

(3) Actinides (4) Lanthanones

11. An element which is recently discovered is placed in 7th period and 10th group. IUPAC name of the element will be :-

(1) Unnilseptium (2) Ununnilium (3) Ununbium (4) None

12. Which of the following statement is wrong for the transition elements :-

(1) Transition elements are placed from 3rd to 6th period.

(2) Last electron enters in (n –1)d orbital

(3) Exhibits variable valency

(4) General electronic configuration is $(n-1)d^{1-10}\ ns^{1-2}$

13. In the general electronic configuration -

$(n-2)f^{1-14}\ (n-1)d^{0-1}\ ns^2$, if value of n = 7 the configuration will be of -

(1) Lanthanides (2) Actinides (3) Transition elements (4) None

14. Element with the electronic configuration given below, belong to which group in the periodic table $1s^2,\ 2s^22p^6,\ 3s^23p^63d^{10},\ 4s^24p^64d^{10},\ 5s^25p^3$

(1) 3rd (2) 5th (3) 15th (4) 17th

15. $4d^45s^1$ configuration belongs to which group :-

(1) IIA (2) IIB (3) V B (4) III B

16. Which of the following general electronic configuration for transition elements is not correct

(1) $(n + 1)\ s^{1-2}\ nd^{1-10}$ (2) $ns^{1-2}\ (n-1)d^{1-10}$(Where n = 2, 3, 4 .....)

(3) $ns^{0,1,2}\ (n-1)s^2\ p^6\ d^{1-10}$ (4) $(n-1)d^{1-10}\ ns^{0-2}$

17. Which of the following electronic configuration belongs to inert gas elements :-

(1) $ns^2\ (n-1)d^{10}$ (2) $ns^2\ (n-1)s^2p^6$ (3) $ns^2\ np^6$ (4) None

18. The electronic configuration of an element is $1s^22s^22p^63s^23p^63d^{10}4s^1$. What is the atomic number of next element of the same group which is recently discovered :-

(1) 20 (2) 119 (3) 111 (4) None

19. From atomic number 58 to 71, elements are placed in :-

(1) 5th period and III A group (2) 6th period and III B group

(3) separate period and group (4) 7th period and IV B group

20. Element X belongs to 4th period. It contains 18 and 1 electron in the penultimate and ultimate orbit. The X should be :

(1) Normal element (2) Transition element

(3) Inert gas (4) Inner - transition element

21. Element with atomic number 56 belong to which block ?

(1) s (2) p (3) d (4) f

22. Outer electronic configuration of K, Cu, and Cr are respectively

(1) $4s^1$, $3d^{10}$, $3d^5$ (2) $4s^2$, $3d^{10}$, $3d^4$ (3) $4s^1$, $3d^9$, $3d^4$ (4) $4s^1$, $3d^9$, $3d^4$

23. Elements whose outer electronic configuration vary from ns^2np^1 to ns^2np^6 constitute.

(1) s-Block of elements (2) p-Block of elements

(3) d-Block of elements (4) f-Block of elements

24. Which of the following pairs has both members from the same group of periodic table.

(1) Mg, Ba (2) Mg, Na (3) Mg, Cu (4) Mg, Cl

25. In the long form of periodic table, elements are arranged in the increasing order of

(1) Atomic mass (2) Atomic number (3) Mass number (4) Metallic character

26. The period to which an element belongs to in the long form of periodic table represents

(1) Atomic mass (2) Atomic number

(3) Principal quantum number (4) Azimuthal quantum number

27. Elements belonging to the same group of periodic table have

(1) Same number of energy levels (2) Same number of valence electrons

(3) Same number of electrons (4) Same ionisation enthalpy

28. What is the name and symbol of the element with atomic number 112?

(1) Ununbium, Uub (2) Unnilbium, Unb (3) Ununnillum, Uun (4) Ununtrium, Uut

29. An element with atomic number 117 is known as

(1) Nihonium (2) Flerovium (3) Tennessine (4) Roentgenium

30. The period number in the long form of the periodic table is equal to:

(1) Magnetic quantum number of any element of the peirod.

(2) Atomic number of any element of the period.

(3) Maximum principal quantum number of any element of the period.

(4) Maximum azimuthal quantum number of any element of the period.

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NEET-CHEMISTRY **ELP NO.-4**

UPTO EFFECTIVE NUCLEAR CHARGE

1. The last member in each period of the periodic table is

(1) An inert gas element (2) A transition element

(3) A halogen (4) An alkali metal

2. All the s-block elements of the periodic table are placed in the groups ...

(1) IA and IIA (2) IIIA and IVA

(3) B sub groups (4) VA to VIIA

3. Fluorine, chlorine, bromine and iodine are placed in the same group (17) of the periodic table, because:

(1) They are non-metals

(2) They are electronegative

(3) Their atoms are generally univalent

(4) They have 7 electrons in the outermost shell of their atom

4. According to the Modern Periodic law of elements the variation in properties of elements is related to their.

(1) Atomic masses (2) Nuclear masses

(3) Atomic numbers (4) Nuclear neutron-proton number

5. If the atomic number of an element is 33, it will be placed in the periodic table in the

(1) Group 1 (2) Group 13 (3) Group 15 (4) Group 17

6. If an atom has electronic configuration $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^3\ 4s^2$, it will be placed in

(1) Second group (2) Third group (3) Fifth group (4) Sixth group

7. Which group of the periodic table contais only metals

(1) IIA (2) VIIA (3) IIIA (4) None of these

8. Which of the following show diagonal relationship

(1) B and Si (2) Li and Mg (3) Be and Al (4) All of these

9. The element with atomic number 36 belongs to .... block in the periodic table

(1) p (2) s (3) f (4) d

10. Chemical property of Li and Mg similar because

(1) These belong to same group (2) Both IP is same

(3) Shows diagonal relationship (4) Both EA is same

11. Coinage metals are present in

(A) s-block (2) d-block (3) p-block (4) f-block

12. Which of the following is the atomic number of a metal

(1) 32 (2) 34 (3) 36 (4) 38

13. Which of the following statement is not correct regarding hydrogen atom

(1) It resembles halogens in some properties

(2) It resembles alkali metals in some properties

(3) It can be placed in 17th group of periodic table

(4) It can not be placed in first group of periodic table

14. Hydrogen can be put in halogen group because

(1) It has deuterium and tritium as isotopes

(2) It forms hydrides like chlorides

(3) It contains one electron only

(4) It is light

15. The basis of keeping the elements in the group of a periodic table is

(1) Ionisation potential (2) Electronegativity

(3) Electron affinity (4) Number of electrons in the valence shell

16. The fundamental basis of the present-day periodic Table is that elements are

(1) Arranged in the order of increasing atomic weights

(2) Grouped according to chemical properties

(3) Arranged in the order of increasing number of neutrons in the atomic nucleus

(4) Arranged in the order of increasing number of protons in the nucleus

17. Which of the following species does'not show shielding effect?

(1) H (2) He (3) Li (4) Be

18. The screening effect of d-electron is

(1) Equal to p-electrons (3) More than p-electrons

(3) Same as f-electrons (4) Less than p-electrons

19. On moving down the group in Alkali metals value of σ

(1) Increases (2) Decreases

(3) Remains same (4) First increases than becomes constant

20. If value of σ for Li is x than determine the value of σ for 'B' is

(1) x (2) x + 0.35 (3) x + 0.70 (4) x + 1.30

21. Which of the following order of $Z_{eff.}$ is correct

(1) $Mn^{2+} < Mn^{4+} < Mn^{+7}$ (2) $Mn^{+2} > Mn^{4+} > Mn^{+7}$

(3) $Cr^{+2} > Cr^{+3} > Cr^{+6}$ (4) $I^{\oplus} > I^{\ominus} > I$

22. Which of the following order of $Z_{effective}$ is correct

(1) $N^{-3} > O^{-2} > F^{-}$ (2) $Al^{3+} > Mg^{2+} > Na^{+} > F^{-}$

(3) $Al^{3+} < Mg^{2+} < Na^{+} < F^{-}$ (4) Na > Mg > Al > Si

23. If Zeff of Li is x than $Z_{effective}$ of carbon is

(1) x + 0.90 (2) x + 1.05 (3) x + 1.95 (4) x + 0.40

24. The order of screening effect of electrons of s,p,d,f orbitals of a given shell of an atom on its outer shell electrons

(1) s > p > d > f (2) f > d > p > s (3) p > d > s > f (4) f > p > s > d

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NEET-CHEMISTRY | **ELP NO.-5** | **ATOMIC & IONIC RADIUS**

1. The correct order of atomic size of C, N, P, S follows the order:

(1) N<C<S<P (2) N<C<P<S (3) C<N<S<P (4) C<N<P<S

2. Match list-I with list-II and select the correct answer using the codes given below:

List-I	**List-II**
Ion	**Radius (in pm)**
(i) Li^+	(a) 216
(ii) Na^+	(b) 195
(iii) Br^-	(c) 60
(iv) I^-	(d) 95

Codes:

	I	**II**	**III**	**IV**
(1)	a	b	d	c
(2)	b	c	a	d
(3)	c	d	b	a
(4)	d	c	b	a

3. The ionic radii of N^{3-}, O^{2-} and F^- are respectively given by:

(1) 1.36, 1.40, 1.71 (2) 1.36, 1.71, 1.40 (3) 1.71,1.40, 1.36 (4) 1.71,1.36, 1.40

4. In which of the following compounds manganese shows maximum radius:

(1) MnO_2 (2) $KMnO_4$ (3) MnO (4) $K_3[Mn(CN)_6]$

5. Arrange in the increasing order of atomic radii of the following elements O, C, F, Cl, Br:

(1) F<O<C<Cl<Br (2) F<C<O<Cl<Br (3) F<Cl<Br<O<C (4) C<O<F<Cl<Br

6. The correct order of size would be:

(1) Ni<Pd~Pt (2) Pd<Pt<Ni (3) Pt>Ni>Pd (4) Pd>Pt>Ni

7. Which group of atoms have nearly same atomic radius:

(1) Na, K, Rb, Cs (2) Li, Be, B, C (3) Fe, Co, Ni (4) F, Cl, Br, I

8. In the ions P^{3-}, S^{2-} and Cl^- the increasing order of size is:

(1) $Cl^- < S^{2-} < P^{3-}$ (2) $P^{3-} < S^{2-} < Cl^-$ (3) $S^{2-} < Cl^- < P^{3-}$ (4) $S^{2-} < P^{3-} < Cl^-$

9. Atomic radii of Fluorine and Neon in Angstrom units are given by:

(1) 0.72, 1.60 (2) 1.60, 1.60 (3) 0.72, 0.72 (4) None of these

10. Which of the following has largest radius:

(1) $1s^2, 2s^2, 2p^6, 3s^2$ (2) $1s^2, 2s^2, 2p^6, 3s^2, 3p^1$

(3) $1s^2,2s^2,2p^6,3s^2,3p^3$ (4) $1s^2,2s^2,2p^6,3s^2,3p^5$

11. Arrange the elements in increasing order of atomic radius Na, Rb, K, Mg:

(1) Na<K<Mg<Rb (2) K<Na<Mg<Rb (3) Mg<Na<K<Rb (4) Rb<K<Mg<Na

12. Arrange the following in increasing order of atomic radii Na, Si, Al, Ar:

(1) Na<Si<Al<Ar (2) Si<Al<Na<Ar (3) Ar<Al<Si<Na (4) Na<Al<Si<Ar

13. Consider the isoelectronic series:

K^+, S^{2-}, Cl^- and Ca^{2+}, the radii of the ions decrease as:

(1) $Ca^{2+}<K^+<Cl^-<S^{2-}$ (2) $Cl^->S^{2-}>K^+>Ca^{2+}$

(3) $S^{2-}>Cl^->K^+>Ca^{2+}$ (4) $K^+>Ca^{2+}>S^{2-}>Cl^-$

14. Which of the following is not isoelectronic series:

(1) Cl^-, P^{3-}, Ar (2) N^{3-}, Ne, Mg^{+2} (3) B^{+3}, He, Li^+ (4) N^{3-}, S^{2-}, Cl^-

15. In the isoelectronic species the ionic radii ($\mathring{A}$) of N^{3-}, Ne and Al^{+3} are respectively given by:

(1) 1.36, 1.40, 1.71 (2) 1.36, 1.71, 1.40

(3) 1.71, 1.40, 1.36 (4) 1.71, 1.36, 1.40

16. The size of the following species increases in the order:

(1) $Mg^{2+} < Na^+ < F^-$ (2) $F^-<Na^+<Mg^{2+}$

(3) $Mg<F^-<Na^+$ (4) $Na^+<F^-<Mg^{2+}$

17. Highest size will be of:

(1) Br^- (2) I (3) I^- (4) I^+

18. Element Hg has two oxidation states Hg^{+1} & Hg^{+2}, the right order of radii of these ions.

(1) $Hg^{+1}> Hg^{+2}$ (2) $Hg^{+2}>Hg^{+1}$ (3) $Hg^{+1} = Hg^{+2}$ (4) None of these

19. The correct order of increasing atomic size of element N, F, Si & P.

(1) N < F < Si < P (2) F > N < P < Si (3) F < N < P < Si (4) F < N < Si < P

20. The correct order of atomic/ionic size:

(1) N > Li < B (2) Cl < Mg < Ca (3) $Ca^{+2} < S^{-2}<Cl^-$ (4) $Na^+<Mg^{+2}<Cl^-$

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NEET-CHEMISTRY **ELP NO.-6** **ATOMIC RADIUS & SCREENING EFFECTS**

1. Atomic radii of fluorine and neon in angstroms units are respectively:

(1) 1.60 and 1.60 (2) 0.72 and 1.60

(3) 0.72 and 0.72 (4) none of these

2. The difference between ions and atoms is of:

(1) Relative size (2) Configuration

(3) Presence of charge (4) All of the above

3. Na^+ is smaller than Na atom because:

(1) Nucleus in each case contains different nucleons

(2) Sodium atom has an electron lesser than sodium ion

(3) Sodium atom has 11 electrons and sodium ion has 10 electrons

(4) The force of attractions is less in Na^+ than in Na atom

4. The ionic radii of a cation w. r. t. parent atom is always:

(1) Less than atomic radii (2) More than atomic radii

(3) Equal to atomic radii (4) Cannot be predicted

5. Which of the following has largest size?

(1) Na (2) Na^+ (3) Mg (4) Mg^{2+}

6. An element M has an atomic number 9 and atomic mass 19. Its ion will be represented by

(1) M (2) M^{2+} (3) M^- (4) M^{2-}

7. Which one of the following is smallest in size?

(1) Na^+ (2) O^{2-} (3) N^{3-} (4) F^-

8. Which of the following is the smallest cation?

(1) Na^+ (2) Mg^{2+} (3) Ca^{2+} (4) Al^{3+}

9. In the isoelectronic species, the ionic radii (A) of N^{3-}, O^{2-} and F^- are respectively given by

(1) 1.36, 1.40, 1.71 (2) 1.36, 1.71, 1.40

(3) 1.71, 1.40, 1.36 (4) 1.71, 1.36, 1.40

10. Chloride ion and potassium ion are isoelectronic. Then:

(1) Their sizes are same (2) Cl^- ion is bigger than K^+ ions

(3) K^+ ion is relatively bigger (4) Their sizes depend on other cation and anion

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NEET-CHEMISTRY **ELP NO.-7** **IONISATION & ENTHALPY**

1. On moving from left to right across a period in the table the metallic character

(1) Increases (2) Decreases

(3) Remains constant (4) First increases and then decreases

2. The energy required to remove an electron of a gaseous atom from its ground state is called

(1) Potential energy (2) Ionization energy

(3) Electrode potential (4) Activation energy

3. The first ionization energy of boron is less than that of beryllium because

(1) Boron has higher nuclear charge

(2) Atomic size of boron is more than that of beryllium

(3) Boron has only one electron in p-sub-shell

(4) 2p electron of boron is more shielded from the nucleus by the inner core of electrons than the 2s electrons of beryllium.

4. $A \rightarrow A^+ + e$, E_1 and $A^+ \rightarrow A^{2+} + e$, E_2. The energy required to pull out the two electrons are E_1 and E_2 respectively. The correct relationship between two energy would be

(1) $E_1 < E_2$ (2) $E_1 = E_2$ (3) $E_1 > E_2$ (4) $E_1 \neq E_2$

5. Which of the following element has maximum, first ionisation potential?

(1) V (2) Ti (3) Cr (4) Mn

6. Highest energy will be absorbed to eject out the electron in the configuration

(1) $1s^2\ 2s^2\ 2p^1$ (2) $1s^2\ 2s^2\ 2p^3$ (3) $1s^2\ 2s^2\ 2p^2$ (4) $1s^2\ 2s^2\ 2p^4$

7. The first ionization potentials (eV) of Be and B respectively are

(1) 8.29eV, 9.32eV (2) 9.32eV, 9.32eV

(3) 8.29eV, 8.29eV (4) 9.32eV, 8.29eV

8. The first four ionization energy values of an element are 191, 578, 872 and 5962 kcal. The number of valence electrons in the element is

(1) 1 (2) 2 (3) 3 (4) 4

9. Which of the following has least ionization potential?

(1) Li (2) Cs (3) Cl (4) I

10. As one moves along a given row in the periodic table, ionization energy

(1) Remains same (2) Increases from left to right

(3) First increases, then decreases (4) Decreases from left to right

11. Ionization energy is highest for

(1) Noble gases (2) Platinum metals

(3) Transition elements (4) Inner–transition elements

12. When the first ionization energies are plotted against atomic number the peaks are occupied

(1) Alkali metals (2) Halogens (3) Inert gases (4) Transition elements

13. Among the following which has the highest first ionization energy?

(1) K (2) Na (3) B (4) Kr

14. With reference to concept of ionisation potential, which one of the following sets are correct

(1) Li > K > Cs (2) Li > B > K (3) Cs > Li > B (4) Cs > Li > K

15. The set representing the correct order of first ionisation potential is

(1) K > Na > Li (2) Be > Mg > Ca (3) B > C > N (4) Ge > Si > C

16. The decreasing order of the ionisation potential in the following elements is

(1) Ne > Cl > P > S > Al > Mg (2) Ne > Cl > P > S > Mg > Al

(3) Ne > Cl > S > P > Mg > Al (4) Ne > Cl > S > P > Al > Mg

17. Which is the correct order of the first ionization potential of N, O and C?

(1) C > N > O (2) C < N > O (3) O > N > O (4) C > N ~ O

18. In view of their low ionisation energies the alkali metals are

(1) Weak oxidising agents (2) Strong reducing agents

(3) Strong oxidising agents (4) Weak reducing agents

19. Of the following iso-electronic ions, the one which has the lowest ionisation potential is

(1) Na^{+} (2) Mg^{++} (3) F^{-} (4) O^{--}

20. A sudden large jump between the values of 2nd and 3rd IP of an element would be associated with the electronic configuration.

(1) $1s^2, 2s^2 2p^6, 3s^1$ (2) $1s^2, 2s^2 2p^6, 3s^2 3p^5$

(3) $1s^2, 2s^2 2p^6, 3s^2 3p^2$ (4) $1s^2, 2s^2 2p^6, 3s^2$

21. IP_1 and IP_2 of Mg are 178 and 348 Kcal mol–1. The enthalpy required for the reaction $Mg \rightarrow Mg^{2+} + 2e^-$ is

(1) +170 Kcal (2) +526 Kcal (3) – 170 Kcal (4) – 526 Kcal

22. In which of the following electronic configuration ionisation energy will be maximum

(1) [Ne] $3s^2\ 3p^1$ (2) [Ne] $3s^2\ 3p^2$ (3) [Ne] $3s^2\ 3p^3$ (4) [Ar] $3d^{10}\ 4s^2\ 4p^3$

23. The correct order of second I.P.

(1) Na < Mg > Al < Si (2) Na > Mg < Al > Si

(3) Na > Mg > Al < Si (4) Na > Mg > Al > Si

24. The first Ionization energy of Na, Mg, Al & Si are in the order:

(1) Na < Mg > Al < Si (2) Na > Mg > Al > Si

(3) Na < Mg < Al < Si (4) Na > Mg > Al < Si

25. The first ionization energy in eV of N & O are respectively given by :-

(1) 14.6, 13.6 (2) 13.6, 14.6 (3) 13.6, 13.6 (4) 14.6, 14.6

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NEET-CHEMISTRY **ELP NO.-8** **ELECTRON AFFINITY**

1. Electron affinity is: -

(1) Relative strength to attract the shared electron pair

(2) Necessary energy required to remove the electron from the ultimate orbit

(3) Energy released when an electron is added to the outermost shell

(4) Energy released when an electron is added to the inner shell

2. The electron affinity of N, O, S and Cl are such that: -

(1) N < O < S < Cl (2) O < N < Cl < S (3) O ≈ Cl < N ≈ S (4) O < S < Cl < N

3. The correct order of electron affinity of B, C, N, O is: –

(1) O > C > N > B (2) B > N > C > O (3) O > C > B > N (4) O > B > C > N

4. The correct order of electron affinity for the different families is: -

(1) Halogen > carbon > nitrogen > oxygen

(2) Halogen > oxygen > nitrogen > carbon

(3) Halogen > nitrogen > carbon > oxygen

(4) Halogen > oxygen > carbon > nitrogen

5. Highest electron–affinity is associated with the configuration: -

(1) $2s^2, 2p^0$ (2) $2s^2, 2p^2$ (3) $2s^2, 2p^3$ (4) $2s^2, 2p^1$

6. Which statement is correct: -

(1) The E.A. of carbon is greater than oxygen (2) The E.A. of Sulphur is less than oxygen

(3) The E.A. of iodine is greater than bromine (4) The E.A. of bromine is less than chlorine

7. Arrange N, O and S in decreasing order of electron affinity: -

(1) S > O > N (2) O > S > N (3) N > O > S (4) S > N > O

8. $O_{(g)} + 2e^- \rightarrow O^{2-}_{(g)}$ ΔH_{eg} = 744.7 KJ/mole. The positive value of ΔH_{eg} is due to: -

(1) Energy is released to add to 1 e^- to O^{-1} (2) Energy is required to add to 1 e^- to O^{-1}

(3) Energy is needed to add on 1 e^- to O (4) None of the above is correct

9. Which of the following process energy is liberated: -

(1) $Cl \rightarrow Cl^{+} + e^{-}$ (2) $HCl \rightarrow H^{+} + Cl^{-}$ (3) $Cl + e^{-} \rightarrow Cl^{-} + e^{-}$ (4) $O^{-} + e^{-} \rightarrow O^{-2}$

10. The element having very high ionization enthalpy but zero electron gain enthalpy is: -

(1) H (2) F (3) He (4) Be

11. The electron affinity values for the halogens shown the following trend: -

(1) F < Cl > Br > l (2) F < Cl < Br < l (3) F > Cl > Br > l (4) F < Cl > Br < l

12. The electron affinity of the members of oxygen family of the periodic table, follows the sequence:

(1) O > S > Se (2) S > O > Se (3) O < S > Se (4) Se > O > S

13. Of the following elements, which have the highest electron affinity?

(1) As (2) O (3) S (4) Se

14. Electron affinities of O, F, S and Cl are in the order.

(1) O < S< Cl < F (2) O < S < F < Cl (3) S < O < Cl < F (4) S < O < F < Cl

15. Which of the following statement is not true?

(1) F atom can hold additional electron more tightly than Cl atom

(2) Cl atom can hold additional electron more tightly than F atom

(3) The incoming electron encounters greater repulsion for F atom than for Cl atom

(4) It is easier to remove an electron from F^{-} than Cl^{-}

16. Increasing order of Electron affinity for following configuration.

(a) $1s^2, 2s^2, 2p^3$ (b) $1s^2, 2s^2, 2p^4$

(c) $1s^2, 2s^2, 2p^6\ 3s^2\ 3p^4$ (d) $1s^2, 2s^2\ 2p^6, 3s^2, 3p^3$

(1) a < d < b < c (2) d < a < c < b (3) a <b< c < d (4) a < b < d < c

17. Highest electron affinity is shown by

(1) F^{-} (2) Cl^{-} (3) Li^{+} (4) Na^{+}

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NEET-CHEMISTRY **ELP NO.-9**

IONISATION ENTHALPY & ELECTRON AFFINITY

1. The first ionisation energy of lithium will be

(1) Greater than Be (2) Less than Be

(3) Equal to that of Na (4) Equal to that of F

2. Ionisation energy in group I-A varies in the decreasing order as

(1) Li > Na > K > Cs (2) Na > Li > K > Cs

(3) Li > Cs > K > Na (4) K > Cs > Na > Li

3. The order of the magnitude of first ionisation potentials of Be, B, N and O is

(1) N > O > Be > B (2) N > Be > O > B

(3) Be > B > N > O (4) B > Be > O > N

4. Which has the highest second ionisation potential?

(1) Nitrogen (2) Carbon (3) Oxygen (4) Fluorine

5. A neutral atom will have the lowest ionization potential when its electronic configuration is

(1) $1s^1$ (2) $1s^2, 2s^2p^6$ (3) $1s^2, 2s^2p^2$ (4) $1s^2, 2s^2p^6, 3s^1$

6. Which one of the following elements has the highest ionisation energy?

(1) Na (2) Mg (3) C (4) F

7. Which is correct about ionisation potential?

(1) It is independent of atomic radii

(2) It increases with increase in atomic radii

(3) It remains constant with increase in atomic radii

(4) It decreases with increase in atomic radii

8. Ionisation energy increases in the order–

(1) Be<B<C<N (2) B<Be<C<N (3) C<N<Be<B (4) N<C<Be<B

9. Highest ionisation potential in a period is shown by–

(1) Alkali metals (2) Noble gases

(3) Halogens (4) Representative elements

10. The ionization energy will be maximum for the process.

(1) $Ba \rightarrow Ba^{++}$ (2) $Be \rightarrow Be^{++}$ (3) $Cs \rightarrow Cs^{+}$ (4) $Li \rightarrow Li^{+}$

11. Amongst the following the incorrect statement is

(1) IE_1 (Al) < IE_1 (Mg) (2) IE_1 (Na) < IE_1 (Mg)

(3) IE_2 (Mg) > IE_2 (Na) (4) IE_3 (Mg) > IE_3 (Al)

12. The first ionisation energy of N & O in eV are respectively:

(1) 14.6, 13.6 (2) 13.6, 14.6 (3) 13.6, 13.6 (4) 14.6, 14.6

13. Which of the following isoelectronic ion has the lowest ionisation energy?

(1) Na^{+} (2) F^{-} (3) Mg^{2+} (4) O^{2-}

14. On moving down the group, which of the following will not be observed?

(1) Ionisation energy increases (2) Electron affinity decreases

(3) Electronegativity decreases (4) Atomic radii increase

15. Which of the following has the lowest 1st ionisation energy?

(1) Na^{+} (2) F^{-} (3) Mg^{2+} (4) O^{2-}

16. Fluorine has low electron affinity than chlorine because of: -

(1) Smaller radius of fluorine, high e^{-} density

(2) Smaller radius of chlorine, high e^{-} density

(3) Bigger radius of fluorine, less e^{-} density

(4) Smaller radius of chlorine, less e^{-} density

17. Which of the following element is expected to have highest electron gain enthalpy: -

(1) $1s^2 2s^2 2p^6 3s^2 3p^5$ (2) $1s^2 2s^2 2p^3$

(3) $1s^2 2s^2 2p^4$ (4) $1s^2 2s^2 2p^5$

18. The correct order of electron affinity is: -

(1) Be < B < C < N (2) Be < N < B < C

(3) N < Be < C < B (4) N < C < B < Be

19. Electron addition would be easier in: -

(1) O (2) O^{+} (3) O^{-} (4) O^{+2}

20. Second electron affinity of an element is: -

(1) Always exothermic (2) Endothermic for few elements

(3) Exothermic for few elements (4) Always endothermic

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NEET-CHEMISTRY **ELP NO.-10** **PERIODIC TABLE (ELECTRONEGATIVITY)**

1. In which of the following configuration of element has maximum electronegativity

(1) $1s^2, 2s^2\ 2p^5$ (2) $1s^2, 2s^2\ 2p^6$ (3) $1s^2, 2s^2\ 2p^4$ (4) $1s^2, 2s^2\ 2p^6, 3s^2\ 3p^3$

2. On the pauling's electronegativity scale, which is most electronegative?

(1) Cl (2) O (3) Br (4) Ne

3. What parameters are required to evaluate electronegativity in Mulliken scale?

(1) Only electronegativity (2) Only electron affinity

(3) Electron affinity and ionization energy (4) Ionic potential and electronegativity

4. Select the correct statement: -

(1) Cl_2O_7 is the most acidic oxide (2) Non-metallic character decreases in a period

(3) BeO is a basic oxide (4) All are correct

5. Which of the following is affected by the stable electronic configuration of an atom?

(1) Electronegativity (2) Ionisation enthalpy (3) Electron gain enthalpy

Correct answer is :

(1) only electronegativity (2) only ionisation enthalpy

(3) both electron gain enthalpy and ionisation enthalpy (4) all of the above

6. The lowest electronegativity of the element from the following atomic number is

(1) 37 (2) 55 (3) 9 (4) 35

7. Correct order of electronegativity is/are: -

(1) F > Cl > Br > l (2) Si > Al > Mg > Na (3) Cl > S > P > Si (4) All

8. Elements of which group form anions most readily: -

(1) Oxygen family (2) Nitrogen group (3) Halogens (4) Alkali metals

9. Outermost electronic configuration of the most electronegative element is –

(1) ns^2np^3 (2) ns^2np^6 (3) ns^2 (4) ns^2np^5

10. Electronegativity of the following elements increases in the order –

(1) O < N < S < P (2) P < S < N < O (3) P < N < S < O (4) S < P < N < O

11. Which one of the following is incorrect?

(1) An element which has high electronegativity always has high electron gain enthalpy

(2) Electron gain enthalpy is the property of an isolated atom

(3) Electronegativity is the property of a bonded atom

(4) Both electronegativity and electron gain enthalpy are usually directly related to nuclear charge and inversely related to atomic size

12. If electronegativity values of element X and Y are 3.8 and 1.8 respectively, then percentage of ionic character in compound XY is:

(1) 50 (2) 46 (3) 64 (4) 36

13. The pair of amphoteric hydroxide is

(1) $Al(OH)_3$, LiOH (2) $Be(OH)_2$, $Mg(OH)_2$

(3) $B(OH)_3$, $Be(OH)_2$ (4) $Be(OH)_2$, $Zn(OH)_2$

14. Which of the following have no acidic or basic properties: -

(1) CO (2) N_2O (3) NO (4) All

15. The pair with minimum difference in electronegativity is: -

(1) F, Cl (2) C,H (3) P,H (4) Na, Cs

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NEET-CHEMISTRY **ELP NO.–1** **CHEMICAL BONDING**

1. Which condition favours the bond formation:
(1) Maximum attraction and maximum potential energy
(2) Minimum attraction and minimum potential energy
(3) Minimum potential energy and maximum attraction
(4) None of the above

2. During bond formation, potential energy of system:
(1) Increases (2) Decreases (3) Remains the same (4) Cannot be predicted

3. Which of the following has pseudo inert gas configuration.
(1) Na^+ (2) Cu^+ (3) K^+ (4) S^{-2}

4. Which of the following covalent molecule is an exception to octet rule?
(1) $BeCl_2$ (2) CO_2 (3) H_2O (4) CH_4

5. Which of the following contains unpaired electron
(1) NO_2 (2) CO_2 (3) NO_2^- (4) CN^-

6. Odd electron species is/are:
(1) NO (2) NO_2 (3) ClO_2 (4) All

7. Hypervalent species among the following is
(1) BF_3 (2) CO_2 (3) SiF_4 (4) XeF_6

8. Molecule which contain only bonded pair of electrons on the central atom is
(1) H_2O (2) NH_3 (3) $BeCl_2$ (4) BrF_3

9. Compound having maximum number of bonded pair of electrons in its molecule is
(1) Ethyne (2) Ammonia
(3) Sulphur hexafluoride (4) Bromine Pentafluoride

10. Expanded octet can be observed in the valence shell of the central atom in
(1) NH_3 (2) CH_4 (3) PCl_5 (4) $BeCl_2$

11. Duplet configuration is not found in

(1) Hydride ion (2) Hydrogen molecule (3) Lithium cation (4) Be^{3+}

Review Your Self

12. Which d-block metals is liquid at room temperature?

(1) Hg (2) Cd (3) Ga (4) Cs

13. In a given energy level, the order of penetration effect of different orbitals is-

(1) f < d < p < s (2) s = P = d = f (3) s < p < d < f (4) p > s > d > f

14. X is placed in group number 7 and 4th period, Its outermost configuration is-

(1) $5s^2, 5p^5$ (2) $3d^5, 4s^2$ (3) $4d^5, 5s^2$ (4) $4d^5, 4s^1$

15. Which of the following sets does not represent isoelectronic species?

(1) Ne, F^-, O^{2-} (2) Cl^-, Ar, K^+ (3) S^{2-}, Br^-, Kr (4) Mg^{+2}, Na^+, Ne

16. The first transition series begins with-

(1) Titanium (2) Scandium (3) Calcium (4) Yttrium

17. Last group of d-block is known as-

(1) II B (2) VII B (3) VIII (4) X

18. Electronic configuration of X is $1s^2$; $2s^2$, $2p^6$; $3s^2$, $3p^1$. It belongs to-

(1) Third group and third period (2) Thirteenth group and third period

(3) First group and third period (4) Third group and first period

19. What is the atomic number of the third alkali metal?

(1) 3 (2) 9 (3) 11 (4) 19

20. Match list I with List II and then select the correct answer from the codes given below the lists

	List I		**List II**
A.	Metalloid	a.	Selenium
B.	Radioactive	b.	Silver
C.	Transition	c.	Arsenic
D.	Chalcogen	d.	Uranium

Codes :

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

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NEET-CHEMISTRY **ELP NO.–2** **CHEMICAL BONDING**

1. Covalency of chlorine atoms after excitation of two electrons will be

(1) 2 (2) 5 (3) 3 (4) 7

2. In "SF_6", Sulphur atom is in:

(1) Ground state (2) 1st excited state (3) 2nd excited state (4) 3rd excited state

3. Maximum covalency of 2nd and 3rd period elements are respectively:

(1) 4, 4 (2) 6, 6 (3) 4, 6 (4) 4, 7

4. Which of the following species exist?

(1) NF_3 (2) OF_4 (3) NF_5 (4) BF_6^{3-}

5. In Covalence

(1) Transfer of electrons takes place (2) Sharing of electrons takes place

(3) Sharing of electrons by one atom only (4) None of these take place

6. Valency of the atom with respect to oxygen is maximum in

(1) Na_2O (2) MgO (3) Al_2O_3 (4) Cl_2O_7

7. Nucleus of an element has nine protons. its valence would be

(1) 1 (2) 3 (3) 2 (4) 5

8. Variable valence is a property of

(1) Alkali metals (2) Transition metals

(3) Alkaline earth metals (4) Inert gases

9. The molecule that deviates from octet rule is

(1) NaCl (2) $BeCl_2$ (3) MgO (4) NH_3

10. Which of the following molecule deviates from octet rule with respect to central atom

(1) PCl_3 (2) H_2S (3) NH_3 (4) XeF_4

11. The maximum valence of sulphur is

(1) 4 (2) 6 (3) 8 (4) 7

12. $Cl+Cl \rightarrow Cl_2$, this is an example for

(1) Endothermic reaction (2) Exothermic reaction

(3) Either exothermic or endothermic (4) Neither exothermic nor endothermic

Review Your Self

13. Correct electronic configuration of Cr is-

(1) $1s^2 2s^2 2p^6 3s^2 3p^2 3d^4 4s^1$ (2) $1s^2 2s^2 2p^6 3s^2 3d^6 4s^0$

(3) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^5 4s^1$ (4) $1s^2 2p^2 2p^6 3p^0 3d^5$

14. ns^2np^4(n-outermost orbit) represents the valency electrons. The corresponding group would be-

(1) F, Cl, Br ..... (2) N, P, As ..... (3) O, S, Se ..... (4) C, Si, Ge .....

15. Outer configuration of X is $3d^5$, $4s^1$. It belongs to group number-

(1) 16 (2) 15 (3) 5 (4) 6

16. Which of the following the ion with the smallest ionic radius is-

(1) K^+ (2) Ca^{2+} (3) Ti^{3+} (4) Ti^{4+}

17. Identify the incorrect are:

(1) Shielding constatn (σ): Li <Na <K <Rb (2) Atomic size: Li < Na <K <Rb

(3) Ionic radius: $O^{2-} > F^- > Na^+ > Mg^{2+}$ (4) Z_{eff}: Li> Na> K> Rb

18. Electronic configuration are:

A - $1s^2 2s^2 2p^1$

B - $1s^2 2s^2 2p^6 3s^1 3p^2$

C - $1s^2 2s^2 2p^6 3s^2 3p^2$

D - $1s^2 2s^2 2p^5 3s^1$

Then which among these will belong to the same group in the periodic table?

(1) A & B (2) A, B, C (3) A, B, D (4) A, B, C, D

19. Spot the incorrect order of atomic radii:

(1) Cu > Zn (2) Cl > F (3) P > S (4) Sc > Ti

20. For the element Z = 120, in which family would you place:

(1) Group 18, Inert gas (2) Group 15, Nitrogen

(3) Group 2, Alkaline earth metal (4) Group 3, Inner transition element

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ELP

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NEET-CHEMISTRY | **ELP NO.–3** | **CHEMICAL BONDING**

1. Which condition is not favourable for the combination of atomic orbitals:
(1) The combining atomic orbitals nearly have the same energy
(2) The combining atomic orbitals must have the same symmetry about the molecular axis
(3) The combining orbitals must overlap to the maximum extent
(4) The combining orbital must overlap to the minimum extent

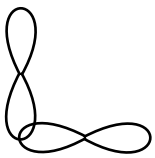
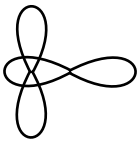
2. Which of the following overlaping is correct [assuming X-axis to be the internuclear axis]
(1) $2p_z + 2p_z \rightarrow \sigma$ (2) $2p_y + 2p_y \rightarrow \pi$ (3) $1s + 2p_y \rightarrow \pi$ (4) $2p_y + 2p_z \rightarrow \pi$

3. Which of the following does not form diatomic molecule?
(1) Iodine (2) Oxygen (3) Phosphorous (4) Nitrogen

4. Which of the following overlapping is not possible
(1) $P_x + p_x$ along y–axis (2) $P_x + p_x$ along x–axis
(3) $P_x + d_{xy}$ along y–axis (4) $P_y + d_{xy}$ along y–axis

5. CO_2 is a gas, while SiO_2 is a solid but both are:
(1) Covalent containing π–bond (2) Molecules having $P\pi - d\pi$ bonding
(3) Acidic (4) Discrete molecules

6. Nitrogen does not form NF_5 because
(1) Nitrogen is member of V group (2) It contains no empty d-orbital
(3) The bond energy of N≡N is very high (4) None

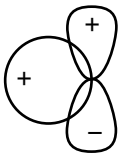
7. Which of the following p-orbitals overlapping would result in the strongest bond:
(1)  (2)  (3) (4)

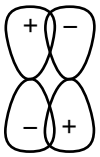
8. Which overlapping is involved in HCl molecule:
(1) s - s Overlap (2) p - p Overlap (3) s - d Overlap (4) s - p Overlap

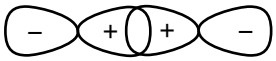
9. Correct order of extent of overlapping is:

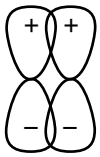
(1) 1s-1s < 2s-2s < 2s-2p
(2) 2p-2p (Axial) < 2p-2p (Collateral)
(3) 1s-1s > 2p-2p (Axial) > 2s-2p > 2s-2s
(4) 1s-1s > 2s-2p > 2s-2s > 2p-2p (Axial)

10. Which of the following atomic orbital overlapping are not allowed:

(1) 

(2) 

(3) 

(4) 

Review Your Self

11. Isoelectronics do not differ in-

(1) Molar mass
(2) Ionic mass
(3) Charge
(4) Numbers of electrons

12. Ionisation potential does not depend upon-

(1) Atomic size
(2) Type of electron
(3) Nuclear charge
(4) Type of bonding in crystal lattice

13. Ionization potential phosphorus is greater than that of Sulphur because-

(1) Of its smaller size
(2) Of more penetrating power of p-orbitals
(3) Its nuclear force of attraction on electrons
(4) Phosphorous has half filled electronic configuration

14. The ionisation potnetial of isotopes of an element will be:

(1) Same
(2) Different
(3) Depends on atomic masses
(4) Depends on number of neutrons

15. Electropositive or metallic character-

(1) Increases in period
(2) Decreases in a group
(3) Decreases in a period and increases in a group
(4) Of an element is reflected in its tendency to from covalent compounds.

16. Match list I with list II and then select the correct answer from the codes given below the lists

List I	**List II**
A. Isoelectronic	a. A^{+} + energy $\rightarrow A^{++}$
B. Half filled orbital	b. Ar, K^{+}, Ca^{++}
C. Second ionisation energy	c. Cerium
D. Lanthenide	d. Arsenic

Codes :

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

17. Ionisation potential is lowest for-

(1) Halogens (2) Inert gas (3) Alkaline earth metals (4) Alkali metals

18. The element which have lowest ionization potential-

(1) Cs (2) Li (3) Na (4) K

19. Two p-block elements x (outer configuration ns^2, np^3) and z (out configuration ns^2np^4) occupy neighbouring positions in a period. Using the is information which of the following is correct with respect to their ionization potential I_x and I_z.

(1) $I_x > I_z$ (2) $I_z > I_x$

(3) $I_z = I_x$ (4) Relation between I_x and I_z is uncertains

20. Least ionisation potential will be of:

(1) Be^{3+} (2) H (3) Li^{+2} (4) He^{+}

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NEET-CHEMISTRY | **ELP NO.–4** | **CHEMICAL BONDING**

1. Which of the following is the electron deficient compound ?

(1) ICl (2) NH_3 (3) BCl_3 (4) PCl_3

2. The octet rule is not obeyed in : –

(1) CO_2 (2) BCl_3 (3) PCl_5 (4) 2 & 3 both

3. Example of super octet molecule is –

(1) SF_6 (2) PCl_5 (3) IF_7 (4) ALl

4. In which of the following species octet rule is applicable ?

(1) BrF_5 (2) SF_6 (3) IF_7 (4) CO_2

5. Which of the following have co-ordinate bond ?

(1) NH_4^+ (2) H_3O^+ (3) Both (4) None

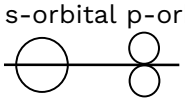
6. In NO_3^- ion number of lone pair present on nitrogen atom are : –

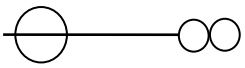
(1) 2 (2) 5 (3) 1 (4) 0

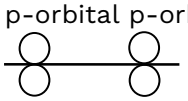
7. How many bonded electron pairs are present in IF_7 molecule

(1) 6 (2) 7 (3) 5 (4) None

8. Which of the following orbitals do not overlap?

(1) s-orbital p-orbital


(2) s-orbital p-orbital


(3) p-orbital p-orbital


(4) p-orbital d-orbital

9. Indicate the correct statement according to VBT :

(1) A sigma bond has no free rotation about the inter-nuclear axis.

(2) p-orbitals always have only sidewise overlapping.

(3) s-orbitals never form π–bonds.

(4) There can be more than one sigma bond between two atoms.

10. The odd electron molecules among the following is/are :

(1) NO_2 (2) NO (3) ClO_2 (4) All of these

11. Which of the following does not exist –

(1) $[BF_6]^{3-}$ (2) NCl_5 (3) $[CF_6]^{2-}$ (4) All

12. Which of following exist –

(1) $[SiF_6]^{2-}$ (2) $[BeF_5]^{3-}$ (3) $[BF_6]^{3-}$ (4) All

13. In ICl_3 iodine atom present in –

(1) GS (2) ES_1 (3) ES_2 (4) ES_3

Review Your Self

14. Which is the correct order of electron affinity-

(1) Li > Mg > Na (2) Na < Li < Mg (3) Li < Na < Mg (4) Li > Na > Mg

15. Which of the following element has the highest value of electron affinity -

(1) Carbon (2) Oxygen (3) Fluorine (4) Neon

16. The process requiring the absorption of energy is -

(1) $F \rightarrow F^-$ (2) $Cl \rightarrow Cl^-$ (3) $O \rightarrow O^{2-}$ (4) $H \rightarrow H^-$

17. Arrange S, O and Se in ascending order of electron affinity -

(1) Se < S < O (2) O < Se < S (3) S < O < Se (4) S < Se < O

18. Which of the following elements has the maximum electron affinity ?

(1) F (2) Cl (3) Br (4) I

19. The elecrton affinity value of halogens are F = 329, Cl = 349, Br = 324, I = 295kJ mol^{-1}. The higher value for Cl as compared to that of F is due to :

(1) Less electron-electron repulsion in Cl as compare to F

(2) Higher atomic radius of F

(3) Smaller electronegativity of F

(4) More vacant P-subshell in Cl

20. Which of the following having Lowest I.E.

(1) F (2) Cl (3) Cl^- (4) F^-

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ELP

Educator Led Practice

NEET-CHEMISTRY **ELP NO.–5** **CHEMICAL BONDING**

1. Which of the following statement is true –

(1) Shape of hybridised orbitals is different from parent atomic orbital

(2) Only those atomic orbitals can hybridised which has approx same energy

(3) Hybridised orbitals always form σ-bond

(4) All of these

2. Which of the following is incorrect about hybridization?

(1) The concept of hybridization is not applied to isolated atoms.

(2) Hybridization is the mixing of at least two non-equivalent atomic orbitals.

(3) The number of hybrid orbitals generated is more than the number of pure atomic orbitals that participate in the hybridization process.

(4) Hybridization requires an input of energy.

3. The hybridization state of the central atom in AlI_3 is-

(1) sp^3d (2) sp^3 (3) sp^2 (4) sp

4. By hybridization, we mean the mixing of-

(1) Electrons (2) Atomic orbitals (3) Atoms (4) Protons

5. On hybridization of one *s* and one *p* orbitals we get

(1) Two mutually perpendicular orbitals (2) Two orbitals at 180°

(3) Four orbitals directed tetrahedrally (4) Three orbitals in a plane

6. Beryllium atom in beryllium fluoride is

(1) sp^3 hybridized (2) sp^2 hybridized (3) *sp* hybridized (4) unhybridized

7. Shape of BF_3 molecule is

(1) Linear (2) Planar (3) Tetrahedral (4) Square pyramidal

8. Which of the following molecule having sp^2 hybridization

(1) BeF_2 (2) BF_3 (3) C_2H_2 (4) NH_3

9. Which molecule is planar

(1) NH_3 (2) CH_4 (3) $AlCl_3$ (4) $SiCl_4$

10. Which one of the following is a correct set with respect to molecule, hybridization and shape

(1) $BeCl_2$, sp^2, linear (2) $BeCl_2$, sp^2, triangular planar

(3) BCl_3, sp^2, triangular planar (4) BCl_3, sp^3, tetrahedral

11. A sp^3 hybrid orbital contains

(1) 1/4*s* character (2) 1/2*s* character (3) 2/3*s* character (4) 3/4*s* character

12. A molecule with four bonded electron pairs on the central atom and no lone pair is likely to be

(1) Linear (2) Tetrahedral (3) Octahedral (4) Triangular planar

13. Hybridisation state of 'S' atom in SF_6 molecule is:-

(1) sp^3 (2) sp^3d (3) sp^3d^2 (4) sp^3d^3

14. The AsF_5 molecule is trigonal bipyramidal. The hybrid orbitals used by the As atoms for bonding are

(1) $d_{x^2-y^2}, d_{z^2}, s, p_x, p_y$ (2) d_{xy}, s, p_x, p_y, p_z (3) $s, p_x, p_y, p_z, d_{z^2}$ (4) $d_{x^2-y^2}, s, p_x, p_y$

<u>Review Your Self</u>

15. The formula of oxide of metal whose successive ionisation enthalpies are 10, 20, 50, 2000 kJ mol^{-1} respectively

(1) M_2O (2) M_2O_3 (3) MO (4) MO_2

16. The electronic configurations of the elements X, Y, Z and J are given below. Which element has the highest metallic character

(1) X = 2, 8, 4 (2) Y = 2, 8, 8 (3) Z = 2, 8, 8, 1 (4) J = 2, 8, 8, 7

17. (1) Be and Mg are alkaline earth metal

(2) K^+ have larger radii than Ca^{2+}

(3) All d-block elements are transition elements

(4) $H^{\ominus}$ ion have larger size than Li^+

Incorrect statements is/are

(1) (1), (3) & (4) (2) (2) & (3) (3) (1) & (4) (4) (1) & (3)

18. The successive ionization energies for element X is given below

IE_1 : 250 kJ mol^{-1}

IE_2 : 820 kJ mol^{-1}

IE_3 : 1100 kJ mol^{-1}

IE_4 : 1400 kJ mol^{-1}

Find out the number of valence electrons for the element X.

(1) 3 (2) 4 (3) 2 (4) 1

19. If you are given Avogadro's number of atoms of a gas 'X' If half of the atoms are converted into $X^+_{(g)}$ by energy ΔH. The IE of X is

(1) $\frac{2\Delta H}{N_A}$ (2) $\frac{2N_A}{\Delta H}$ (3) $\frac{\Delta H}{2N_A}$ (4) $\frac{N_A}{\Delta H}$

20. Element of highest second ionization energy is

(1) Na (2) Al (3) Mg (4) Si

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ELP

Educator Led Practice

NEET-CHEMISTRY **ELP NO.–6** **CHEMICAL BONDING**

1. Predict the hybridisation of the central atom in following molecules:

Molecules	No. of hybrid orbital	No. of σ bond	No. of Lone pair	Hybridisation	Electronic geometry	Molecular geometry
1. $BeH_2(g)$						
2. BeF_2						
3. CO_2						
4. PCl_3F_2						
5. BF_3						
6. CH_3^+						
7. IF_5						
8. SO_2						
9. SO_3						
10. $SnCl_2$						
11. $AlCl_3$						
12. AlH_4^-						
13. NF_3						
14. PF_3						
15. $AsCl_3$						
16. CH_3^-						
17. OF_2						
18. SCl_2						
19. SF_4						
20. PCl_6^-						
21. ICl_2^-						
22. ICl_5						
23. ICl_4^-						
24. XeF_6						
25. ClO_4^-						

2. Which of the following does not have sp hybridized central atom:

(1) XeF_2 (2) C_2H_2 (3) CO_2 (4) BeH_2

3. How many species having two lone pair of electrons on central atom?

XeF_4, XeF_5^-, $XeOF_4$, ICl_4^-, SCl_2

(1) 2 (2) 3 (3) 5 (4) 4

4. Match the species in column (I) with characteristics in column (II) :

ColumnI	**Column II**
(P) BH_4^-	(1) 2 Bond pair and 3 lone pair on centralatom
(Q) ICl_2^+	(2) 4 Bond pair and no lone pair on central atom
(R) ICl_2^-	(3) 3 Bond pair and 1 lone pair on central atom
(S) ICl_4^-	(4) 2 Bond pair and 2 lone pair on central atom
	(5) 4 Bond pair and 2 lone pair on central atom

(1) P = 2 ; Q = 4 ; R = 3 ; S = 1 (2) P = 2 ; Q = 4 ; R = 1 ; S = 5

(3) P = 2 ; Q = 1 ; R = 5 ; S = 4 (4) P = 2 ; Q = 1 ; R = 3 ; S = 4

5. The molecule without lone pair around the central atom is

(1) XeO_3 (2) XeO_4 (3) XeF_6 (4) XeO_2F_2

6. The hybridisation of nitrogen in NO_2^+, NO_3^- & NH_4^+ are –

(1) SP, SP^3 and SP^2 respectively (2) SP, SP^2 & SP^3 respectively

(3) SP^2, SP & SP^3 respectively (4) SP^2, SP^3 & SP respectively

7. $BF_3 + F^- \longrightarrow [BF_4]^-$ what is hybridisation state of boron in BF_3 & $(BF_4)^-$

(1) SP^2, SP^3 (2) SP^3, SP^3 (3) SP^2, SP^2 (4) SP^3SP^3d

<u>Review Your Self</u>

8. Correct order of ionic size is

(1) $S^{-2} > P^{-3} > Cl^-$ (2) $Cl^- > P^{-3} > S^{-2}$ (3) $Cl^- > S^{-2} > P^{-3}$ (4) $P^{-3} > S^{-2} > Cl^-$

9. An element with atomic number 34 belongs to

(1) s-block (2) p-block (3) d-block (4) f-block

10. The least electronegative element has the following electronic configuration

(1) ns^2np^5 (2) ns^2np^4 (3) ns^2np^3 (4) ns^2

11. The first four ionization energy values of an element are 191, 578, 872 and 5962 kcal. The number of valence electrons in the element is

(1) 1 (2) 2 (3) 3 (4) 4

12. Which of the following species has highest electron affinity?

(1) Li (2) O (3) O^- (4) N

13. Which of statements is correct?

(1) The elements in which electrons are filled in 4f orbitals called lanthanoids.

(2) The properties of elements are periodic function of atomic number.

(3) Non metallic elements are less in number than metallic elements in periodic table

(4) All of these

14. When a neutral atom is converted to cation there is

(1) A decrease in size (2) An increase in size

(3) A decrease in atomic number (4) A decreases in mass number

15. If each orbital contains 3 electrons then total number of elements present in 5th period

(1) 18 (2) 27 (3) 32 (4) 36

16. Pd has electronic configuration of $4d^{10}\ 5s^0$. It belong to

(1) 4th period, group 11 (2) 5th period, group 10

(3) 6th period, group 9 (4) 3rd period, group 16

17. In which of the following pairs the radii of second species is greater than that of first?

(1) K, Ca (2) H, He (3) Mg^+, Mg^{2+} (4) O^{2-}, O^-

18. The electronic configuration having maximum difference in first and second ionization energies is

(1) $1s^22s^22p^63s^2$ (2) $1s^22s^22p^63s^23p^1$ (3) $1s^22s^22p^63s^23p^2$ (4) $1s^22s^22p^63s^1$

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ELP

Educator Led Practice

NEET-CHEMISTRY **ELP NO.–7** **CHEMICAL BONDING**

1. The hybridisation of in C_2 & C_3 in $\underset{4}{HC}\equiv\underset{3}{C}-\underset{2}{CH}=\underset{1}{CH_2}$ is:

(1) sp^3, sp^3 (2) sp^2, sp (3) sp, sp^2 (4) sp^3, sp

2. Shape of NH_3 is very similar to –

(1) BF_3 (2) $\overset{-}{C}H_3$ (3) SO_3 (4) $\overset{\oplus}{C}H_3$

3. Which of the following molecular geometry is not possible for sp^3d hybridisation ?

(1) Trigonal bipyramidal (2) See-saw
(3) T-shaped (4) Triangular planer

4. Which of the following molecule is planar?

(1) CH_4 (2) BF_3 (3) PF_3 (4) NH_3

5. Which of the following molecule is planar?

(1) CO_2 (2) SO_3 (3) BF_3 (4) All

6. Which of the following is V-shapped

(1) CH_4 (2) H_2O (3) SO_3 (4) All

7. Which of the following statement is correct for given molecule $CH_2=CH_2$

(1) No of sigma bonds = 5 (2) No. of π-bonds = 1
(3) All H-atoms lie in the same plane (4) All of these

8. XeF_2 molecule is –

(1) Linear (2) Triangular planer (3) Pyramidal (4) Square planer

9. Match the items under list (1) with items under list (2) select the correct answers from the sets (A), (B), (C) and (D) -

List (1) molecule	**List (2) shape**
(a) PCl_5	(i) V-shaped
(b) F_2O	(ii) Triangular planar
(c) BCl_3	(iii) Trigonal bipyramidal
(d) NH_3	(iv) Pyramidal
	(v) Tetrahedral

(1) a - i, b - v, c - iv, d - iii (2) a -ii, b -iii, c - i , d - ii
(3) a - iv , b - iii, c - ii, d - v (4) a - iii, b - i, c - ii, d - iv

10. The pair of species with similar shape is
(1) PCl_3, NH_3 (2) CF_4, SF_4 (3) NH_3, CO_2 (4) PF_5, IF_5

11. Incorrect statement for SF_4
(1) Hypervalent (2) Number of bond pair is four
(3) It form in first excited state (4) ℓp at central sulphur atom are two

12. Which among the following have regular geometry
(1) CCl_4 (2) NF_3 (3) PF_3 (4) SCl_4

13. Among the following molecules these having different molecular geometry (shape) but same no of lp on "Xe" are
I. XeO_3 II. $XeOF_4$ III. XeO_2F_2 IV. XeF_6
(1) I, II, III & IV (2) I, II & IV only (3) II, III & IV only (4) IV & IV only

14. BCl_3 is planar molecule which NCl_3 is pyramidal because
(1) BCl_3 has no lone pair of electrons on boron but NCl_3 has a lone pair of electrons on nitrogen
(2) B – Cl bond is more polar than N–Cl bond
(3) Nitrogen atom is smaller than boron atom
(4) N–Cl bond is more covalent than B–Cl bond

15. Which of the following species is planar
(1) CO_3^{2-} (2) NH_3 (3) PCl_3 (4) $SOCl_2$

Review Your Self

16. Element having highest 1st ionization energy in the following is
(1) Na (2) Mg (3) Al (4) He

17. The electronic configuration for the various elements are given below
a. $1s^2 2s^2 2p^5$ b. $1s^2 2s^2 2p^6 3s^1$ c. $1s^2 2s^2 2p^6 3s^2$ d. $1s^2 2s^2 2p^6$
From the above configurations, the correct order of their ionisation energy will be
(1) b < c < a < d (2) a < b < c < d (3) b < c < d < a (4) d < a < c < b

18. Which of the following is a representative element?
(1) Zn (2) Sr (3) Au (4) Fe

19. Ionization potential of Na would be numerically the same as
(1) Electron affinity of Na^+ (2) Electronegativity of Na^+
(3) Electron affinity of Ne (4) Ionization potential of Mg

20. Which element has the maximum electron affinity?
(1) Mg (2) Na (3) Al (4) S

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ELP

Educator Led Practice

NEET-CHEMISTRY | **ELP NO.–8** | **CHEMICAL BONDING**

1. The bond angles of NH_3, NH_4^+ and NH_2^- are in the order -

(1) $NH_2^- > NH_3 > NH_4^+$ (2) $NH_4^+ > NH_3 > NH_2^-$ (3) $NH_3 > NH_2^- > NH_4^+$ (4) $NH_3 > NH_4^+ > NH_2^-$

2. Which order of decreasing bond angle is correct:-

(1) $CCl_4 > BF_3 > NO_2^+$ (2) $NH_3 > NCl_3 > NBr_3$

(3) $Br_2O > Cl_2O > OF_2$ (4) $PF_3 > PH_3 > PCl_3$

3. Which of the following is the correct order of bond-angle

(1) $NH_3 < CH_4 < BeCl_2 < H_2O$ (2) $H_2O < NH_3 < CH_4 < BeCl_2$

(3) $BeCl_2 < CH_4 < H_2O < NH_3$ (4) $NH_3 < H_2O < CH_4 < BeCl_2$

4. Maximum bond angle is present in

(1) BCl_3 (2) BBr_3 (3) BF_3 (4) Same for all

5. Select the correct order for bond angle.

(1) $PH_3<AsH_3<NH_3<SbH_3$ (2) $F_2O<H_2O<Cl_2O$

(3) $SbI_3<SbBr_3<SbCl_3$ (4) $BF_3>BCl_3>BBr_3$

6. The correct order for bond angle is

(1) $NO_2^+ > NO_2 > NO_2^-$ (2) $NO_2^+ > NO_2^- > NO_2$

(3) $NO_2 > NO_2^- > NO_2^+$ (4) $NO_2^- > NO_2 > NO_2^+$

7. In SO_3 molecule there are three σ-bond & three π-bonds, three π-bonds are formed by

(1) pπ – pπ overlap b/w S & O-atom

(2) sp^2 – P overlap b/w S & O-atoms

(3) One by pπ-pπ overlap & other by pπ-dπ overlap

(4) Both by pπ-dπ overlap

8. In which molecule all possible bond angles are identical ?

(1) SF_4 (2) SO_2Cl_2 (3) ClF_3 (4) SiF_4

9. Minimum bond angle is associated with ?

(1) H_2S (2) H_2O (3) NH_3 (4) CH_4

10. What is the hybridisation of the central atom of SiO_2

(1) sp (2) sp^2 (3) sp^3 (4) sp^3d

11. Which of the following molecule is not planar?

(1) ClF_3 (2) XeF_5^+ (3) XeF_4 (4) BF_3

Review Your Self

12. Select the element of highest electronegativity in the following

(1) Li (2) Be (3) B (4) N

13. Metallic character is maximum for

(1) Na (2) Al (3) F (4) C

14. The elements whose atoms have three outer most shells incomplete are called

(1) s-Block elements (2) p-Block elements (3) f-Block elements (4) d-Block elements

15. Which of the following configuration is associated with biggest jump between 2nd and 3rd 1E?

(1) $1s^22s^22p^2$ (2) $1s^22s^22p^63s^1$ (3) $1s^22s^22p^63s^2$ (4) $1s^22s^22p^1$

16. The electronegativity of Be is almost same as

(1) Al (2) Mg (3) Na (4) Li

17. Among group 16 elements, electron gain enthalpy of which is least negative?

(1) O (2) S (3) Se (4) Te

18. Nature of three oxides formed by A, B and C is acidic, basic and amphoteric. Give the sequence of their electronegativity

(1) A > C > B (2) A > B > C (3) C > B > A (4) B > C > A

19. (a) Li < Na < K < Rb $\rightarrow Z_{eff}$

(b) S > Se > Te > O $\rightarrow$ Electron gain enthalpy

(c) Ne > F > N > O $\rightarrow$ First ionization energy

(d) $CH \equiv CH > CH_2 = CH_2 > CH_3 - CH_3 \rightarrow$ Electronegativity of carbon

The correct statement are

(1) (a) & (d) only (2) (a) & (b) only (3) (b), (c) & (d) only (4) (a), (b) & (c)

20. Which one of the following represents a d-block element?

(1) [Rn] $6d^{10}\ 7s^2\ 7p^2$ (2) [Xe] $4f^1\ 5d^1\ 6s^2$ (3) [Xe] $4f^{14}\ 5d^1\ 6s^2$ (4) [Xe] $5d^1\ 6s^2$

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ELP

Educator Led Practice

NEET-CHEMISTRY **ELP NO.–9** **CHEMICAL BONDING**

1. Which of the following is non polar molecule ?

(1) CH_4 (2) $CHCl_3$ (3) F_2O (4) CH_2Cl_2

2. AB_3 has zero dipole moment A can have

(1) SP^3 hybridisation (2) SP^2 hybridisation (3) Both (4) None

3. Among the following compound one that is polar & has central atom with sp^2 hybridisation ?

(1) SO_2 (2) BF_3 (3) $CHCl_3$ (4) CCl_4

4. Which of the following pair of molecules will have permanent dipole moments for both members ?

(1) SiF_4 & NO_2 (2) NO_2 & CO_2 (3) NO_2 & O_3 (4) SiF_4 & CO_2

5. Which of the following has zero dipole moment

(1) ClF (2) PCl_3 (3) SiF_4 (4) $CHCl_3$

6. Which of the following represents a non-polar molecule with polar bonds

(1) NCl_3 (2) NF_3 (3) N_2 (4) CCl_4

7. Which of the following would have a permanent dipole moment ?

(1) SiF_4 (2) SF_4 (3) PCl_5 (4) BCl_3

8. The most polar bond is

(1) C – F (2) F – O (3) C – Br (4) C – N

9. Dipole moment of NH_3 is greater than ?

(1) PCl_5 (2) CO_2 (3) NF_3 (4) All

10. The correct order of dipole moment is :

(1) $CF_4 > NF_3 > NH_3 > H_2O$ (2) $H_2O > NH_3 > NF_3 > CF_4$

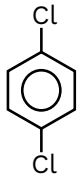
(3) $H_2O > NH_3 > CF_4 > NF_3$ (4) $CF_4 > NH_3 > NF_3 > H_2O$

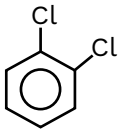
11. The geometry of H_2S and its dipole moment are :

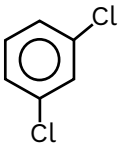
(1) Angular and non-zero (2) Angular and zero

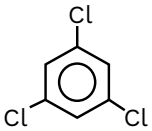
(3) Linear and non-zero (4) Linear and zero

12. Which has maximum dipole moment ?

(1) 

(2) 

(3) 

(4) 

Review Your Self

13. Select the element of positive electron gain enthalpy

(1) Li (2) Na (3) P (4) He

14. Which one of the following statement of the modern periodic table is incorrect?

(1) The first period contains two elements

(2) p-Block elements together with s-block elements are called representative elements

(3) Elements in the same group have similar valence shell electronic configuration

(4) The d-Block has 9 columns, because a maximum of 9 electrons can occupy all the orbitals in a d-subshell

15. The ionic radii of S^{-2} and Te^{-2} are 1.84 and 2.21 Å respectively. The ionic radii of Se^{-2} is

(1) 1.83 Å (2) 2.22 Å (3) 4.5 Å (4) 2.02 Å

16. Which element has lowest electron affinity?

(1) O (2) S (3) Se (4) Te

17. Electronic configuration of elements with atomic number 117 will be

(1) $[Rn]5f^{14}6d^{10}7s^{2}7p^{5}$ (2) $[Rn]5f^{14}7s^{2}7p^{6}6d^{9}$

(3) $[Rn]7s^{2}7p^{6}6d^{10}5f^{13}$ (4) $[Rn]5f^{1}6d^{10}7s^{2}7p^{6}$

18. Electron gain enthalpy of F is –328 kJ/mol. Ionisation energy of $F^{\ominus}$ ion will be (IE_1 of F is +1683 kJ/mol)

(1) +1683 kJ/mol (2) +328 kJ/mol (3) –1628 kJ/mol (4) +164 kJ/mol

19. Which of the following set of atomic number represents only representative elements?

(1) 55, 12, 48, 53 (2) 13, 23, 54, 83 (3) 3, 33, 53, 87 (4) 22, 33, 55, 66

20. Find the formula of halide of a metal whose successive ionization enthalpies are x, 2x, 5x, 100 × kJ mol^{-} respectively

(1) MX (2) MX_2 (3) MX_3 (4) M_2X

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ELP

Educator Led Practice

NEET-CHEMISTRY | **ELP NO.–10** | **CHEMICAL BONDING**

1. In Co-ordinate bond, the acceptor atoms must essentially contain in its valency shell an orbital:-
(1) With paired electron (2) With single electron
(3) With no electron (4) With three electron

2. The bonds present in N_2O_5 are:-
(1) Only ionic (2) Covalent & coordinate
(3) Only covalent (4) Covalent & ionic

3. Dative bond is present in
(1) SO_3 (2) NH_3 (3) K_2CO_3 (4) BF_3

4. The correct statement for the reaction-
$NH_3 + H^+ \rightarrow NH_4^+$
(1) Hybridisation state is changed (2) Bond angle increases
(3) NH_3 act as a Lewis acid (4) Regular geometry is changed

5. The number of coordinate bonds presents in SO_3 molecule are
(1) 1 (2) 2 (3) 3 (4) 4

6. In PO_4^{3-} ion, the average charge on the oxygen atoms is
(1) +1 (2) –1 (3) –0.75 (4) +0.75

7. Bond order of S – O bond in SO_4^{2-} is
(1) 2 (2) 1.5 (3) 3 (4) $\frac{4}{3}$

8. Which of the following contain both ionic and covalent bonds?
(1) H_2O (2) NaOH (3) C_6H_5Cl (4) CO_2

9. Nitrogen-Oxygen bond order in NO_2^- is
(1) 3 (2) 1.5 (3) 2 (4) 4

10. Electrovalency of Al in Al_2O_3 compound is
(1) 2 (2) 3 (3) 4 (4) 5

Review Your Self

11. The correct order for the mentioned property is

(1) $F^- < O^{2-} < S^{2-} < Br^-$ – Ionic radii

(2) Li > Na > K – Electropositive Nature

(3) N > P > Sb > As – Electron affinity

(4) Sn > Ge > Si > C – Non-metallic character

12. When a neutral atom is converted into a cation its

(1) Atomic weight increases (2) Atomic weight decreases

(3) Size increases (4) Size decreases

13. Which of the following element has the lowest first ionisation potential?

(1) Na (2) F (3) Cs (4) I

14. The correct order regarding second ionisation potential is

(1) N > C > B > Be (2) N > C > Be > B (3) N > B > C > Be (4) Be > N > C > B

15. Correct statement(s) among the following is/are

(1) Second electron gain enthalpy is always endothermic

(2) Electronegativity is the property of bonded atoms

(3) Al_2O_3 and BeO are amphoteric oxide

(4) All are correct

16. Which of the following pairs of atomic numbers represent elements belonging to the same group?

(1) 11 and 20 (2) 12 and 30 (3) 13 and 31 (4) 14 and 33

17. Which of the following equation represents first enthalpy of ionization?

(1) $Hg(s) \rightarrow Hg^+(g) + e^-$ (2) $Hg(l) \rightarrow Hg^+(g) + e^-$

(3) $Hg(g) \rightarrow Hg^+(g) + e^-$ (4) $Hg^+(g) \rightarrow Hg(g)^{2+} + e^-$

18. Which of the following has maximum charge density?

(1) Se^{2-} (2) S^{2-} (3) O^{2-} (4) Te^{2-}

19. Which of the following electronic configuration represent element of highest ionisation potential is

(1) [Xe] $6s^2$ (2) [Ar] $4s^2 3d^{10}$ (3) $1s^2$ (4) [Rn] $7s^2 6d^1 5f^{14}$

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ELP

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NEET-CHEMISTRY **ELP NO.–11** **CHEMICAL BONDING**

1. In an antibonding molecular orbital, electron density is minimum -
(1) Around one atom of the molecule
(2) Between the two nuclei of the molecule
(3) At the region away from the nuclei of the molecule
(4) At no place

2. Correct order of energy is –
(1) BMO > AO > ABMO
(2) AO > BMO> ABMO
(3) BMO > ABMO > AO
(4) ABMO > AO > BMO

3. Correct statement is for MOT –
(1) Only those atomic orbital can combine which has same or approx same energy
(2) Molecular orbitals are polycentric
(3) One molecular orbital can accomodate max two electron
(4) All

4. Bonding molecular orbital is formed by –
(1) In phase combination of atomic orbitals
(2) Out phase combination of atomic orbitals
(3) In phase or out phase combination of atomic orbitals
(4) None

5. ABMO is formed by –
(1) In phase combination of atomic orbitals
(2) Out phase combination of atomic orbitals
(3) In phase or out phase combination of atomic
(4) All of these

6. Electron finding probability in BMO is –
(1) Greater than sum of electron finding probability of parent atomic orbitals
(2) Than sum of electron finding probability of parent atomic orbitals
(3) Equal to the sum of electron finding probability of parent atomic orbitals
(4) All of these

7. If Z-axis is the molecular axis then π-molecular orbitals are formed by overlap of –
(1) S + Pz
(2) Px + Py
(3) pz + Pz
(4) Px + Px

8. If more electrons occupy bonding molecular orbital, then stability of molecule –
(1) Increases (2) Decreases (3) Remains same (4) None of these

9. MOT can explain
(1) Fractional bond order (2) Paramagnetic behaviour of dioxygen
(3) Diamagnetic behaviour of dinitrogen (4) All of these

10. Which of the following has nodal plane?
(1) $\sigma 2s$ (2) $\sigma^* 2s$ (3) Both (4) None

11. In a homonuclear diatomic molecule higher the bond order larger will be
(1) Bond length (2) Bond strength
(3) Paramagnetic nature (4) Ionic character

12. Which of the following should be most stable
(1) H_2 (2) H_2^+ (3) H_2^- (4) All are equally stable

13. Which of the following does not exist
(1) H_2 (2) Li_2 (3) He_2 (4) He_2^+

14. Which of the following has maximum bond strength ?
(1) H_2 (2) H_2^- (3) H_2^+ (4) He_2

<u>Review Your Self</u>

15. Select the species of highest electronegativity
(1) Na (2) Na^{3+} (3) Na^{2+} (4) Na^+

16. Modern periodic law is
(1) The physical and chemical properties of the elements are periodic function of their atomic numbers
(2) The physical and chemical properties of the elements depend upon the energy of the electrons
(3) The physical and chemical properties of the elements are periodic function of their atomic mass
(4) The physical and chemical properties of the elements are periodic function of their density

17. The correct order of ionic radii is
(1) $Fe > Fe^{++} > Fe^{+++}$ (2) $O^{--} > O^- > O^+$ (3) $I^- > I > I^+$ (4) All of these

18. Electronic configuration of anion in sodium hydride will be
(1) $1s^2$ (2) $1s^1$ (3) $1s^0$ (4) $1s^1\ 2s^1$

19. CO and NO are
(1) Neutral oxides (2) Acidic oxides
(3) Basic oxides (4) Neutral and basic respectively

20. Which of the following is correct order of ionization potential is
(1) K > Ca (2) Ca > Ba (3) $Na > Na^+$ (4) $Cl^- > Cl$

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ELP

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NEET-CHEMISTRY | **ELP NO.–12** | **CHEMICAL BONDING**

1. Which have non-integral bond order -

(1) O_2^+ (2) O_2^- (3) NO (4) All of these

2. Number of bonding electrons in N_2 is -

(1) 4 (2) 10 (3) 12 (4) 14

3. N_2 and O_2 are converted to monocations N_2^+ and O_2^+ respectively, which is wrong statement-

(1) In N_2^+, the N—N bond weakens (2) In O_2^+, the O—O bond order increases

(3) In O_2^+, the paramagnetism decreases (4) N_2^+ becomes diamagnetic

4. The species having bond order different from that in CO is

(1) NO^- (2) NO^+ (3) CN^- (4) N_2

5. What is correct sequence of bond order

(1) $O_2^+ > O_2^- > O_2$ (2) $O_2^+ > O_2 > O_2^-$ (3) $O_2 > O_2^- > O_2^+$ (4) $O_2^- > O_2^+ > O_2$

6. Which of the following is not paramagnetic

(1) C_2 (2) N_2^- (3) O_2^- (4) NO

7. The paramagnetic property of the oxygen molecule is due to the presence of unpaired electrons present in :

(1) $(\sigma 2p_x)^1$ and $(\sigma^* 2p_x)^1$ (2) $(\sigma 2p_x)^1$ and $(\pi 2p_y)^1$

(3) $(\pi^* 2p_x)^1$ and $(\pi^* 2p_y)^1$ (4) $(\pi^* 2p_y)^1$ and $(\pi 2p_y)^1$

8. Which of the following is paramagnetic ?

(1) B_2 (2) C_2 (3) N_2 (4) F_2

9. N_2 accept electron and convert into N_2^-, where this electron goes

(1) Antibonding π molecular orbital (2) Bonding π molecular orbital

(3) σ bonding molecular orbital (4) σ-anti bonding molecular orbital

10. On the basis of MOT which is correct :

(1) The bond order for C_2 molecule is two and both bonds are σ-bonds

(2) The LUMO in C_2 molecule is σ2p bonding molecular orbital

(3) The HOMO in C_2 molecule are π type of antibonding molecular orbital containing total 4 electrons

(4) None of the above is correct

Review Your Self

11. An element, X has electronic configuration of 2, 8, 8, 2. The incorrect statement(s) about his element is/are

(i) It belongs to 10th group of the periodic table.

(ii) It has 20 Protons

(iii) Its ionization energy is higher than the element placed left to this in the same period but lower than the element placed just above it.

(1) Only (i) (2) Both (i) & (ii) (3) Both (ii) & (iii) (4) Both (i) & (ii)

12. The elements with atomic number 31 belongs to which group and period respectively?

(1) 13, 4 (2) 14, 3 (3) 4, 13 (4) 4, 8

13. Element having highest 1st ionization energy in the following is

(1) Na (2) Mg (3) Al (4) He

14. Which of the following is most acidic in nature?

(1) SO_3 (2) CO (3) Al_2O_3 (4) P_2O_5

15. Positive electron gain enthalpy is shown by

(1) Ne (2) O^- (3) F (4) Both (1) & (2)

16. Which of the following sequences contains atomic number of only representative elements?

(1) 3, 33, 53, 87 (2) 2, 10 22, 36 (3) 7, 17, 25, 37, 48 (4) 10, 35, 66, 88

17. Long form of periodic table consists of

(1) 7 Periods and 18 groups (2) 6 Periods and 7 groups

(3) 7 Groups and 18 periods (4) 7 Periods and 8 groups

18. The electronegativity follows the order

(1) F > O > Cl > Br (2) F > Cl > Br > O (3) O > F > Cl > Br (4) Cl > F > O > Br

19. Total number of elements presents in 5th period of modern periodic table is

(1) 2 (2) 8 (3) 18 (4) 32

20. The energy required to convert all atoms present in 1.2 g magnesium to Mg^{2+} ions if IE_1 and IE_2 of magnesium are 120 kJ mol^{-1} and 240 kJ mol^{-} respectively

(1) 18 kJ (2) 36 kJ (3) 360 kJ (4) 24 kJ

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ELP

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NEET-CHEMISTRY **ELP NO.–13** **CHEMICAL BONDING**

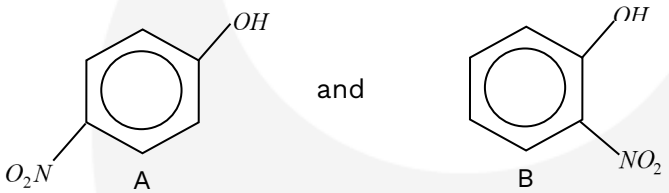
1. Among $HF, CH_4, CH_3OH,$ and N_2H_4 intermolecular hydrogen bonding is expected

(1) In all (2) In all leaving one (3) In two (4) None of these

2. Intramolecular H-bonding is present in

(1) Meta nitrophenol (2) Salicylaldehyde (3) Hydrogen chloride (4) Benzophenone

3. Out of the two compounds shown below, the vapour pressure of *B* at a particular temperature is expected to be



(1) Higher than that of *A*

(2) Lower than that of *A*

(3) Same as that of *A*

(4) Can be higher or lower depending upon the size of the vessel

4. Density of ice is less than that of water because of

(1) Extensive hydrogen bonding

(2) Crystal modification of ice

(3) Open porous structure of ice due to hydrogen bonding

(4) Different physical states of these

5. The hydrogen bond is strongest in

(1) F - H....O (2) F - H....F (3) O - H....S (4) O - H....N

6. Hydrogen fluoride is a liquid unlike other hydrogen halides because

(1) HF molecules associate due to hydrogen bonding

(2) F_2 is highly reactive

(3) HF is the weakest acid of all hydrogen halides

(4) Fluorine atom is the smallest of all halogens

7. Incorrect order of decreasing boiling points is

(1) HF > HI > HBr > HCl (2) $H_2O > H_2Te > H_2Se > H_2S$

(3) $Br_2 > Cl_2 > F_2$ (4) $CH_4 > GeH_4 > SiH_4$

8. Which does not show hydrogen bonding

(1) C_2H_5OH (2) Liquid NH_3 (3) H_2O (4) Liquid HBr

9. The boiling points of methanol, water and diethyl ether are respectively 65°C, 100°C and 34.5°C. Which of the following best explain these wide variations in b.p.

(1) The molecular mass increases from water (18) to methanol (32) to diethyl ether (74)

(2) The extent of H-bonding decreases from water to methanol while it is absent in ether

(3) The extent of intermolecular H-bonding decreases from ether to methanol to water

(4) The number of H atoms per molecule increases from water to methanol to ether

10. Ethanol and methoxymethane have the same molecular weight but methoxymethane boils at a lower temperature because it has

(1) Low density (2) No hydrogen bonding

(3) Molecular association (4) Oxygen atom attached to two methyl groups

11. Which one shows maximum hydrogen bonding

(1) H_2O (2) H_2Se (3) H_2Te (4) HF

<u>Review Your Self</u>

12. The symbol of element with atomic number 105 is

(1) Uup (2) Unp (3) Uuu (4) Unn

13. Which of the following is correct order of metallic character for Si, Be, Mg, Na and P?

(1) P > Si > Be > Na > Mg (2) P > Si > Be > Mg > Na

(3) Na > Mg > Be > Si > P (4) Na > Si > Mg > Be > P

14. Consider the iso-electronic series: K^+, S^{2-}, Cl^- and Ca^{2+}. The radii of the ions decreases as

(1) $Ca^{2+} > K^+ > Cl^- > S^{2-}$ (2) $Cl^- > S^{2-} > K^+ > Ca^{2+}$

(3) $S^{2-} > Cl^- > K^+ > Ca^{2+}$ (4) $K^+ > Ca^{2+} > S^{2-} > Cl^-$

15. Which of the following has positive electron gain enthalpy?

(1) Cl (2) S (3) He (4) C

16. An element with E.C. [Xe] $4f^{14}5d^7\ 6s^2$ belongs to

(1) 7th period (2) 9th group (3) 7th group (4) 5th period

17. Which of the following set of elements does not belong to the same group, but resemble in properties?

(1) Li and Mg (2) Be and Al (3) B and Si (4) All of these

18. First ionization energy of Mg is

(1) More than Al (2) Less than Al (3) Equal to Al (4) Zero

19. the correct order of shielding effect of s, p, d and f orbital is

(1) s > p > d > f (2) s < p < d > f (3) s < p < d < f (4) s > p < d < f

20. The least electronegative element has the following electronic configuration

(1) ns^2np^5 (2) ns^2np^4 (3) ns^2np^3 (4) ns^2np^2

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ELP

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NEET-CHEMISTRY | **ELP NO.–14** | **CHEMICAL BONDING**

1. Which of the following molecules are Expected of exhibit Intermolecular H-bonding

(I) Acetic acid (II) O-nitrophenol (3) M-nitrophenol (4) Boric acid

(1) I, II, III (2) I, III, IV (3) I, II, IV (4) II, III, IV

2. Hydrogen bonding (I) In solid state ____ & (II) in gaseous state ____ fill in the blanks the appropriate word:

(1) (I) Maximum (II) Minimum (2) (I) Minimum (II) Maximum

(3) Cannot be predicted (4) All of these

3. Which of the following compounds would have significant Intermolecular H-bonding?

HF, CH_3OH, N_2O_4, CH_4

(1) HF, N_2O_4 (2) HF, CH_4, CH_3OH (3) HF, CH_3OH (4) CH_3OH, CH_4

4. For H_2O_2, H_2S, H_2O and HF the correct order of decreasing extent of Hydrogen bonding?

(1) $H_2O > HF > H_2O_2 > H_2S$ (2) $H_2O > HF > H_2S > H_2O_2$

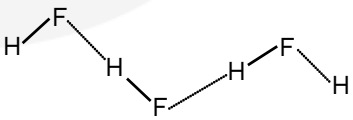
(3) $HF > H_2O > H_2O_2 > H_2S$ (4) $H_2O_2 > H_2O > HF > H_2S$

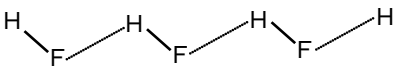
5. Which of the following exhibits H-bonding?

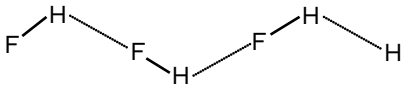
(1) CH_4 (2) H_2Se (3) N_2H_4 (4) H_2S

6. The H-bond in solid HF can be best represent as

(1) H–F.....H–F.....H–F

(2) 

(3) 

(4) 

7. The volatility of HF is low because of

(1) Its low polarizability

(2) The weak dispersion interaction between the molecules

(3) Its smaller molecular mass

(4) Its strong Hydrogen bonding

8. Two ice cubes are pressed over each other until they unite to form one block. Which force is responsible for holding them together is:

(1) Vander wall's forces (2) Covalent interaction

(3) Hydrogen bond formation (4) Dipole-dipole attraction

9. Which is weakest among the following types of bonds?
(1) Debye force (2) Dipole-dipole bond
(3) Metallic bond (4) Hydrogen bond

10. Intermolecular Hydrogen bonding increases the Enthalpy of vaporization of liquid due to the
(1) Decrease in the attraction between molecules
(2) In crease in the attraction between molecules
(3) Decrease in the molar mass of unassociated liquid molecules
(4) Increase in the effective molar mass of hydrogen bonded molecules

Review Your Self

11. Which of the following elements show properties that are characteristic of both metals and non-metals?
(1) Mg (2) S (3) C (4) Si

12. Beryllium shows diagonal relationship with
(1) Mg (2) Al (3) Li (4) Si

13. The element having lowest first ionization potential among Sr, As, S and F is
(1) Sr (2) As (3) S (4) F

14. Electronegativity of the following elements increases in the order
(1) C, N, Si, P (2) N, Si, C, P (3) Si, P, C, N (4) P, Si, N, C

15. Among the equation given below, ΔH of which one is equal to IE_1 of Ba
(1) $Ba(g) + e^- \rightarrow Ba^-(g)$ (2) $Ba(g) \rightarrow Ba^+(g) + e^-$
(3) $Ba(s) \rightarrow Ba^+(g) + e^-$ (4) $Ba(g) \rightarrow Ba^{+2}(g) + 2e^-$

16. Symbol of element with atomic number 102 is
(1) Unb (2) Und (3) Uub (4) Ubn

17. Most electronegative among halogens is
(1) F (2) Cl (3) Br (4) I

18. An atom of an element has electronic configuration 2, 8, 1. Which of the following statement is correct?
(1) The valency of element is 7 (2) The element exists as a triatomic molecule
(3) The element is metalloid (4) The element forms basic oxide

19. Which of the following statement is incorrect?
(1) The ionization potential of nitrogen is greater than that of oxygen
(2) The electron affinity of fluorine is greater than that of chlorine
(3) The ionization potential of Mg is greater than aluminium
(4) The electronegativity of fluorine is greater than that of chlorine

20. Select the element of positive electron gain enthalpy
(1) Li (2) Na (3) P (4) He

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NEET-CHEMISTRY **ELP NO.–15** **CHEMICAL BONDING**

1. Element X is strongly electronegative and Y is strongly electropositive. Both are univalent. The compound formed would be

(1) X^+Y^- (2) X - Y (3) $Y^{\oplus}X^{\ominus}$ (4) $X \rightarrow Y$

2. Most favourable conditions for covalent bond formation are

(1) Low charge on ions, large cation, large anion
(2) Low charge on ions, large cation, small anion
(3) High charge on ions, large cation, small anion
(4) High charge on ions, small cation, large anion

3. An electrovalent compound does not exhibit space isomerism because of

(1) Presence of oppositely charged ions (2) High melting points
(3) Non-directional nature of the bond (4) Crystalline nature

4. The stability of ionic crystal depends principally on

(1) High electron affinity of anion forming species
(2) The lattice energy of crystal
(3) Low I.E. of cation forming species
(4) Low heat of sublimation of cation forming solid

5. Which of the following hydride is ionic

(1) H_2O (2) NH_3 (3) CaH_2 (4) H_2S

6. Two element *X* and *Y* have following electronic configuration X = $1s^2, 2s^22p^6, 3s^23p^6, 4s^2$ and Y = $1s^2, 2s^22p^6, 3s^23p^5$ the compound formed by combination of *X* and *Y* is

(1) XY_2 (2) X_5Y_2 (3) X_2Y_5 (4) XY_5

7. Which will not conduct electricity

(1) Aqueous KOH solution (2) Fused NaCl
(3) Graphite (4) KCl in solid state

8. Which of the following options is/are true?

(1) Ionic bonds have non-directional nature
(2) Ionic bonds do not show any isomerism
(3) Generally, ionic compounds have high melting points
(4) All are true

9. Which of the following will have high lattice energy?
(1) LiCl (2) KCl (3) NaCl (4) CsCl

10. Which of the given molecule contains ionic bond, covalent bond and coordinate bond?
(1) Li_2CO_3 (2) KCl (3) NH_4Cl (4) HCN

Review Your Self

11. With which of the following electronic configuration an atom has the lowest ionization enthalpy?
(1) $1s^22s^22p^3$ (2) $1s^22s^2s2p^63s^1$ (3) $1s^22s^22p^6$ (4) $1s^22s^22p^5$

12. Ce (z = 58) is a member of
(1) s-Block elements (2) p-Block elements
(3) d-Block elements (4) f-Block elements

13. The element having least difference in the values of first and second ionization potential is
(1) Na (2) K (3) Li (4) Mg

14. Which of the following has lowest ionisation energy?
(1) P^{3-} (2) Cl^- (3) S^{2-} (4) K^+

15. Maximum number of elements which can be placed in 7th period
(1) 18 (2) 32 (3) 50 (4) 86

16. S electrons in Ne are same in number as
(1) p electrons in O (2) d electrons in Fe^{3+}
(3) d electrons in Cr (4) All of these

17. Incorrect electronic configuration is represented by
(At. No.: Gd: 64, W: 74, Pd: 46, Mo: 42)
(a) Gd = $[Xe]4f^75d^16s^2$ (b) W = $[Xe]4f^{14},5d^4,6s^2$
(c) Pd = $[Kr]\ 4d^9,5s^1$ (d) Mo = $[Kr]\ 4d^5,5s^1$

(1) (a) only (2) (b) and (c) only (3) (c) only (4) (a) & (d) only

18. The symbol of element with atomic number Z = 109
(1) Unp (2) Uns (3) Uno (4) Une

19. Increase in atomic size down the group is due to
(1) Increase in number of orbit
(2) Increase in number of protons and neutrons
(3) Increase in number of protons
(4) Increase in number of protons, neutrons and electrons

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ELP

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NEET-CHEMISTRY | **ELP NO.–16** | **CHEMICAL BONDING**

1. Which of the following order is incorrect ?

(1) Ionic character = MCl < MCl_2 < MCl_3

(2) Polarizibility = F^- < Cl^- < Br^- < I^-

(3) Polarising power = Na^+ < Mg^{+2} < Al^{+3}

(4) Covalent character = LiF < LiCl < LiBr < LiI

2. Which of the following having maximum covalent character?

(1) NaCl (2) $MgCl_2$ (3) $AlCl_3$ (4) $SiCl_4$

3. Which of the following order is not correct ?

(1) CrO < Cr_2O_3 < CrO_3 covalent character

(2) ZnO > ZnS ionic character

(3) $BeCl_2$ > $MgCl_2$ > $CaCl_2$ > $SrCl_2$ > $BaCl_2$ ionic character

(4) KCl < AgCl covalent character

4. Which of the following have maximum and minimum ionic character out of MnO, MnO_2, Mn_2O_7 ?

(1) MnO, Mn_2O_7 respectively (2) MnO_2, Mn_2O_7 respectively

(3) MnO_2, MnO respectively (4) Mn_2O_7, MnO respectively

5. Ionic potential (ϕ) of Electropositive element will be highest in which of the following compound:

(1) CsCl (2) $MgCl_2$ (3) AlF_3 (4) SF_6

6. Which of the following pairs of elements forms a compound with maximum ionic character?

(1) Na and F (2) Cs and F (3) Na and Cl (4) Cs and I

7. Among LiCl, RbCl, BeCl2, MgCl2 the compounds with greatest and least ionic character respectively are :

(1) LiCl, RbCl (2) RbCl, $BeCl_2$ (3) RbCl, $MgCl_2$ (4) $MgCl_2$, $BeCl_2$

<u>Review Your Self</u>

8. The Group number for the Inner transition element is:

(1) 3 (2) 6 (3) 4 (4) 8

9. Which is not s–block element :

(1) $[Ar]4s^2\ 3d^{10}\ 4p^6\ 5s^1$

(2) $1s^2\ 2s^2\ 2p^1$

(3) $1s^2\ 2s^2$

(4) $[He]\ 2s^2\ 2p^6\ 3s^1$

10. Which of the following has maximum ionisation energy ?

(1) $Ba \rightarrow Ba^+ + e^-$

(2) $Be \rightarrow Be^+ + e^-$

(3) $Ca \rightarrow Ca^+ + e^-$

(4) $Mg \rightarrow Mg^+ + e^-$

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ELP

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NEET-CHEMISTRY | **ELP NO.–17** | **CHEMICAL BONDING**

1. Which of the following is maximum soluble in organic solvent?

(1) LiF (2) LiCl (3) LiBr (4) LiI

2. Among the following metal halides, the one which is soluble in ethanol is?

(1) $BaCl_2$ (2) $MgCl_2$ (3) $CaCl_2$ (4) $SrCl_2$

3. Which of the following is most soluble in water.

(1) Li_2O (2) Na_2O (3) K_2O (4) Cs_2O

4. Which of the following is correct order of solubility in water?

(1) $NaClO_4 < KClO_4$ (2) $BeCO_3 > MgCO_3$

(3) $MgSO_4 < SrSO_4$ (4) None of these

5. Correct solubility order:

(1) $CaCrO_4 > BaCrO_4$ (2) $BeCO_3 < BaCO_3$

(3) $Be(OH)_2 > Ba(OH)_2$ (4) $NaClO_4 < KClO_4$

6. Among the following Group-I carbonate having highest solubility:

(1) Li_2CO_3 (2) Na_2CO_3 (3) K_2CO_3 (4) Rb_2CO_3

7. Which of the following is least soluble in water?

(1) AgF (2) AgCl (3) AgBr (4) AgI

8. The hydration energy of Mg^{2+} ions is higher than that of:

(1) Al^{3+} (2) Be^{2+} (3) Na^{+} (4) None of these

9. The right order of the solubility of sulphates of alkaline earth metals is:

(1) Be > Ca > Mg > Ba > Sr (2) Mg > Be > Ba > Ca > Sr

(3) Be > Mg > Ca > Sr > Ba (4) Mg > Ca > Ba > Be > Sr

Review Your Self

10. The set representing the correct order of first ionisation potential is:

(1) K > Na > Li (2) Be > Mg > Ca

(3) B > C > N (4) Ge > Si > C

11. Which of the following process is endothermic?

(1) $S \rightarrow S^-$ (2) $Na \rightarrow Na^-$ (3) $S^- \rightarrow S^{2-}$ (4) $P \rightarrow P^-$

12. The I.E. for B, Tl and In are x, y and z Kcal mol^{-1} Respectively. Choose the correct relationship between them?

(1) $z > x \simeq y$ (2) $x > y > z$ (3) $x > y \simeq z$ (4) $x < y < z$

13. Chose the incorrect order of Acidic strength:

(1) $CO_2 > CO$ (2) $SO_2 < SO_3$

(3) $HClO_2 > HOCl$ (4) $SiO_2 > CO_2$

14. What is the Atomic number of element. Which belongs to fifth period and Group-16?

(1) 50 (2) 34 (3) 52 (4) 53

15. Identify the block to which an element with electronic configuration [Kr] $4d^{10}$, $4f^{14}$, $5s^2$ $5p^6$ $5d^1$, $6s^2$ belongs to:

(1) s-Block (2) p-Block (3) d-Block (4) f-Block

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NEET-CHEMISTRY **ELP NO.–18** **CHEMICAL BONDING**

1. Which of the following compounds on thermal decomposition yields basic as well as acidic oxides?
(1) $ZnCO_3$ (2) $BeCO_3$ (3) K_2CO_3 (4) $MgCO_3$

2. Which of the following compound does not give metal oxide on decomposition ?
(1) K_2CO_3 (2) KOH (3) $NaHCO_3$ (4) All of these

3. Which of the following has lowest thermal stability?
(1) Li_2CO_3 (2) Na_2CO_3 (3) K_2CO_3 (4) Rb_2CO_3

4. Which of the following bicarbonate can exist in solid state ?
(1) $LiHCO_3$ (2) $Mg(HCO_3)_2$ (3) $Ca(HCO_3)_2$ (4) $KHCO_3$

5. The decomposition temperature is maximum for:
(1) $BeCO_3$ (2) $CaCO_3$ (3) $BaCO_3$ (4) $MgCO_3$

6. Least stable hydride is:
(1) Silane (2) Germane (3) Plumbane (4) Stannane

7. On Heating Na_2CO_3 gives:
(1) Na_2O+CO_2 (2) $Na+CO_2$
(3) Both (4) None

8. Which compound can't produce two gaseous compounds on heating ?
(1) $NaNO_3$ (2) $Pb(NO_3)_2$ (3) $Cu(NO_3)_2$ (4) None

9. The pair of amphoteric hydroxide is
(1) $Al(OH)_3$, LiOH (2) $Be(OH)_2$, $Mg(OH)_2$
(3) $B(OH)_3$, $Be(OH)_2$ (4) $Be(OH)_2$, $Zn(OH)_2$

10. Which of the following metal carbonate is decomposed on heating ?
(1) Na_2CO_3 (2) $MgCO_3$ (3) K_2CO_3 (4) Rb_2CO_3

11. The following compounds have been arranged in order of their increasing thermal stabilities. Identify the correct order:-

K_2CO_3 (I), $MgCO_3$ (II), $CaCO_3$ (III), $BeCO_3$(IV)

(1) I < II < III < IV (2) IV < II < III < I (3) IV < II < I < III (4) II < IV < III < I

12. Which of the following is thermally more stable

(1) $BeSO_4$ (2) $MgSO_4$ (3) $CaSO_4$ (4) $BaSO_4$

13. Write correct order of thermal stability of following

(I) KO_2 (II) RbO_2 (III) CsO_2

(1) I > II > III (2) I < II < III (3) III < I < II (4) I = II = III

14. Which of the following do not decompose on heating:

(1) NaOH (2) KOH (3) CsOH (4) All

15. Which of the following metal nitrate gives two Paramagnetic gases on heating:

(1) $Pb(NO_3)_2$ (2) $NaNO_3$ (3) KNO_3 (4) $RbNO_3$

Review Your Self

16. An element has electronic configuration $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^4$. Predict their period, group and block:

(1) Period = 3rd, block = p, group = 16 (2) Period = 5th, block = s, group = 1

(3) Period = 3rd, block = p, group = 10 (4) Period = 4th, block = d, group = 12

17. In the isoelectronic species the ionic radii (Å) of N^{3-}, Ne and Al^{+3} are respectively given by:

(1) 1.36, 1.40, 1.71 (2) 1.36, 1.71, 1.40 (3) 1.71, 1.40, 1.36 (4) 1.71, 1.36, 1.40

18. IP_1 and IP_2 of Mg are 178 and 348 K. cal mol–1. The enthalpy required for the reqction $Mg \rightarrow Mg^{2+} + 2e^-$ is

(1) +170 K. cal (2) +526 K. cal (3) – 170 K. cal (4) – 526 K. cal

19. Highest electron–affinity is associated with the configuration:-

(1) $2s^2$, $2p^0$ (2) $2s^2$, $2p^2$ (3) $2s^2$, $2p^3$ (4) $2s^2$, $2p^1$

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NEET-CHEMISTRY **ELP NO.–19** **CHEMICAL BONDING**

1. Of the following hydrides which one has the lowest boiling point ?

(1) AsH_3 (2) SbH_3 (3) PH_3 (4) NH_3

2. Highest melting point is shown by the compound:

(1) $MgCl_2$ (2) $SiCl_4$ (3) NaCl (4) $AlCl_3$

3. Which is correct order of melting point?

(1) $CaCl_2 > FeCl_2 > FeCl_3$ (2) $CaCl_2 > FeCl_3 > FeCl_2$

(3) $FeCl_3 > CaCl_2 > FeCl_2$ (4) $FeCl_2 > CaCl_2 > FeCl_3$

4. Which of the following having highest boiling point?

(1) O_2 (2) S_8 (3) Se_8 (4) Te_8

5. Which is likely to have the highest melting point.

(1) He (2) CsCl (3) NH_3 (4) $CHCl_3$

6. Which of the following having highest melting point.

(1) NaCl (2) NaF (3) NaBr (4) NaI

7. Covalent compounds have low boiling point because

(1) Covalent bond is less exothermic

(2) Covalent molecules have definite shape

(3) Covalent bond is weaker than ionic bond

(4) Covalent molecules are held by weak Vander Waal's force of attraction

8. The boiling point of *p*–nitrophenol is higher than that of *o*–nitrophenol because

(1) NO_2 group at *p*–position behaves in a different way from that at *o*–position

(2) Intramolecular hydrogen bonding exists in *p*–nitrophenol

(3) There is intermolecular hydrogen bonding in *p*–nitrophenol

(4) *p*–nitrophenol has a higher molecular weight than *o*–nitrophenol

9. Which one of the following hydrogen halides has the lowest boiling point

(1) HF (2) HCl (3) HBr (4) HI

Review Your Self

10. What should be the atomic number of the recently discovered halogen?

(1) 115 (2) 119 (3) 117 (4) 121

11. The electronic configurations for some neutral atoms are given below :

(i) $1s^2, 2s^2\ 2p^6, 3s^2$ (ii) $1s^2, 2s^2\ 2p^6, 3s^1$

(iii) $1s^2, 2s^2\ 2p^6, 3s^2 3p^2$ (iv) $1s^2, 2s^2\ 2p^6, 3s^2\ 3p^3$

Which of these is expected to have the highest second ionization enthalpy ?

(1) (i) (2) (ii) (3) (iii) (4) (iv)

12. The ionic radius of Cr is minimum in which of the following compounds ?

(1) CrF_3 (2) $CrCl_3$ (3) Cr_2O_3 (4) K_2CrO_4

13. Arrange Ce^{3+}, La^{3+}, Pm^3 and Yb^{3+} in increasing order of their size-

(1) $Yb^{3+} < Pm^{3+} < Ce^{3+} < La^{3+}$ (2) $Ce^{3+} < Yb^{3+} < Pm^{3+} < La^{3+}$

(3) $Yb^{3+} < Pm^{3+} < La^{3+} < Ce^{3+}$ (4) $Pm^{3+} < La^{3+} < Ce^{3+} < Yb^{3+}$

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ELP

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NEET-CHEMISTRY **ELP NO.-1** **CO-ORDINATION COMPOUNDS**

1. Which of the following is true about metal-EDTA complex (if it is a 3d metal)

(1) The ratio of moles of metal & EDTA complex is 1:6

(2) The ratio of moles of metal & EDTA in complex is 6:1

(3) The ratio of moles of metal & EDTA in complex is 1:1

(4) 3d metal ion cannot bonded with EDTA

2. CN^- is an ambidentate ligand because

(1) It has multiple bonds

(2) Carbon has a negative charge

(3) It form chelate

(4) Both C & N can donate lone pair

3. The strongest –CO bond is present in

(1) $[Cr(CO)_6]^+$

(2) $[Fe(CO)_5]$

(3) $[V(CO)_6]^-$

(4) All have equal strength

4. Match the following and choose correct option.

Ligand	**Property**
(A) Ethylenediamine	(P) Bidentate ligand
(B) Hydrazine	(Q) Tridentate ligand
(C) Dimethylgyloximato (dmg)	(R) Monodentate ligand
(D) Dien	(S) Can form dimer

	A	**B**	**C**	**D**
(1)	P	Q	R	S
(2)	P	R	Q	S
(3)	P	R	S	Q
(4)	P	S	Q	R

5. The oxidation state of metal in iron in $[Fe(CN)_6]^{3-}$ is:

(1) –6

(2) +3

(3) –3

(4) +6

6. Coordination number of Co in $[CoF_6]^{-3}$ is:

(1) 1 (2) 5 (3) 6 (4) 8

7. Which ligand is non classical ligand:

(1) Cl^- (2) CO (3) OH^+ (4) NH_3

8. $H_2N - CH_2 - CH_2 - NH_2$ serves as:

(1) Monodentate ligand (2) Chelating ligand

(3) Anionic ligand (4) Cationic ligand

9. An incorrect statement is:

(1) The metal-carbon bond in metal carbonyls possess both σ and π character.

(2) The M-C π bond is formed by the donation of pair of electrons from a filled d orbital of metal into the vacant antibonding π orbital of carbon monoxide.

(3) The metal to ligand bonding creates a synergic effect which strengthens the bond between C–O in CO.

(4) Due to M–C π bond the C–O bond order decreases and M–C bond length decreases.

10. In the complex ion $[Fe(EDTA)]^-$ the coordination number and oxidation state of central metal ion is

(1) C.N. = 6 O.N. = +3

(2) C.N. = 1 O.N. = –3

(3) C.N. = 4 O.N. = +2

(4) C.N. = 3 O.N. = +3

11. The coordination number and oxidation number of central ion in the complex $[Pt(en)_2]^{+2}$ is:

(1) C.N. = 2 O.N. = +2

(2) C.N. = 6 O.N. = +4

(3) C.N. = 4 O.N. = +4

(4) C.N. = 4 O.N. = +2

12. Select bidentate or didentate ligand from the following :

(1) CO (2) SCN^- (3) CH_3COO^- (4) $C_2O_4^{2-}$

13. The oxidation and coordination number of Pt in $[Pt(C_2H_4Cl_3]^-$ is respectively:

(1) +1, 3 (2) +2, 4 (3) +3, 6 (4) +2, 5

14. The CN and OS of X in the compound $[X(SO_4)(NH_3)_5]$ will be respectively:

(1) 10 and +3 (2) 1 and +6 (4) 6 and +4 (4) 6 and +2

15. What is the oxidation number of Fe in $[Fe(H_2O)_5(NO)]^{2+}$ ion ?

(1) +2 (2) +3 (3) +1 (4) 0

16. Which one is a heteroleptic complex?

(1) Ferrocene (2) Chromocene (3) Prussian blue (4) Zeise's salt

17. Select the set representing correct statements only.

(i) A coordination entity constitutes a central metal atom or ion bonded to a fixed number of ions or molecules.

(ii) Ligand having two different or similar donor atoms in the complex is called bidentate ligand.

(iii) All bidentate ligands are chelating ligands.

(iv) Ni^{+2}, Co^{+3} and Fe^{+3} are acting as Lewis acids in $[NiCl_2(H_2O)_4]$, $[CoCl(NH_3)_5]^{+2}$ and $[Fe(CN)_6]^{-3}$,

(1) I, II, III and IV (2) II and III

(3) I, III and IV (4) I, II and IV

18. Oxidation number of Cobalt in $K[Co(CO)_4]$ is:

(1) +1 (2) –1 (3) 0 (4) +2

19. Which of the following species is not expected to be ligand:

(1) NO (2) NH_4^+ (3) $NH_2CH_2CH_2NH_2$ (4) CO

20. Identify the statement which is not correct:

(1) Coordination compounds are mainly known for transition metals

(2) Coordination number and oxidation state of central metal atom in a complex is same.

(3) Ligand donates at least one electron pair to central metal atom

(4) $[Co(NH_3)_4Cl_2]^+$ is a heteroleptic complex.

21. Which of the following ligands will not show chelation?

(1) EDTA (2) DMG

(3) Ethane–1, 2 diamine (4) SCN^-

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ELP

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NEET-CHEMISTRY **ELP NO.-2** **CO-ORDINATION COMPOUNDS**

1. Give the IUPAC name of the complex compound $[Co(NH_3)_4(H_2O)Br](NO_3)_2$.
(1) Bromoaquotetraamine Cobalt (III) nitrate
(2) Bromoaquoetraaminocobalt (III) nitrate
(3) Bromoaquatetraammine cobaltate (III) nitrate
(4) Tetraammineaquabromido cobalt (III) nitrate

2. Which of the following complex is anion :
(1) Fluoro pentaamine cobalt (III)
(2) Trioxalato ferrate (III)
(3) Penta carbonyl iron (0)
(4) Dichloro diamine platinum (II)

3. The chloro-bis (ethylenediamine) nitro cobalt (III) ion is:
(1) $[Co\ (NO_2)_2\ (en)_2\ Cl_2]^+$
(2) $[CoCl\ (NO_2)_2\ (en)_2]^+$
(3) $[CoCl\ (en)_2\ NO_2]^+$
(4) $Co\ (en)\ Cl_2\ (NO_2)_2]^-$

4. Which of the following complexes is not a chelate
(1) Bis (dimethylglyoximato) nickel (II)
(2) Potassium ethylenediaminetetrathiocyanato chromate (III)
(3) Tetrammine dichlorocobalt (III)
(4) Trans-diglycinatoplatinum (II)

5. The correct IUPAC name of the complex $[Fe(\eta^5-C_5H_5)_2]$ is
(1) Cyclopentadienyl iron (II)
(2) Bis (cyclopentadienyl) iron (II)
(3) Dicyclopentadienyl ferrate (II)
(4) Derrocene

6. The correct name of $[Pt(NH_3)_4Cl_2][PtCl_4]$ is
(1) Tetraammine dichloro platinum (IV) tetrachloro platinate (II)
(2) Dichloro tetra ammine platinum (IV) tetrachloro platinate (II)
(3) Tetrachloro platinum (II) tetraamine platinate (IV)
(4) Tetrachloro platinum (II) dichloro tetraamine platinate (IV)

7. The IUPAC name of $K_2[Cr(CN)_2O_2(O)_2(NH_3)]$ is:
(1) Potassiumamminadicyano dioxoperoxochromate (VI)
(2) Potassiumamminecyanoperoxodioxo chromium (VI)
(3) Potassiumamminecyanoperoxodioxo chromium (VI)
(4) Potassiumamminecyanoperoxodioxo chromate (IV)

8. The IUPAC name for $[Co(NH_3)_6][Cr(CN)_6]$ is :
(1) Hexaammine cobalt (III) hexacyanochromate (III)
(2) Hexacyanochromium cobalt hexaammine (VI)
(3) Hexaammine cobalt (III) hexacyanochromium (VI)
(4) Hexacyanochromium (III) hexaammine cobalt (III)

9. The IUPAC name for $[Co(NCS)(NH_3)_5]Cl_2$ is:
(1) Pentaammine (thiocyanato-N) cobalt (III) chloride
(2) Pentaammine (thiocyanato-S) cobalt (III) chloride
(3) Pentaammine (isothiocyanato-N, S)cobalt (III) chloride
(4) Pentaammine (mercapto-N) cobalt (III) chloride

10. Which rule is incorrect regarding IUPAC nomenclature of complex ions?
(1) Cation is named first and then anion is named
(2) In the coordination sphere, the ligands are named alphabetically.
(3) Positively charged ligands have suffix-ate.
(4) More than one same type of ligands are indicated by di, tri, tetra etc.

11. Which of the following has least conductivity in aqueous solution.
(1) $CoCl_3.4NH_3$ (2) $CoCl_3.3NH_3$ (3) $CoCl_3.5NH_3$ (4) $CoCl_3.6NH_3$

12. If EAN of a central metal ion X^{+2} in a complex is 34. and atomic number of X is 28. The number of monodentate ligands present in complex are:
(1) 3 (2) 4 (3) 6 (4) 2

13. The EAN of cobalt in the complex ion $[Co(en)_2Cl_2]^+$ is:
(1) 27 (2) 36 (3) 33 (4) 35

14. The effective atomic number of Cr (atomic no. 24) in $[Cr(NH_3)_6]\ Cl_3$ is:
(1) 35 (2) 27 (3) 33 (4) 36

15. Which gives only 25% mole of AgCl, when reacts with $AgNO_3$:
(1) $PtCl_2.4NH_3$ (2) $PtCl_4.5NH_3$ (3) $PtCl_4.4NH_3$ (4) $PtCl_4.3NH_3$

16. In the metal carbonyls of general formula $M(CO)_x$ (Which follows EAN rule) if M is Ni, Fe and Cr the value of x will be respectively.
(1) 6,5,6 (2) 4,5,6 (3) 4,4,5 (4) 4,6,6

17. A compound has the empirical formula $CoCl_3.5NH_3$. When an aqueous solution of this compound is mixed with excess silver nitrate, 2 mol of AgCl precipitate per mol of compound. On reaction with excess HCl, no NH_4^+ is detected. Hence it is:
(1) $Co(NH_3)_5Cl_2]Cl$ (2) $[Co(NH_3)_5Cl]Cl_2$ (3) $[Co(NH_3)_5Cl_3]$ (4) $Co(NH_3)_4Cl_2]Cl.NH_3$

18. Which is incorrect regarding Werner theory:
(1) Co-ordination compounds metals show two types of valency.
(2) Primary valency is satisfied by negative ions.
(3) Secondary valency is satisfied by only neutral molecules.
(4) Secondary valency is responsible for geometry of complex.

19. Number of electrolytes in the complex $CoCl_3.5NH_3$
(1) 3 (2) 2 (3) 4 (4) 5

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ELP

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NEET-CHEMISTRY **ELP NO.-3** **CO-ORDINATION COMPOUNDS**

1. The IUPAC name of $Fe(CO)_5$ is

(1) Pentacarbonyl ferrate (0) (2) Pentacarbonyl Ferrate (III)

(3) Pentacarbonyl Iron (0) (4) Pentacarbonyl Iron (III)

2. $FeCl_3.\ 4H_2O$ is actually

(1) $[Fe(H_2O)_4]Cl_3$ (2) $[Fe(H_2O)_3Cl]Cl_2.H_2O$

(3) $Fe(H_2O)_4Cl_2]Cl$ (4) $[Fe(H_2O)_3Cl_2]Cl.H_2O$

3. Which of the following compound does not give test of chloride ion in aqueous solution

(1) $CoCl_3.6NH_3$ (2) $CoCl_3.5NH_3$ (3) $CoCl_3.4NH_3$ (4) $CoCl_3.3NH_3$

4. Which of the following is most likely formula of platinum complex, if $\frac{1}{4}$ of total chlorine of the compound is precipitated by adding $AgNO_3$ to its aqueous solution.

(1) $PtCl_4.6H_2O$ (2) $PtCl_4.5H_2O$ (3) $PtCl_2.2H_2O$ (4) $PtCl_4.3H_2O$

5. The effective atomic number of Cr in $Cr(CO)_6$ is:

(1) 36 (2) 38 (3) 28 (4) 54

6. Which complex is chelating complex ?

(1) Diammine dichloroplatinum (II) (2) Bis (ethylene diamine) copper (II)

(3) Tetra carbonyl nickel (0) (4) Hexacyanoferrate (III) ion

7. The Effective atomic number of iron in $K_4[Fe(CN)_6]$ is:

(1) 35 (2) 34 (3) 36 (4) 38

8. Which of the following does not follow EAN rule?

(1) $[Ni(CO)_4]$ (2) $[Fe(CO)_5]$ (3) $[Cr(CO)_6]$ (4) $[Mn(CO)_5]$

9. Complex ion having square planar geometry is:

(1) $[Ni(CN)_4]^{2-}$ (2) $[Pt(CN)_6]^{-2}$ (3) $[Cu(NH_3)_6]^{+2}$ (4) All

10. For the complex $[Fe(CO)_5]$ what is wrong:
(1) It is σ-π bonded organometallic compound
(2) It does not follow EAN rule
(3) In the complex CO is π-acid ligand
(4) It has trigonal bipyramidal shape

11. In the complex ion $[FeF_6]^{-3}$, according to valence bond theory, the magnetic properties of the complex ion corresponds to how many unpaired electrons ?
(1) 0 (2) 5 (3) 2 (4) 3

12. Among $[Ni(CO)_4]$, $[Ni(CN)_4]^{2-}$ and $[Ni(Cl)_4]^{2-}$:
(1) $[Ni(CO)_4]$ and $[NiCl_4]^{3-}$ are diamagnetic and $[Ni(CN)_4]^{2-}$ is paramagnetic
(2) $[NiCl_4]^{2-}$ and $[Ni(CN)_4]^{2-}$ are diamagnetic and $[Ni(CO)_4]$ is paramagnetic
(3) $[Ni(CO)_4]$ and $[Ni(CN)_4]^{2-}$ are diamagnetic and $[NiCl_4]^{2-}$ is paramagnetic
(4) $[Ni(CO_4)]$ is diamagnetic and $[NiCl_4]^{2-}$ and $[Ni(CN)_4]^{2-}$ are paramagnetic

13. Which of the following compound is square planar and not have any unpaired electron:
(1) $[Cu(NH_3)_4]^{+2}$ (2) $[Ni(CO)_4]$ (3) $[NiCl_4]^{-2}$ (4) $Ni(CN)_4]^{-2}$

14. Match list-I with list II and choose the correct answer from the code given below

	List-I (Complex)		List-II (Geometry)
A	$[Ni(CN)_4]^{-2}$	i	Octahedral
B	$[Pt(NH_3)_6]^{+4}$	ii	Squareplanar
C	$[Ag(NH_3)_2]^{+}$	iii	Tetrahedral
D	$[Zn(NH_3)_4]^{+2}$	iv	Linear

	A	B	C	D
(1)	ii	i	iv	iii
(2)	i	ii	iii	iv
(3)	iii	iv	ii	i
(4)	ii	iii	iv	i

15. Choose the set containing incorrect statement only.
(i) $[Fe(CN)_6]^{-3}$ has magnetic moment is equal to 1.73 BM while $[FeF_6]^{-3}$ has a magnetic moment is equal to 5.9 BM.
(ii) $[CoF_6]^{-3}$ is paramagnetic with four unpaired electrons while $[Co(C_2O_4]^{-3}$ has two unpaired electrons
(iii) $[(Co(H_2O)_6]^{+3}$ & $[Co(C_2O_4)_3]^{-3}$ are inner orbital complexes.
(iv) $[Mn(H_2O)_6]^{+3}$, $[Cr(H_2O)_6]^{+3}$ & $[V(H_2O)_6]^{+3}$ are outer orbital complexes with four, three and two unpaired electrons respectively
(1) i, ii & iii (2) ii & iv (3) i & iii (4) ii, iii & iv

16. Which pair of complexes has inner orbital complexes ?
(1) $[Fe(CN)_6]^{-3}$ & $[FeF_6]^{-3}$ (2) $[CoF_6]^{-3}$ & $[CoCl_6]^{-3}$
(3) $[Zn(NH_3)_6]^{-2}$ & $[Zn(H_2O_6]^{+2}$ (4) $[Fe(CN)_6]^{-3}$ & $[Fe(CN)_6]^{-4}$

17. Which is not related with complex $[Ni(CO)_4]$
(1) It has sp^3 hybridisation (2) It has tetrahedral geometry
(3) It is paramagnetic (4) It is diamagnetic

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ELP

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NEET-CHEMISTRY **ELP NO.-4** **CO-ORDINATION COMPOUNDS**

1. Which of the following compound is paramagnetic

(1) Tetracyanonickelate (II) ion (2) Tetraamminezinc (II) ion

(3) Hexaamine chromium (III) ion (4) Diammine silver (I) ion

2. The shape of the complex $[Ag(NH_3)_2]^+$ is:

(1) Octahedral (2) Square planar (3) Tetrahedral (4) Linear

3. Hexafluoroferrate (III) ion is an outer orbital complex. The number of unpaired electrons are

(1) 1 (2) 5 (3) 4 (4) 3

4. The shape of $[Cu(NH_3)_4]SO_4$ is:

(1) Square planar (2) Pyramidal (3) Octahedral (4) Tetrahedral

5. Among the following ions, which one has the highest paramagnetism?

(1) $[FeF_6]^{3-}$ (2) $[Fe(H_2O)_6]^{2+}$ (3) $[Cu(H_2O)_6]^{2+}$ (4) $[Zn(H_2O)_6]^{2+}$

6. In the complex ion ML_6^{n+}, M^{n+} has five d-electrons and L is weak field ligand. According to crystal field theory, the magnetic properties of the complex ion correspond to how many unpaired electrons.

(1) 0 (2) 5 (3) 2 (4) 3

7. A magnetic moment of 1.73 BM will be shown by one among of the following compounds.

(1) $[Cu(NH_3)_4]^{2+}$ (2) $[Ni(CN)_4]^{2-}$ (3) $TiCl_4$ (4) $[CoCl_6]^{3-}$

8. The magnetic property and the shape of $[Cr(NH_3)_6]^{3+}$ complex ions are:

(1) Paramagnetic, Octahedral (2) Diamagnetic, square planar

(3) Paramagnetic, tetrahedral (4) None of the above

9. Which of the following complexes is an inner orbital complex?

(1) $[CoF_6]^{3+}$ (2) $[FeF_6]^{3-}$ (3) $[Cr(NH_3)_6]^{3+}$ (4) $[Fe(H_2O)_6]^{2+}$

10. What is incorrect for $K_4[Fe(CN)_6]$

(1) O.N of iron is +2 (2) It exhibit diamagnetic character

(3) It exhibit paramagnetic character (4) It involved d^2sp^3 hybridisation

11. In which of the following molecules, central atom used orbitals of different principal quantum number in the hybridisation:-

(1) $[Fe(CO)_5]$ (2) $[Zn(NH_3)_6]^{+2}$
(3) $Ni(CO)_4$ (4) $[Ni(NH_3)_6]^{+2}$

12. What are the geometric shape and the oxidation number of the copper atom, respectively, for the complex ion, $[Cu(NH_3)_4(OH_2)_2]^{2+}$?

(1) Tetrahedral; + 2 (2) Square planar; –2
(3) Linear; + 3 (4) Octahedral; + 2

13. For $[FeF_6]^{3-}$ and $[Fe(CN)_6]^{3-}$ magnetic moment of the fluoride complex is expected to be:

(1) The same as the magnetic moment of the cyanide complex
(2) Larger than the magnetic moment of the cyanide complex because there are more unpaired electrons in the fluoride complex
(3) Smaller than the magnetic moment of the cyanide complex because there are more unpaired electrons in the fluoride complex
(4) Larger than the magnetic moment of the cyanide complex because there are fewer unpaired electrons in the fluoride complex

14. Which of the following contains one unpaired electron in the 4p orbitals:

(1) $[Cu(NH_3)_2]^+$ (2) $[Cu(NH_3)_4]^{2+}$ (3) $[Cu(CN)_4]^{3-}$ (4) $(Ni(CN)_4]^{2-}$

15. How many unpaired electrons are present in the Brown Ring complex $[Fe(H_2O)_5(NO)]SO_4$

(1) 4 (2) 3 (3) 0 (4) 5

16. Which of the following statements about $[Cr(CO)_6]$ is correct ?

(1) It is paramagnetic and inner orbital complex
(2) It is diamagnetic and Inner orbital complex
(3) It is diamagnetic and outer orbital complex
(4) It is paramagnetic and outer orbital complex

17. Which is true for complex $[Ni(en)_2]^{+2}$?

(1) Paramagnetism, dsp^2, square planar, C.N. of Ni = 2
(2) Diamagnetism, dsp^2, square planar, C.N. of Ni = 4
(3) Diamagnetism, sp^3, tetrahedral, C.N. of Ni = 4
(4) Paramagnetism, sp^3, tetrahedral, C.N. of Ni = 4

18. Arrange the following in order of decreasing number of unpaired electrons:

I. $[Fe(H_2O)_6]^{2+}$ II. $[Fe(CN)_6]^{3-}$ III. $[Fe(CN)_6]^{4-}$ IV. $[Fe(H_2O)_6]^{3+}$

(1) IV, I, II, III (2) I, II, III, IV (3) III, II, I, IV (4) II, III, I, IV

19. Spin magnetic moment of $[MnBr_4]^{-2}$ is 5.9 BM its geometry would be:

(1) Square planar (2) Tetrahedral (3) Square pyramidal (4) Octahedral

20. The hybridisation in $[Co(C_2O_4)_3]^{-3}$

(1) sp^3d^2 (2) sp^3d^3 (3) dsp^3 (4) d^2sp^3

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NEET-CHEMISTRY **ELP NO.-5** **CO-ORDINATION COMPOUNDS**

1. Increasing order of Δ_0 of the following complex is–

(1) $[Cr(NH_3)_6]^{3+} < [Cr(H_2O)_6]^{3+} < [Cr(NO_2)_6]^{3-}$

(2) $[Cr(H_2O)_6]^{3+} > [Cr(NH_3)_6]^{3+} > [Cr(NO_2)_6]^{3-}$

(3) $[Cr(H_2O)_6]^{3+} < [Cr(NH_3)_6]^{3+} < [Cr(NO_2)_6]^{3-}$

(4) $[Cr(NH_3)_6]^{3+} < [Cr(NO_2)_6]^{3-} < [Cr(H_2O)_6]^{3+}$

2. The crystal field splitting energy for octahedral complex (Δ_o) and that for tetrahedral complex (Δ_t) are related as:

(1) $\Delta_t = \frac{4}{9}\Delta_0$ (2) $\Delta_t = 0.5\,\Delta_o$ (3) $\Delta_t = 0.33\,\Delta_o$ (4) $\Delta_t = \frac{9}{4}\Delta_0$

3. The CFSE for $[CoCl_6]^{4-}$ complex is 18000 cm^{-1}. The Δ for $[CoCl_4]^{2-}$ will be

(1) 18000 cm^{-1} (2) 16000 cm^{-1} (3) 8000 cm^{-1} (4) 2000 cm^{-1}

4. The compound which does not show paramagnetism?

(1) $[Cu(NH_3)_4]Cl_2$ (2) $[Ag(NH_3)_2]Cl$ (3) NO (4) NO_2

5. 'Spin only' magnetic moment of Ni in $[Ni(dmg)_2]$ is same as that found in :

(1) Ni in $[NiCl_2\,(PPh_3)_2]$ (2) Mn in $[MnO_4]^-$

(3) Co in $[CoBr_4]^{2-}$ (4) None of these

6. From the stability constant (hypothetical values), given below, predict which is the most stable complex ?

(1) $Cu^{2+} + 4NH_3 \rightarrow [Cu(NH_3)_4]^{2+}$,K = 4.5×10^{11}

(2) $Cu^{2+}\ \ 4CN^- \rightarrow [Cu(CN)_4]^{2-}$, K = 2.0×10^{27}

(3) $Cu^{2+} + 2en \rightarrow [Cu(en)_2]^{2+}$,K = 3.0×10^{15}

(4) $Cu^{2+} + 4H_2O \rightarrow [Cu(H_2O)_4]^{2+}$, K = 9.5×10^{8}

7. Which of the following is an oxidizing agent?

(1) $Mn(CO)_5$ (2) $Fe(CO)_5$ (3) $Mn_2(CO)_{10}$ (4) $[Ni(CO)_4]$

8. Concentrated H_2SO_4 will not dehydrate the following complex :

(1) $[Cr(H_2O)_5Cl]Cl_2.H_2O$ (2) $[Cr(H_2O)_4Cl_2]Cl.2H_2O$

(3) $[Cr(H_2O)_6]Cl_3$ (4) All of these

9. The two compounds sulphato penta-ammine cobalt (III) bromide and sulphato penta-ammine cobalt (III) chloride represent:

(1) Linkage isomerism (2) Ionisation isomerism

(3) Co-ordination isomerise (4) No isomerism

10. Which one of the following is an example of coordination isomerism?

(1) $[Co(NH_3)_5Br]SO_4$ and $[Co(NH_3)_5SO_4]$ Br

(2) $[Co(NH_3)_5NO_2]$ Cl_2 and $[Co(NH_3)_5ONO]Cl_2$

(3) $[Cr(H_2O)_6]Cl_3$and $[Cr(H_2O)_5Cl]Cl_2.H_2O$

(4) $[Cr(NH_3)_6]$ $[Co(CN)_6]$ and $[Co(NH_3)_6]$ $[Cr(CN)_6]$

11. $[Cr(NH_3)_5Br]$ Cl and $[Cr(NH_3)_5Cl]Br$ can be distinguished by and isomerism shown is

(1) $BaCl_2$, ionisation (2) $AgNO_3$, ionisation

(3) $AgNO_3$, coordinate (4) $BaCl_2$, linkage

12. The complexes $[Pt(NH_3)_4]$ $[PtCl_6]$ and $[Pt(NH_3)_4Cl_2]$ $[PtCl_4]$ are :

(1) Linkage isomers (2) Optical isomers

(3) Co-ordination isomers (4) Ionisation isomers

13. Incorrect order of splitting energy is –

(1) $[NiF_6]^{4-} < [NiF_6]^{2-}$ (2) $[Fe(H_2O)_6]^{+3} < [Ru(H_2O)_6]^{+3}$

(3) $[Co(NH_3)_6]^{+3} > [Co(en)_3]^{+3}$ (4) $[Ni(OH)_4]^{2-} < [Ni(CN)_6]^{-4}$

14. In which of the following configuration will these be the possibility of both para & diamagnetism depending on the nature of ligands.

(1) d^7 (2) d^3 (3) d^6 (4) d^5

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NEET-CHEMISTRY **ELP NO.-6** **CO-ORDINATION COMPOUNDS**

1. In octahedral complex for eg orbital relative to the average energy in spherical crystal field is : –

(1) Raised by 2/5 Δ_0 (2) Lowered by 4/5 Δ_0

(3) Raised by 3/5 Δ_0 (4) Lowered by 3/5 Δ_0

2. The value of spin only magnetic moment of one of the following configuration is 2.84 BM. the correct one is–

(1) d^4 (in SFL) (2) d^7 (in WFL)

(3) d^3(WFL as well as SFL) (4) d^3 (in SFL)

3. The oxidation state of Fe in brown ring complex $[Fe(H_2O)_5NO]SO_4$ is

(1) +1 (2) +2 (3) +3 (4) +4

4. Among the following ions which one has highest paramagnetism

(1) $[Cr(H_2O)_6]^{3+}$ (2) $[Fe(H_2O)_6]^{2+}$ (3) $[Cu(H_2O)_6]^{2+}$ (4) $[Zn(H_2O)_6]^{2+}$

5. The number of geometrical isomers of $[Co(NH_3)_3(NO_3)_3]$ are :

(1) 0 (2) 2 (3) 3 (4) 4

6. The number of isomeric forms in which $[Co(NH_3)_4Cl_2]^+$ ion can occur is

(1) 2 (2) 3 (3) 4 (4) 1

7. Which of the following complex ion exhibits isomerism?

(1) $[Ag(NH_3)_2]^+$ (2) $[Co(NH_3)_5NO_2]^{2+}$ (3) $[Pt(en)Cl_2]$ (4) $[Co(NH_3)_5Cl]^{2+}$

8. Geometrical isomerism in coordination compounds is exhibited by.

(1) Square planar and tetrahedral complexes

(2) Square planar and octahedral complexes

(3) Tetrahedral and octahedral complexes

(4) Square planar, tetrahedral and octahedral complexes

9. Fac & mer isomerism is associate with which one of the following complexes ?

(1) $[M(AB)_2]$ (2) $[Ma_3b_3]$ (3) $[M(A\text{-}A)_3]$ (4) $[Ma_2b_2cd]$

10. Which of the following will not show geometrical isomerism ?

(1) $[Cr(NH_3)_4Cl_2]Cl$ (2) $[Co(en)_2Cl_2]Cl$

(3) $[Co(NH_3)_5NO_2]Cl_2$ (4) $[Pt(NH_3)_4Cl_2]Cl_2$

11. Which of the following common shapes (I – IV) can never exist as geometrical isomers regardless identity of the ligands

(I) Linear (II) Square planer (III) Tetrahedral (IV) Octahedral

(1) I only (2) I & II (3) I & III (4) II & IV

12. Of the following complex ions one can exhibits optical isomerism, that one is

(1) cis–$[Co(en)_2Cl_2]^+$ (2) $[Co(NH_3)_4Cl_2]^+$

(3) $[Co(NH_3)_2Cl_4]^-$ (4) trans–$[Co(en)_2Cl_2]^+$

13. Which of the following compounds show optical isomerism?

I. cis—$[Co(NH_3)_4Cl_2]^+$ II. trans–$[Co(en)_2Cl_2]^+$

III. cis–$[Co–(en)_2Cl_2]^+$ IV. $[Co(en)_3]^{3+}$

Select the correct answer using the codes given below:

(1) I and II (2) II and III (3) III and IV (4) I, III and IV

14. Which of the following is not optically active?

(1) $[Co(en)_3]^{3+}$ (2) $[Cr(ox)_3]^{3-}$ (3) cis–$[CoCl_2(en)_2]^+$ (4)trans–$[CoCl_2(en)_2]^+$

15. Which of the following is an organometallic compound?

(1) $Ti(C_2H_5)_4$ (2) $Ti(OC_2H_5)_4$ (3) $Ti(OCOCH_3)_4$ (4) All of these

16. Which of the following will give a pair of enantiomers?

(1) $[Cr(H_2O)_6]^{3+}$ (2) $[Cr(NH_3)_4Cl_2]NO_2$

(3) $[Cr(NH_3)_6]Co(CN)_6]$ (4) $[Cr(en)_2Cl_2]Cl$

17. Which of the following complex is not considered as an organometallic compound?

(1) Cis-platin (2) Ferrocene

(3) Grignard reagent (4) Zeise's salt

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NEET-CHEMISTRY **ELP NO.-7** **CO-ORDINATION COMPOUNDS**

1. Consider the following statements and choose correct code (T - True, F - False)

S_1 : $[Cr(NH_3)_6]^{3+}$ is a inner orbital complex with crystal field stabilization energy equal to - $1.2\Delta_o$

S_2 : The complex formed by joining the CN^- ligands to Fe^{3+} ion has theoretical value of 'spin only' magnetic moment equal to 1.73 B.M.

S_3 : Spin magnetic moment of complex $[Mn(CN)_6]^{-3}$ is 2.8 BM.

(1) F T F (2) T T F (3) T T T (4) F F F

2. For the $t_{2g}^6 e_g^2$ system, the value of magnetic moment (μ) is:

(1) 2.83 B.M. (2) 1.73 B.M. (3) 3.87 B.M. (4) 4.92 B.M.

3. Which of the following compound is not coloured:

(1) $Na_2[CuCl_4]$ (2) $Fe_4[Fe(CN)_6]_3$ (3) $Na_2[CdCl_4]$ (4) Na_2CrO_4

4. The stability constants of the complexes formed by a metal ion M^{2+} with NH_3, CN^-, H_2O are of the order of 10^{15}, 10^{27}, 10^{11} respectively. Then:

(1) NH_3 is the strongest ligand

(2) CN^- is the strongest ligand

(3) These values cannot predict the strength of the ligand

(4) All the ligands are equally strong

5. The value of crystal field stabilisation energy is zero for

(1) $K_2[MnF_6]$ (2) $K_3[Fe(CN)_6]$ (3) $K_3[FeF_6]$ (4) $K_4[Fe(CN)_6]$

6. Match the following and choose correct option

Complexes	**e– configuration**
(P) $[CoCl_6]^{3-}$	(a) $t_{2g}^5 e_g^0$
(Q) $[Co(OX)_3]^{3-}$	(b) $t_{2g}^6 e_g^0$
(R) $[Co(H_2O)_6]^{2+}$	(c) $t_{2g}^5 e_g^2$
(S) $[Fe(CN)_6]^{-3}$	(d) $t_{2g}^4 e_g^2$

	P	**Q**	**R**	**S**
(1)	b	a	c	d
(2)	d	a	b	c
(3)	d	b	c	a
(4)	d	a	c	b

7. Which order is correct

(1) $[NiCl_6]^{4-} > [NiCl_4]^{2-}$ — Splitting energy

(2) $[Cr(en)_3]Cl_3 > [Cr(H_2O)_6]Cl_3$ — Crystal field stabilisation energy

(3) $[Co(CN)_6]^{4-} > [Co(CN)_6]^{3-}$ — Reducing behaviour

(4) All of these

8. Which is inner orbital complex?

(1) $[Co(H_2O)_6]^{3+}$ (2) $[RhF_6]^{3-}$ (3) $[IrF_6]^{3-}$ (4) All

9. Which one of these ions absorbs energy from visible spectrum:

(1) $[Cu(NH_3)_4]^{+}$ (2) $[Cu(NH_3)_4]^{+2}$ (3) $[Zn(H_2O)_6]^{+2}$ (4) $[CdCl_4]^{-2}$

10. In the complex $[Ni(H_2O)_2(NH_3)_4]^{+2}$ the magnetic moment (μ) of Ni is:

(1) Zero (2) 2.83 BM (3) 1.73 BM (4) 3.87

11. If $\Delta_0 < P$, the correct electronic configuration for d^4 system will be: (Octahedral Complex)

(1) $t_{2g}^4\, e_g^0$ (2) $t_{2g}^3\, e_g^1$ (3) $t_{2g}^0\, e_g^4$ (4) $t_{2g}^2\, e_g^2$

12. Consider the following complex formation reactions and comment on their formation constant value

(i) $Fe^{2+}(aq) + 6NH_3 \overset{K_f}{\rightleftharpoons} [Fe(NH_3)_6]^{2+}$

(ii) $Fe^{2+}(aq) + 3en \overset{K'_f}{\rightleftharpoons} [Fe(en)_3]^{2+}$

(1) $K_f > K'_f$ (2) $K_f < K'_f$

(3) $K_f = K'_f$ (4) Can not be compared

13. Select most stable complex:

(1) $[Co(H_2O)_6]^{3+}$ (2) $[Co(NH_3)_2(en)_2]^{+3}$

(3) $[Co(en)_3]^{+3}$ (4) $[Co(NH_3)_4(en)]^{+3}$

14. Red color of gem stone ruby is due to impurities of:

(1) Al_2O_3 (2) Cr^{+3} (3) Al^{+3} ions (4) All of these

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ELP

Educator Led Practice

1. Give the number of unpaired electrons in the following.

(i) Cr^{2+} (Z = 24) (ii) Fe^{2+} (Z = 26) (iii) Mn^{2+} (Z = 25)

(iv) Ti^{4+} (Z = 22) (v) La^{3+} (Z = 57) (vi) Zn^{2+} (Z = 30)

2. Answer the following:

(i) Which one of Fe^{2+} and Fe^{3+} ions is more paramagnetic and why ?

(ii) Which of the following ions are expected to be coloured and why ?

Cu^{+}, Fe^{2+}, Mn^{2+}, Cr^{3+}, Sc^{3+}, Ti^{4+}

3. The 3d metal ions are generally paramagnetic in nature because:

(1) They form coloured salts (2) They have one or more unpaired d electrons

(3) They show variable valency (4) They are reducing agents

4. The correct order of ionic radii of Ce, La, Pm and yb in +3 oxidation state is:

(1) $La^{3+} < Pm^{3+} < Ce^{3+}$ Yb^{3+} (2) $La^{3+} < Ce^{3+} < Pm^{3+}$ Yb^{3+}

(3) $Yb^{3+} < Ce^{3+} < Pm^{3+}$ La^{3+} (4) $Yb^{3+} < Pm^{3+} < Ce^{3+}$ La^{3+}

[Hint]: Lanthanide contraction decreases atomic sizes from La^{3+} to Lu^{3+}. Hence, the correct order will be (4) for the given ions

5. Which of the following is not an actinide ?

(1) Curium (2) Californium (3) Uranium (4) Terbium

[Hint]: Terbium is a lanthanide

6. Brass, bronze and German silver have one metal in common. This is:

(1) Zn (2) Fe (3) Cu (4) Al

[Hint]:

Brass	Cu 60-80%	Zn 40-20%
Bronze	Cu 75-90%	Sn 25-10%
German silver	Cu 56%	Zn 24%, Ni 20%

Common metal is copper.

7. Which of the following pairs of ions is colourless?

(1) Ti^{3+}, Cu^{2+} (2) Sc^{3+}, Zn^{2+} (3) Co^{2+}, Fe^{3+} (4) Ni^{2+}, V^{3+}

[Hint]: Sc^{3+} has $3d^0$ configuration while Zn^{2+} has $3d^{10}$ configuration. Hence, these ions are colourless.

8. The spin only magnetic moment [in units of Bohr magneton] of Ni^{2+} in aqueous solution would be (At. No. 28)

(1) 2.84 (2) 4.90 (3) 0 (4) 1.73

[Hint]: Ni^{2+} has $3d^8$ configuration i.e. 2 unpaired electrons are present.

Thus, magnetic moment = $\sqrt{n(n+2)} = \sqrt{2 \times 4} = \sqrt{8} = 2.84$ B.M.

9. Arrange the following ions in their magnetic moment:

(i) V^{4+} (ii) Mn^{4+} (iii) Fe^{3+} (iv) Ni^{2+}

[At. Nos. V = 23, Mn = 25, Fe = 26, Ni = 28]

(1) (ii) > (iii) > (i) > (iv) (2) (iii) > (iv) > (ii) > (i)

(3) (iii) > (ii) > (iv) > (i) (4) (i) > (iv) > (iii) > (ii)

[Hint]: $V^{4+} \rightarrow [Ar]3d^1$

$Mn^{4+} \rightarrow [Ar]3d^3$

$Fe^{3+} \rightarrow [Ar]3d^5$

$Ni^{4+} \rightarrow [Ar]3d^8$

10. The property, which is not characteristic of transition metals, is

(1) Variable oxidation states (2) Tendency to form complex

(3) Formation of coloured compound (4) Natural-radioactivity

11. Which of the following is an acidic oxide ?

(1) Mn_2O_7 (2) Mn_3O_4 (3) MnO (4) Mn_2O_3

12. Percentage of silver in the alloy german silver, is

(1) 2.5% (2) 1.5% (3) 10% (4) 0%

13. In the rection, $HgCl_2 + KI \rightarrow A + KCl$; A is

(1) HgI_2 (2) K_2HgI_3 (3) K_2HgI_4 (4) $KHgI_3$

14. Mercury is transported in the containers made of:

(1) Ag (2) Pb (3) Al (4) Fe

15. In the dichromate dianion:

(1) 4Cr–O bonds are equivalent (2) 6Cr–O bonds are equivalent

(3) All Cr–O bonds are equivalent (4) All Cr–O bonds are equivalent

16. A student accidently added conc. H_2SO_4 to potassium permanganate and it exploded due to the formation of an explosive. Which of the following is formed ?

(1) Mn_2O_7 (2) MnO_2 (3) Mn_2O_5 (4) MnO_3

17. CrO_3 dissolves in aqueous NaOH to give:

(1) CrO_4^{2-} (2) $Cr(OH)_2$ (3) CrO_7^{2-} (4) $Cr(OH)_4$

18. Amongst the following, identity the species with an atom in +6 oxidation state:

(1) MnO_4^- (2) $Cr(CN)_6^{3-}$ (3) NiF_6^{2-} (4) CrO_2Cl_2

19. What would happen when a solution of potassium chromate is treated with an excess of dilute nitric acid ?

(1) Cr^{3+} and $Cr_2O_7^{2-}$ are formed (2) $Cr_2O_7^{2-}$ and H_2O are formed

(3) $Cr_2O_7^{2-}$ is reduced to +3 state of Cr (4) $Cr_2O_7^{2-}$ is oxidized to +7 state of Cr

20. Vitamin-B_{12} contains:

(1) Co^{3+} (2) Zn^{2+} (3) Ca^{2+} (4) Fe^{2+}

NEET-CHEMISTRY **ELP NO.-2** **THE D & F-BLOCK ELEMENTS**

1. Which of the following pairs of ions have same paramagnetic moment ?

(1) Mn^{2+}, Cu^{2+} (2) Cu^{2+}, Ti^{3+} (3) Ti^{4+}, Cu^{2+} (4) Ti^{3+}, Ni^{2+}

2. Lanthanide for which +II and +III oxidation states are common is:

(1) La (2) Nd (3) Ce (4) Eu

3. The product of oxidation of I^- with MnO_4^- alkaline medium is:

(1) IO_3^- (2) I_2 (3) IO^- (4) IO_2^-

4. $KMnO_4$ is a strong oxidizing agent in acid medium. To provide acid medium H_2SO_4 is used instead of HCl. This is because:

(1) H_2SO_4 is stronger acid than HCl (2) HCl is oxidized by H_2SO_4 to Cl_2

(3) H_2SO_4 is a dibasic acid (4) Rate is faster in the presence of H_2SO_4

(5) Only H_2SO_4 is completely ionised

5. Identify the incorrect statement among the following:

(1) Lanthanoid contraction is the accumulation of successive shrinkages

(2) As a result of lanthanoid contraction, the properties of 4d-series of the transition elements have no similarities with the 5d-series of elements

(3) Shielding power of 4f-electrons is quite weak

(4) There is a decrease in the radii of the atoms of ions as one proceeds from La to Lu

6. When hydrogen peroxide is added to acidified potassium dichromate, a blue colour is produced due to formation of:

(1) CrO_3 (2) Cr_2O_3 (3) CrO_5 (4) CrO_4^{2-}

7. When of the following pairs of transition metal ions are the stronger oxidizing agents in aqueous solution ?

(1) V^{2+} and Cr^{2+} (2) Ti^{2+} and Cr^{2+} (3) Mn^{3+} and Co^{3+}

(4) V^{2+} and Fe^{2+} (5) Ni^{2+} and Fe^{2+}

8. The correct order of $E^{o}_{Mn^{2+}/M}$ values with negative sign for the four successive elements Cr, Mn, Fe and Co is:

(1) Cr > Mn > Fe > Co (2) Mn > Cr > Fe > Co

(3) Cr > Fe > Mn > Co (4) Fe > Mn > Cr > Co

[Hint]: The values are $E^{o}_{Mn^{2+}/Mn} = -1.18\,V$; $E^{o}_{Fe^{2+}Fe} = 0.44\,V$; $E^{o}_{Co^{2+}/Co} = -0.28\,V$

9. MnO_4^- reacts with Br^- in alkaline pH to give:

(1) BrO_3^-, MnO_2 (2) Br_2, MnO_4^{2-} (3) Br_2, MnO_2 (4) BrO^-, MnO_4^{2-}

[Hint]: $2MnO_4^- + Br^- + H_2O \rightarrow 2OH^- + 2MnO_2 + BrO_3^-$

10. Mark the correct statement(s)

(a) Manganese exhibits +7 oxidation state

(b) Zinc forms colured ions

(c) $[CoF_6]^{3-}$ is diamagnetic

(d) Sc form +4 oxidation state

(e) Zinc exhibits only +2 oxidation state

(1) a and b (2) a and e (3) b and d

(4) c and d (5) b and e

11. The maximum oxidation state exhibited by actinide ions is:

(1) +5 (2) +4 (3) +7 (4) +8 (5) +6

12. Which of the following is a correct statement ?

(1) Aqueous solution of Cu^+ and Zn^{2+} are colourless

(2) Aqueous solution of Cu^{2+} and Zn^{2+} are colourless

(3) Aqueous solution of Fe^{3+} is green in colour

(4) Aqueous solution of MnO_4^- is colourless

13. The reason for the stability of Gd^{3+} ion is:

(1) 4f-subshell – completely filled

(2) 4f-subshell – empty

(3) 4f-subshell – half filled

(4) Possesses the configuration of a noble gas

14. More number of oxidation states are exhibited by the actinoids than by the lanthanoids. The Main reason for his is:

(1) Greater metallic character of the lanthanides than that of the corresponding actinides

(2) Lesser energy difference between 5f and 6d-orbtal than that between 4f and 5d-orbitals

(3) More active nature of actinoids

(4) More energy difference between 5f and 6d-orbitals than that between 4f and 5d-orbitals

15. Match the compounds in List-I with their properties in List-II:

List-I	**List-II**
(a) K_2MnO_4	(p) Transition element in +6 state
(b) $KMnO_4$	(q) Oxidizing agent in acid medium
(c) $K_2Cr_2O_7$	(r) Manufactured from pyrolusite ore
(d) K_2CRO_4	(s) manufactured from chromite ore

(1) (a) → p, r	(b) → q, r	(c) → p, q, s	(d) → p, s
(2) (a) → q, r	(b) → p, r	(c) → p, s	(d) → q, p, s
(3) (a) → p, s	(b) → q, r, s	(c) → q, r	(d) → p, r
(4) (a) → p, q, r	(b) → q, r	(c) → p, q, s	(d) → p, s

16. Oxides of which of the following metals show oxidation state of +8 ?

(1) Ru (2) Os (3) Mn (4) Zn

17. Match List-I with List-II

List-I	**List-II**
(Property)	**(Transition elements)**
(1) Highest oxidation state	(p) Cr
(2) Highest density	(q) Os
(3) Element with maximum unpaired electrons	(r) Tc
(4) Radioactive transition elements	(s) Ru

(1) (a) $\rightarrow$ r	(b) $\rightarrow$ q, s	(c) $\rightarrow$ q	(d) $\rightarrow$ p
(2) (a) $\rightarrow$ q	(b) $\rightarrow$ p	(c) $\rightarrow$ q, s	(d) $\rightarrow$ r
(3) (a) $\rightarrow$ q, s	(b) $\rightarrow$ q	(c) $\rightarrow$ p	(d) $\rightarrow$ r
(4) (a) $\rightarrow$ q	(b) $\rightarrow$ q, r	(c) $\rightarrow$ r	(d) $\rightarrow$ p

18. **Assertion:** $KMnO_4$ is a coloured compound.

Reason: Coloured of $KMnO_4$ is due to charge transfer.

(1) If both assertion and reason and reason are true and reason is the correct explanation of assertion

(2) If both assertion and reason and reason are true and reason is not the correct explanation of assertion

(3) If assertion is true but reason is false

(4) If both assertion and reason are false

19. **Assertion:** $TiCl_4$ is a colourless compound.

Reason: Ti^{4+} ion has no unpaired electron.

(1) If both assertion and reason and reason are true and reason is the correct explanation of assertion

(2) If both assertion and reason and reason are true and reason is not the correct explanation of assertion

(3) If assertion is true but reason is false

(4) If both assertion and reason are false

20. **Assertion:** K_2CrO_4 is yellow coloured compound.

Reason: Chromate ion has tetrahedral geometry.

(1) If both assertion and reason and reason are true and reason is the correct explanation of assertion

(2) If both assertion and reason and reason are true and reason is not the correct explanation of assertion

(3) If assertion is true but reason is false

(4) If both assertion and reason are false

21. **Assertion:** Solution of Na_2CrO_4 in water is intensely coloured.

Reason: Oxidation state of Cr in Na_2CrO_4 is (+VI).

(1) If both assertion and reason and reason are true and reason is the correct explanation of assertion

(2) If both assertion and reason and reason are true and reason is not the correct explanation of assertion

(3) If assertion is true but reason is false

(4) If both assertion and reason are false

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ELP

Educator Led Practice

NEET-CHEMISTRY | **ELP NO.-1** | **THE P-BLOCK ELEMENTS**

1. For BF_3 molecule which of the following is true?

(1) B-atom is sp^2 hybridised

(2) There is $p\pi$-$p\pi$ back bonding in this molecule

(3) Observed B–F bond length is found to be less than expected bond length

(4) All

2. Which of the following statement is incorrect ?

(1) BF_3 is weaker lewis acid than BBr_3

(2) BF_3 has greater extent of back bonding than BBr_3

(3) $N(CH_3)_3$ is weaker lewis base than $N(SiH_3)_3$

(4) None

3. Back bonding is observed in:-

(1) $(CH_3)_3N$ (2) $H_3Si–N=C=O$ (3) $O(CH_3)_2$ (4) $P(SiH_3)_3$

4. In which of the following back bonding is absent

(1) $P(SiH_3)_3$ (2) $N(SiH_3)_3$ (3) BF_3 (4) $\overset{\ominus}{C}Cl_3$

5. In which of the following compounds observed bond angle is found to be greater than expected but not due to back bonding ?

(1) $N(SiH_3)_3$ (2) BCl_3 (3) $O(CH_3)_2$ (4) $O(SiH_3)_2$

6. Which of the following always change due to back bonding ?

(1) Bond angle (2) Hybridisation of central atom

(3) Geometry (4) Bond length

7. Strongest B-F bond present in:-

(1) BF_4^- (2) $H_3N \rightarrow BF_3$ (3) BF_3 (4) $F_3B \leftarrow NMe_3$

8. Pπ–dπ Back bonding present in:-

(1) H_3BO_3 (2) $B_3N_3H_6$ (3) $H_3C–N=C=0$ (4) $H_3Si–N=C=0$

9. Which is the correct order of Lewis basicity:-

(1) $\ddot{N}(CH_3)_3 < N(SiH_3)_3$ (2) $\ddot{N}(CH_3)_3 > N(SiH_3)_3$

(3) $\ddot{N}(CH_3)_3 = \ddot{N}(SiH_3)_3$ (4) $(CH_3)_2O < (SiH_3)_2O$

10. Which of the following having highest Lewis acidic character:-

(1) BeF_2 (2) $BeCl_2$ (3) $BeBr_2$ (4) BeI_2

11. Which of the following statements is true ?

(1) $(SiH_3)_3$ N is more basic than $(CH_3)_3$ N.

(2) Molecular geometries of both $(CH_3)_3N$ and $(SiH_3)_3$ N are trigonal planar.

(3) $(CH_3)_3N$ is more basic than $(SiH_3)_3N$

(4) For ozone molecule, one oxygen-oxygen bond is stronger than the other oxygen-oxygen bond.

Review Yourself

12. Which of the following options is/are true?

(1) Ionic bonds have non-directional nature

(2) Ionic bonds do not show any isomerism

(3) Generally, ionic compounds have high melting points

(4) All are true

13. An example of non polar molecule is:-

(1) BF_3 (2) ClF_3 (3) PCl_3 (4) SO_2

14. Which molecule has the largest dipole moment?

(1) HCl (2) HBr (3) HI (4) HF

15. Bond order of B_2 and its magnetic property is

(1) 1 and Diamagnetic (2) 2 and Paramagnetic

(3) 1 and Paramagnetic (4) 2 and paramagnetic

NEET-CHEMISTRY **ELP NO.-2** **THE P-BLOCK ELEMENTS**

1. The structure of diborane (B_2H_6) contains:
(1) Four 2c-2e bonds and four 3c-2e bonds
(2) Two 2c-2e bonds and two 3c-3e bonds
(3) Two 2c-2e bonds and four 2c-2e bonds
(4) Four 2c-2e bonds and two 3c-2e bonds

2. In B_2H_6 :
(1) There is a direct boron-boron bond.
(2) The structure is similar to that of C_2H_6.
(3) The boron atoms are linked through hydrogen bridges.
(4) All the atoms are in one plane.

3. Which is not true about B_2H_6
(1) Both 'B' atoms are sp^3 hybridised
(2) Maximum six atoms are in same plane in structure of B_2H_6
(3) Four bridge hydrogen present in B_2H_6
(4) There are two, three centre two electron bonds

4. Which of the following do not from dimer
(1) BF_3 (2) AlF_3 (3) BBr_3 (4) All of these

5. Hybridization state of 'I' In I_2Cl_6 is:-
(1) sp^3d^2 (2) sp^3 (3) sp^3d (4) sp^3d^3

6. Which of the following species in Non planar
(1) $(BeCl_2)_2$ (2) $(BeH_2)\eta$ (3) I_2Cl_6 (4) $(BeH_2)_2$

7. No. of $3C-4e^-$ bond in Al_2Cl_6 and $2C-2e^-$ bond in B_2H_6 are respectively :-
(1) 2, 4 (2) 4, 2 (3) 2, 2 (4) 4, 4

8. In B_2H_6, Substitution Reaction takes place then maximum no. of Hydrogen atom will be substituted?
(1) 2 (2) 6 (3) 4 (4) 5

9. Which of following is Examples of Banana bonding?

(1) B_2H_6 (2) $(BeH_2)\eta$ (3) $Ga_2(CH_3)_6$ (4) All of these

10. **Assertion :** Diborane is an electron deficient hydride.

Reason : its contains 3c-2e bonds

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

(2) Both (A) and (R) are correct but (R) is not the correct explanation of (A)

(3) (A) is correct but (R) is not correct.

(4) (A) is not correct but (R) is correct.

Review Your Self

11. The IP_1, IP_2, IP_3, IP_4, and IP_5, of an element are 7.1, 14.3, 34.5, 45.8, 162.2 eV respectively the element is likely to be-

(1) Na (2) Si (3) F (4) Ca

12. Electronic configuration of species M^{2+} is $1s^2$, $2s^2$, $2p^6$, $3s^2$, $3p^6$ and its atomic weight is 56 The number of neutrons in the nucleus of species M is:

(1) 32 (2) 36 (3) 30 (4) 28

13. Hypervalent species among the following is

(1) BF_3 (2) CO_2 (3) SiF_4 (4) XeF_6

14. Which of the following species not exists?

(1) BF_3 (2) NF_3 (3) PF_5 (4) NF_6

15. In an octahedral structure, the pair of d-orbitals involved in sp^3d^2 hybridization is

(1) d_{xy} & $d_{x^2-y^2}$ (2) $d_{x^2-y^2}$ & d_{z^2} (3) d_{z^2} & d_{xz} (4) d_{xy} & d_{zx}

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ELP

Educator Led Practice

NEET-CHEMISTRY | **ELP NO.-3** | **THE P-BLOCK ELEMENTS**

1. The correct code for stability, of oxidation states for given cations is :

(i) $Pb^{2+} > Pb^{4+}$, $Tl^{+} > Tl^{3+}$ (ii) $Bi^{3+} < Sb^{3+}$, $Sn^{2+} < Sn^{4+}$

(iii) $Pb^{2+} > Pb^{4+}$, $Bi^{3+} > Bi^{5+}$ (iv) $T\ell^{3+} < In^{3+}$, $Sn^{2+} > Sn^{4+}$

(1) (i) and (iii) (2) (i) and (ii) (3) (ii) and (iv) (4) (iii) and (iv)

2. PbI_4 does not exist because :

(1) Iodine is not a reactive

(2) Pb(IV) is oxidizing and I^{-} is strong reducing agent

(3) Pb(IV) is more stable than Pb(II)

(4) Pb^{4+} is not easily formed

3. In view of the signs of $\Delta_r G°$ for the following reactions:

$PbO_2 + Pb \rightarrow 2PbO$, $\Delta_r G° < 0$

$SnO_2 + Sn \rightarrow 2SnO$, $\Delta_r G° > 0$

Which oxidation states are more characteristic for lead and tin?

(1) For lead +4, for tin +2 (2) For lead +2, for tin +2

(3) For lead +4, for tin +4 (4) For lead +2, for tin +4

4. The ion(s) that act/s as oxidising agent in solution is/are :

(1) Tl^{+} and Al^{3+} (2) B^{3+} and Al^{3+} (3) Tl^{3+} only (4) B^{3+} only

5. The stability of dihalides of Si, Ge, Sn and Pb increases steadily in the sequence:

(1) $PbX_2 << SnX_2 << GeX_2 << SiX_2$ (2) $GeX_2 << SiX_2 << SnX_2 << PbX_2$

(3) $SiX_2 << GeX_2 << PbX_2 << SnX_2$ (4) $SiX_2 << GeX_2 << SnX_2 << PbX_2$

6. **Assertion :** Pb^{4+} compounds are stronger oxidizing agents than Sn^{4+} compounds

Reason : The higher oxidation states for group 14 elements are more stable for the heavier members of the group due to 'inert pair effect'.

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

(2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).

(3) (A) is correct but (R) is not correct.

(4) (A) is not correct but (R) is correct.

7. Which stability order is incorrect ?

(1) $Pb^{2+} > Pb^{4+}$ (2) $Sn^{2+} > Sn^{4+}$ (3) $Sn^{2+} < Pb^{2+}$ (4) $Sn^{4+} > Pb^{4+}$

8. Which correct order of stability in following

(1) $GaCl_3 > TlCl_3$ (2) $SnCl_4 < PbCl_4$ (3) $TlCl < TlCl_3$ (4) $PbCl_2 < pbCl_4$

Review Your Self

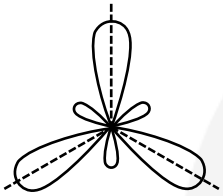
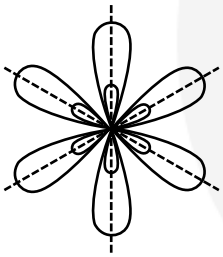
9. Compound having sp^3d hybridization is

(1) PF_5 (2) BF_3 (3) SF_6 (4) IF_7

10. In PO_4^{3-} ion, number of bond pair and lone pair of electrons on phosphorus atom respectively are

(1) 5, 1 (2) 4, 1 (3) 3, 1 (4) 5, 0

11. Which of the following is correctly matched for hybridization?

	Column-I	**Column-II**
(1)		sp
(2)		sp^2
(3)		sp^3d^2

(4) All are correctly matched

12. considering the elements B, C, N, F, and Si the correct order of their non-metallic character is:-

(1) B > C > Si > N > F (2) Si > C > B > N > F

(3) F > N > C > B > Si (4) F > N > C > Si > B

13. The ionization energy of sodium is 495 kJ mol–1 How much energy is needed to convert atoms present in 2.3 mg of sodium into sodium ions?

(1) 4.95 J (2) 49.5 J (3) 495 J (4) 0.495 J

14. considering the elements B, Al, Mg, and K the correct order of their metallic character is:-

(1) B > Al > Mg > K (2) Al > Mg > B > K

(3) Mg > Al > K > B (4) K > Mg > Al > B

15. Ionization energy of F^- is 320 kJ mol^-. The electron gain enthalpy of fluorine would be:

(1) –320 kJ mol^{-1} (2) –160 kJ mol^{-1} (3) + 320 kJ (4) + 160 kJ mol^{-1}

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ELP

Educator Led Practice

NEET-CHEMISTRY **ELP NO.-4** **THE P-BLOCK ELEMENTS**

1. Which of the following oxyacid contains both P-H and P-O-P bond?

(1) $H_4P_2O_5$ (2) $H_4P_2O_7$ (3) $H_4P_2O_6$ (4) $(HPO_3)\eta$

2. In which of the following oxy acids, P–P bonds is present?

(1) Cyclotrimeta phosphoric Acid $(HPO_3)_3$

(2) Pyrophosphoric acid $(H_4P_2O_7)$

(3) Hypophosphoric acid $(H_4P_2O_6)$

(4) Polymetaphosphoric acid $(HPO_3)_n$

3. Pick the incorrect and answer form the choice given below:-

(1) $H_3PO_2 > H_3PO_3$:- Reducing nature

(2) $H_3PO_3 > H_3PO_2$:- Basicity

(3) H_3PO_3 :- Disproportionate on Heating

(4) $(HPO_3)_3$:- Three P-H bond

4. Which of the following is Caro's acid

(1) H_2SO_4 (2) H_2SO_3 (3) H_2SO_5 (4) $H_2S_2O_7$

5. In which of the following oxy acid prefix “hypo” is used

(1) H_2SO_3 (2) H_3PO_2 (3) HOCl (4) B & C Both

6. Metaphosphoric acid exits in

(1) Polymeric form (2) Monomeric form

(3) Dimeric form (4) All form

7. Which of the following do not have peroxide linkage (–O–O– linkage)

(1) H_2SO_5 (2) $H_2S_2O_8$ (3) H_2O_2 (4) $H_2S_2O_7$

8. In Which of the following oxy acid prefix “per” can be used

(1) HNO_4 (2) H_2SO_5 (3) $H_2S_2O_8$ (4) All

9. Hypophosphoric acid is having _____ number of replaceable H-atom.

(1) Four (2) Two (3) Three (4) Five

10. Dithionous acid in the following compound is: –

(1) H_2SO_5 (2) $H_2S_2O_4$ (3) H_2SO_5 (4) $H_2S_2O_3$

11. Pyro acid can't be formed by :-

(1) $HClO_4$ (2) H_2SO_4 (3) H_3PO_4 (4) H_3PO_3

12. How many P–OH bond in pyrophosphoric acid?

(1) 2 (2) 3 (3) 4 (4) 5

13. Which is/are wrong about P_4O_{10} Molecule:-

(1) Each 'P' atom can be considered to be sp^3 Hybridised

(2) The are six P–O–P bonds in the molecule

(3) P–O–P Angle is 180°

(4) There are two types of bond length

14. Which of the following is mixed anhydrides :-

(1) Cl_2O_6 (2) P_4O_{10} (3) SO_3 (4) SO_2

15. The number of P-O-P bonds in cyclic trimetaphosphoric acid is :-

(1) Zero (2) Two (3) Three (4) Four

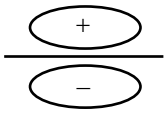
16. The total number of diprotic acids among the following is :-

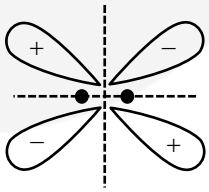
H_3PO_4, H_2SO_4, H_3PO_3, H_2CO_3, $H_2S_2O_7$, H_3BO_3, H_3PO_2, H_2CrO_4, H_2SO_3,

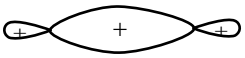
(1) 6 (2) 5 (3) 4 (4) 3

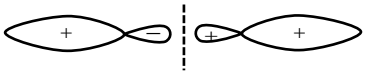
<u>Review Your Self</u>

17. Which of the following is correct molecular orbital representation of π^*-molecular orbital?

(1) 

(2) 

(3) 

(4) 

18. Electron deficient molecule is

(1) SiH_4 (2) H_2S (3) BF_3 (4) IF_7

19. Which of the following have an incorrect order of ionization energy:

(1) Pb (IE) > Sn (IE) (2) Mg (IE) > Al (IE) (3) Tl (IE) < Ga (IE) (4) In (IE) < Tl (IE)

20. Which of the following is incorrect match?

(1) Z = 48, group = II B, period No. = 5th (2) [Xe] $4f^7\ 5d^1\ 6s^2$, group = IIIB, period = 6th

(3) [Rn] $6d^2\ 7s^2$, group = IVB, period = 7th (4) Z = 56, group = IIA, period = 6th

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ELP

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NEET-CHEMISTRY | **ELP NO.-5** | **THE P-BLOCK ELEMENTS**

1. Due to inert pair effect +1 oxidation state is most stable for:

(1) Al (2) Ga (3) In (4) Tl

2. Which molecule does not exist ?

(1) BF_4^- (2) AlF_6^{3-} (3) BF_6^{3-} (4) All

3. Which is a Lewis acid ?

(1) NH_3 (2) H_2O (3) $AlCl_3$ (4) None

4. H_3BO_3 is an example of :

(1) Weak monobasic acid (2) Strong dibasic acid

(3) Weak dibasic acid (4) Weak tribasic acid

5. $AlCl_3$ fumes in moist air due to :

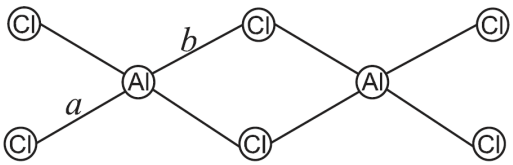
(1) Formation ofAl_2O_3 (2) Formation of HCl vapours

(3) Formation of HOCl vapours (4) None

6. Which can form dimer ?

(1) BF_3 (2) BCl_3 (3) $AlCl_3$ (4) All

7. Compare bond length a and b



(1) a > b (2) b > a

(3) a = b (4) can't say

8. Which element is used inmeasurement of very high temperature ?

(1) Carbon (2) Aluminium

(3) Galium (4) Mercury

9. What is the nature of aqueous solution of borax ?

(1) Acidic (2) Basic

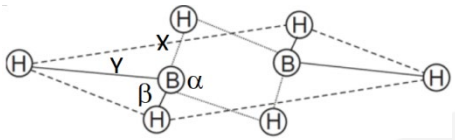
(3) Oxidising (4) None

10. B_2H_6 contain :

(1) 2C, 2e bond (2) 3C, 2e bond

(3) Both (4) None

11. Which is true from the following diagram ?



(1) $x > y, \alpha > \beta$ (2) $x > y, \alpha < \beta$ (3) $x < y, \alpha > \beta$ (4) $x < y, \alpha < \beta$

12. Which is acidic oxide ?

(1) B_2O_3 (2) Al_2O_3 (3) Ga_2O_3 (4) In_2O_3

13. Al_2O_3 can dissolve in :

(1) HCl (2) NaOH (3) Both (4) None

14. Whose fibers are used to make bullet Proof vest

(1) Boron (2) Aluminium (3) Chromium (4) Carbon

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NEET-CHEMISTRY **ELP NO.-6** **THE P-BLOCK ELEMENTS**

1. True statement about B_2H_6 is:

(1) Electron deficient hydride (2) Toxic gas

(3) Give exothermic combustion (4) All

2. Nature of CO and CO_2 is :

(1) Acidic and amphoteric respectively (2) Neutral and acidic respectively

(3) Neutral and amphoteric respectively (4) Basic and Acidic respectively

3. Diamond is an example of

(1) Molecular solid (2) Ionic solid

(3) Covalent solid (4) Metallic solid

4. Fullerenes are only pure form of carbon due to

(1) Cage like molecules (2) Soccer ball structure

(3) Absence of dangling bonds (4) Presence of six membered ring

5. Which is electrical conductor

(1) Diamond (2) Graphite (3) Both (4) None

6. Which is amphoteric

(1) SnO_2 (2) PbO_2 (3) Both (4) None

7. Carbon is sp^2 hybridised in

(1) Diamond and graphite (2) Graphite and fullerenes

(3) Diamond and fullerenes (4) Only diamond

8. Hybridisation of silicon in SiO_2 is :

(1) sp (2) sp^2 (3) sp^3 (4) sp^3d

9. Which is thermally most stable

(1) NH_3 (2) PH_3 (3) AsH_3 (4) SbH_3

10. Which can show +5 oxidation state

(1) N (2) P (3) As (4) All

11. Which is most powerful reducing agent

(1) NH_3 (2) PH_3 (3) AsH_3 (4) SbH_3

12. Reason for anamalous behaviour of nitrogen in its group may be due to

(1) Small size (2) High EN

(3) Non availabality of vacant d orbitals (4) All

13. Highest oxidation state of nitrogen is observed in :

(1) NF_3 (2) N_2O_3 (3) N_2O_4 (4) N_2O_5

14. Select incorrect statement regarding P_4 molecule

(1) Each P atom is joined with three P-atoms (2) It has angle strain

(3) Phosphours is sp hybridized (4) It contains 4 rings, each of 3 membered

15. Which of the following elements does not show allotropy ?

(1) Nitrogen (2) Bismuth

(3) Antimony (4) Arsenic

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NEET-CHEMISTRY **ELP NO.-7** **THE P-BLOCK ELEMENTS**

1. Which of the following statement is correct for allotropes of P ?

(1) White P is soluble in CS_2 but red P is insoluble in CS_2

(2) All P-P-P bond angle is 90° in white P

(3) On heating in air, red P change into white P

(4) Black P is least stable allotropes

2. Similarity between white P and red P :

(1) Both are gaseous at room temperature

(2) Both are insoluble in water

(3) Both show chemiluminiscence

(4) Both are highly poisonous

3. Which has P-P bond?

(1) $H_4P_2O_6$ (2) $H_4P_2O_7$ (3) $H_4P_2O_8$ (4) All

4. Which has P-O-P bond?

(1) $H_4P_2O_6$ (2) $H_4P_2O_7$ (3) $H_4P_2O_8$ (4) All

5. Which is incorrect ?

(1) Polonium is decay product of thorium and uranium minerals

(2) Lv (116) is synthetic radioactive element

(3) Oxygen is most abundant element on earth crust (46.6% by mass)

(4) EA of oxygen is maximum in its group

6. Which of the following molecule having maximum boiling and melting point :

(1) H_2Te (2) H_2S (3) H_2O (4) H_2Se

7. Which of the following accounts for anomalous behaviour of oxygen in the group 16 ?

(1) High electronegativity of oxygen

(2) Small size of oxygen

(3) Absence of vacant d orbitals in oxygen

(4) All

8. Which is correct ?

(1) O > S > Se > Te > Po (size)

(2) O > S > Se > Te > Po (IP)

(3) S > O > Se > Te > Po (EA)

(4) O > S > Se > Te > Po (MP/BP)

9. X = X is stable if X is :

(1) O (2) S (3) Se (4) Te

10. H—X bond strength is minimum if X is :

(1) O (2) S (3) Se (4) Te

11. O–O bond distance is shorter in :

(1) O_2 (2) H_2O_2

(3) O_3 (4) Same in all

12. Which can turn lime water milky ?

(1) CO_2 (2) SO_2

(3) Both (4) None

13. Which is correct order :

(1) H_2SO_4 > H_2SO_3 (acidic nature)

(2) H_2SO_4 > H_2SO_3 (oxidising behaviour)

(3) Both

(4) None

14. Which has highest negative electron gain enthalpy (maximum electron affinity) ?

(1) F (2) Cl (3) Br (4) I

15. Which is strongest oxidising agent ?

(1) F_2 (2) Cl_2 (3) Br_2 (4) I_2

16. Which is most reactive halogen ?

(1) F_2 (2) Cl_2 (3) Br_2 (4) I_2

17. Which has highest bond strength

(1) F_2 (2) Cl_2 (3) Br_2 (4) I_2

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NEET-CHEMISTRY **ELP NO.-8** **THE P-BLOCK ELEMENTS**

1. Which is strongest reducing agent ?

(1) KF (2) KCl (3) KBr (4) KI

2. Which is most responsible factor for strongest oxidising behaviour of fluorine ?

(1) High IP

(2) High EA

(3) High hydration energy of F^- ion

(4) None

3. Which is used in recovery of Pu from spent nuclear fuel ?

(1) OF_2 (2) O_2F_2 (3) Cl_2O (4) Br_2O

4. Which is used in estimation of carbonmonooxide:

(1) Br_2O (2) OF_2 (3) I_2O_5 (4) Cl_2O

5. Middle row anamoly is related with

(1) Halogens oxides (2) Halogens acids

(3) Sulphur oxides (4) Phosphorus oxides

6. Which reaction is not possible ?

(1) $F_2 + KCl \longrightarrow KF + Cl_2$ (2) $Cl_2 + KI \longrightarrow KCl + I_2$

(3) $Br_2 + KF \longrightarrow KBr + F_2$ (4) $Cl_2 + KBr \longrightarrow KCl + Br_2$

7. Which halogen can oxidised water ?

(1) F_2 (2) Cl_2 (3) Br_2 (4) I_2

8. Which is strogest acid ?

(1) HF (2) HCl (3) HBr (4)HI

9. What is the shape of ClF_3

(1) Trigonal planar (2) Bent T-shape

(3) Pyramidal (4) None

10. Which is strongest acid

(1) HOCl (2) $HClO_2$

(3) $HClO_3$ (4) $HClO_4$

11. Which interhalogen is commonly used in enrichment of U_{235} :

(1) IF_7 (2) ClF_3 (3) ClF (4) IF

12. Which has maximum lone pair on central atom ?

(1) IF_3 (2) IF_5

(3) IF_7 (4) Same in all

13. IP of Xe is nearly equal to

(1) O (2) O_2 (3) Cl (4) Br

14. Which is the first compound of Xenon prepared in lab ?

(1) XeF_2 (2) XeF_4 (3) $Xe+[PtF_6]^-$ (4) XeF_6

15. Strucutre of XeF_4 is :

(1) Tetradedral (2) Octrahedral (3) Square Planar (4) Square Pyramidal

16. Which is more soluble in water ?

(1) Xe (2) Ne (3) Ar (4) He

17. O_2 is one of the hydrolysis products of :

(1) XeF_2 (2) XeF_6 (3) Both (4) None

18. Which gas is common as a diluent of oxygen in modern diving apparatus ?

(1) He (2) Ne (3) Ar (4) Kr

19. Which is used in discharge tubes and fluorescent bulbs for advertisement display purposes.

(1) He (2) Ne (3) Ar (4) Kr

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NEET-CHEMISTRY **ELP NO.-9** **THE P-BLOCK ELEMENTS**

Read the Assertion and Reason carefully and mark the correct options.

(1) Both Assertion and Reason are correct Reason is correct explanation

(2) Both Assertion Reason are correct but Reason is not correct explanation of Assertion

(3) Assertion is correct but Reason is not correct

(4) Assertion is not correct but Reason is correct

1. **Assertion:** $AlCl_3$ forms a dimer in aqueous medium

Reason: In aqueous medium Al^{3+} is octa hedrally hydrated

2. **Assertion:** Diamond is covalent yet it has high mp

Reason: Diamond has 3-d network involving strong C–C bonds

3. **Assertion:** In silicates like SiO_2, Si, is sp^3 hybridised

Reason: SiO_2 is a linear molecule

4. **Assertion:** fullerenes are quite pure allotrope of C

Reason: fullerenes do not have any dangling bonds.

5. **Assertion:** $(SiF_6)^{2-}$ exist but $(SiCl_2)^{2-}$ do not

Reason: Si can't show covalency greater from 4

6. **Assertion:** Conc. HNO_3 Can be transported in Al-container

Reason: Al dissolves in presence of HNO_3

7. **Assertion:** BF_4^- has longer B–F bond length than BF_3

Reason: BF_3 Show shortening in bond length due to back bonding effect

8. **Assertion:** N_2 is less reactive than P_4

Reason: N has more e^- gain enthalpy than P

9. **Assertion:** Both rhombic and Monoclinic sulphur exist as S_8 but oxygen exist as O_2

Reason: Oxygen forms pp pp multiple bond due to small size but pp pp bonding is not possible in sulphur

10. **Assertion:** Pb_3O_4 is a basic oxide

Reason: Pb_3O_4 IS mixed oxide of 2PbO & PbO_2

11. **Assertion:** Oxidising power of halogen is in order $F_2 > Cl_2 > Br_2 > I_2$

Reason: Bond strength of halogens is $F_2 < Cl_2 < Br_2 < I_2$

12. **Assertion:** Xe, like O_2, forms $Xe^+[PtF_6]^-$

Reason: IP of Xe is nearly equal to atomic O

13. **Assertion:** N_2O_5 is not possible due to

Reason: incapability of N to show pentavalency Max. covalency of N can be 4

14. **Assertion:** H_3PO_3 can form three series of salt

Reason: H_3PO_3 is a dibasic acid

15. **Assertion:** H_3PO_2 is better reducing agent than H_3PO_3

Reason: H_3PO_2 has greater no of P-H bonds compared to H_3PO_3

16. **Assertion:** ClF_3 exist but FCl_3 does not

Reason: F is II period elements & it has no vacant d orbital to allow expansion of octet

17. **Assertion:** SF_6 is known but not SCl_6

Reason: F has higher e^- gain enthalpy than Cl

18. **Assertion:** SO_2 can turn lime water milky & on passing in excess, milkiness disappears

Reason: SO_2 is an example of reducing gas

19. **Assertion:** $PCl_5(s)$ is an example of molecular solid

Reason: $PCl_5(s)$ exist as $(PCl_4)^+ (PCl_6)^-$

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NEET-CHEMISTRY **ELP NO.- 1**

PRACTICALS RELATED TO INORGANIC CHEMISTRY

ANIONS

1. Which salt does not give any gas on Reaction with dil. H_2SO_4.

(1) $NaNO_2$ (2) Na_2S (3) K_2CO_3 (4) KCl

2. Salt X, does not give any gaseous product with dil. H_2SO_4, but produce red brown fumes with conc. H_2SO_4 is:

(1) Na_2CO_3 (2) Na_2SO_4 (3) KNO_3 (4) KNO_2

3. $X(\text{salt}) \xrightarrow[H_2SO_4]{\text{dil.}} Y_{(gas)}[\text{Colourless}]$

$Y_{(gas)} \xrightarrow[\text{(Lime water)}]{Ca(OH)_2} Z_{(milky)}$

$Z \xrightarrow[\text{excess}]{CO_2} P_{(soluble)}$

Which is not correct:

(a) Anion of X can be co_3^{2-} (b) Gas Y is NO_2

(c) Z is $CaCO_3$ (d) P is $Ca(HCO_3)_2$

Options are:

(1) a & b (2) b & c (3) c & d (4) b & d

4. $\underset{\text{(Sodium salt)}}{X} \xrightarrow[H_2SO_4]{\text{dil}} Y_{(gas)} \xrightarrow[H_2SO_4]{(CH_3COO)_2Pb} Z(\text{black ppt})X_{(aq)} \xrightarrow[\text{sodium nitroprusside}]{NO_2} P(\text{purple})$

Select the true statement(s) which are given below:

(a) Y is red brown cloured gas (b) Z is $PbSO_4$

(c) X is Na_2S (d) P is an Iron complex

Correct option are:

(1) a & b (2) b & c (3) c & d (4) b & d

5. When salt ($NaNO_2$) reacts with dil H_2SO_4, and werming, raddish brown fumes of X (gas) are evoled.

S-1 Salt + KI + CH_3COOH + Freshly prepared Starch = No Colouration

S-2 Aq. salt + CH_3COOH + Sulphanilic Acid + 1–Naplhylamine = Red dye

S-3 Aq. Salt $\xrightarrow[\text{Solution}]{AgNO_3}$ white ppt

Pick correct option for S-1, S-2, S-3 respectively

T= True F = False

(1) TTT (2) FTF (3) FTT (4) FFT

6. Note the observations.

Salt (A) + dil. H_2SO_4 → No gaseous substance

(Sodium salt)

$$A \xrightarrow[\text{Conc.}H_2SO_4]{\text{Warm}} B_{(gas)} \text{ [Colourless \& pungent]} \xrightarrow[\text{glass rod dippedin } NH_4OH]{} C \text{ [dense fumes]}$$

Find correct possibility.

(1) Salt(A), on heating with conc. H_2SO_4 & MnO_2, evolves a greenish yellow pungent gas.

(2) Salt (X), on Reaction with $AgNO_3$ gives curdy white ppt which is soluble in NH_4OH solution.

(3) Salt can give chromyl chloride test

(4) All

7. True statement for NaBr.

(A) Brown coloured salt.

(B) Gives vigourous fumes with dil. H_2SO_4

(C) Gives brown fumes on Reaction with Conc. H_2SO_4 & fumes intensifies on addition of MnO_2.

(D) Give orange brown colouration of aqueous layer during layer test.

(E) Gives pale yellow ppt on Reaction with aq. $AgNO_3$.

(1) A, C, D, E (2) B, C, E (3) C, E (4) C, D, E

8. When NaI react with Conc. H_2SO_4.

(1) I_2 is evolved which can turn starch paper blue

(2) Some amount of HI, SO_2, H_2S and S are also formed

(3) Violet fumes become dense on addition of MnO_2.

(4) All are correct.

9. $\underset{\text{(Sodium Salt)}}{X} \xrightarrow[H_2SO_4]{\text{dil.}}$ No Reaction

$$X \xrightarrow[H_2SO_4,\Delta]{\text{Conc.}} \underset{\text{(Brown)}}{\text{gas Y}} + \underset{\text{(Colourless)}}{\text{gas Z}}$$

$$X \xrightarrow[\text{Cu–turnings}]{\text{Conc.}H_2SO_4} A \text{ (Blue solution)} + B\text{(gas)}$$

$$B_{(gas)} \xrightarrow[\text{(air)}]{O_2} Y_{(gas)}$$

Incorrect statement:

(a) X will show brown ring test. (b) Y is NO

(c) A & B are $CuSO_4$ & NO respectively (d) Z is NO

Options are:

(1) a, b, d only (2) a, b, c only

(3) b, c, d only (4) All of these

10. NO_2 and NO_3 can be distinguished by which of the following reagent:

(1) dil.H_2SO_4 (2) conc.H_2SO_4 (3) dil.HCl (4) None of these

11. $[Fe(H_2O)_5NO]^{2+}$ is unstable because:

(1) It liberates NO gas on warming

(2) It liberates NO gas on shaking

(3) The charge of central atom is +1 (relatively low enough)

(4) None of these

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NEET-CHEMISTRY **ELP NO.- 2**

PRACTICALS RELATED TO INORGANIC CHEMISTRY

CATIONS

1. Which is correct:

(a) $PbCl_2$ (hot solution) $\xrightarrow{KI}$ dark brown ppt

(b) $PbCl_2$ (hot solution) $\xrightarrow{K_2CrO_4}$ Yellow ppt $PbCrO_4\downarrow$ $\xrightarrow{\text{hot NaoH}}$ soluble

(c) $Pb(NO_3)_2$ (aq) $\xrightarrow[H_2SO_4]{\text{dil.}}$ yellow brown solution

(d) Lead sulphide ppt dissolves in dil. HNO_3

Correct options are:

(1) a, d (2) b, c, d (3) a, b, d (4) a, c

2. Which is correctly matched

(1) CuS (ppt) is soluble in HNO_3 → True

(2) Reaction mixture in (1), on heating for longtime $CuSO_4$ is formed & solution turns blue → true

(3) $CuSO_4 \xrightarrow[\text{of } NH_4OH]{\text{Small amount}} Cu(OH)_2.CuSO_4\downarrow$

$CuSO_4 \xrightarrow{\text{exc. } NH_4OH} [Cu(NH_3)_4]SO_4 \xrightarrow{CH_3COOH} CuSO_4 \xrightarrow{K_4[Fe(CN)_6]}$ Chocolate Brown ppt

(4) All

3. **Assertion :** If group II is absent we add few drops of HNO_3 & solution is heated

Reason : Reagent of group II is H_2S in presence of dil. HCl

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

(2) Both Assertion and Reason are correct but Reason is not the correct explanation of Assertion.

(3) Assertion is correct but Reason is not correct.

(4) Assertion is not correct but Reason is correct.

4. Which of the following are true

(a) $\underset{\text{(Brown ppt)}}{Fe(OH)_3} \xrightarrow{\text{dil. HCl}} X$ → $K_4[Fe(CN)_6]$ → Blue ppt; KSCN → Blood red colouration

(b) $\underset{(aq)}{FeCl_3} \xrightarrow[+\ NH_4Cl]{NH_4OH}$ white ppt

(c) $\underset{(aq)}{AlCl_3}$ → $NH_4OH + NH_4Cl$ → Transparent solution; exc. NaOH → Gelatanious white ppt

(d) $AlCl_3(aq)$ can give a ⊕ lake test

Correct code is:

(1) a & d (2) a, b, d (3) c, d (4) a, b, c

5. **Assertion :** Group reagent for group IV cations is H_2S in presence of $NH_4OH + NH_4Cl$

Reason : K_{SP} of group II sulphides > K_{SP} of group IV sulphides

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

(2) Both Assertion and Reason are correct but Reason is not the correct explanation of Assertion.

(3) Assertion is correct but Reason is not correct.

(4) Assertion is not correct but Reason is correct.

6. Find unknown compounds?

(a) $ZnCl_2 \xrightarrow[\text{(Small)}]{\text{NaOH}} \underset{\text{white ppt}}{X} \xrightarrow[\text{execess}]{\text{NaOH}}$ Y(Transparent)

(b) $ZnCl_2 \xrightarrow{K_4[Fe(CN)_6]}$ Z(Blue white ppt)

(c) $\underset{\text{(black ppt)}}{NiS} \xrightarrow{\text{Aquaregia}} \underset{\text{soluble}}{P} \xrightarrow[NH_4OH]{\text{dmg}}$ Q(red ppt)

	X	Y	Z	P	Q
(1)	$Zn(OH)_2$	Na_2ZnO_2	$FeCl_3$	$[Ni(OH)_2]$	$Ni(dmg)_2$
(2)	$Zn(OH)_2$	Na_2ZnO_2	$Zn_2[Fe(CN)_6]$	$NiCl_2$	$Ni(dmg)_2$
(3)	Na_2ZnO_2	$Zn(OH)_2$	$Zn_2[Fe(CN)_6]$	$NiCl_4$	$[Ni(dmg)_3]^{2-}$
(4)	$Zn(OH)_2$	$Zn(OH)_2$	$Zn(CN)_2$	$Ni(OH)_2$	$[Ni(dmg)_2]$

7. (a) $\underset{\text{White ppt}}{X} \xrightarrow{CH_3COOH} \underset{\text{soluble}}{Y} \xrightarrow{K_2CrO_4} \underset{\text{Yellow ppt}}{Z}$

(b) $CaCO_3 \xrightarrow{CH_3COOH} \underset{\text{soluble}}{P} \xrightarrow{(NH_4)_2C_2O_4} \underset{\text{White ppt}}{Q}$

Incorrect statement

(1) X can be $BaCO_3$ (2) Y can be $(CH_3COO)_2Ba$

(3) Q can be $CaCrO_4$ (4) Z can be $BaCrO_4$

8. **Assertion :** $MgCO_3$ is soluble in presence of $\overset{+}{N}H_4$ salt

Reason : $\overset{+}{N}H_4 + CO_3^{2-} \rightleftharpoons NH_3 + HCO_3^-$ shifts towards left hand side

$\therefore$ $MgCO_3$ can't be precipitated

(1) Both Assertion and Reason are correct and Reason is the correct explanation of Assertion.
(2) Both Assertion and Reason are correct but Reason is not the correct explanation of Assertion.
(3) Assertion is correct but Reason is not correct.
(4) Assertion is not correct but Reason is correct.

9. $Mg^{2+}(aq) \xrightarrow[\text{In present of ammoniam salts}]{Na_2HPO_4} \underset{\text{white}}{X\downarrow}$ (find x)

(1) $(NH_4)_3PO_4$ (2) $Mg_3(PO_4)_2$ (3) $Mg(NH_4)PO_4$ (4) $MgCO_3$

10. $\underset{(aq)}{(NH_4)_2SO_4} \xrightarrow{NaOH} \text{gas } X \xrightarrow[\text{reagent}]{\text{Nesseler's}} Y$

(1) X is N_2
(2) Y is brown ppt
(3) X turns blue litmus red
(4) Y contains Hg & Cd

11. Match the List-I with List-II:

List–I	**List–II**
Cations	**Group reagent**
(P) Pb^{2+}, Cu^{2+}	(i) H_2S gas in presence of dilute HCl
(Q) Al^{3+}, Fe^{3+}	(ii) $(NH_4)_2CO_3$ in presence of NH_4OH
(R) Co^{2+}, Ni^{2+}	(iii) NH_4OH in presence of NH_4Cl
(S) Ba^{2+}, Ca^{2+}	(iv) H_2S in presence of NH_4OH

Option are :
(1) P→i, Q→iii, R→ii, S→iv
(2) P→iv, Q→ii, R→iii, S→i
(3) P→iii, Q→i, R→iv, S→ii
(4) P→i, Q→iii, R→iv, S→ii

12. Match the following:

Column–I	**Column –II**
Metal	**Colour**
(a) Li	(p) Brick red
(b) Na	(q) Crimson red
(c) Ba	(r) Golden yellow
(d) Ca	(s) Apple green

Option are :
(1) a→q, b→r, c→s, d→p
(2) a→p, b→r, c→s, d→q
(3) a→s, b→r, c→q, d→p
(4) a→r, b→q, c→s, d→p

13. Ammonium salt gives brown colour with alkaline solution of Nessler's reagent to form iodide of Millon's base. The formula of this compound is:
(1) $NH_2–Hg–OHg–I$
(2) $NH_2–O–Hg–HgI$
(3) K_2HgI_4
(4) $NH_2–Hg–I$

14. Carbonates of Ba and Ca are:

(1) White (2) Blue (3) Green (4) Black

15. Disodium hydrogen phosphate is used to test:

(1) Mg^{2+} (2) Na^{2+} (3) Ca^{2+} (4) All of these

16. Reddis-brown (chocolate) ppt. are formed with:

(1) Cu^{2+} and $[Fe(CN)_6]^{4-}$ (2) Ba^{2+} and SO_4^{2-}

(3) Pb^{2+} and I^- (4) None of these

<u>Important Points:</u>

Information

Flame test

Li	Crimson red	Be	X
Na	Golden yellow	Mg	
K	Pale violet	Ca brick red	
Rb	Red violet	Sr Crimson red	
Cs	Blue	Ba Apple green	

Borax Bead Test

Brorax bead : $NaBO_2 + B_2O_3$

Colour in last : MBO_2 (metaborate)

↓

(d-block)

Cu → Ox. flame → blue

Cu → Red. flame → Red

Fe → Ox. → yellow

Fe → red → green

Ni → Ox. → Red brown

Ni → red → grey

Cobalt nitrate charcoal cavity test

CoO. Al_2O_3 : Thenard blue

CoO. ZnO : Rinman green

CoO. MgO : pink residue

Pb^{2+} →
- $PbS\downarrow$ black ppt
- $PbCl_2\downarrow$ white soluble in warm water
- $PbI_2\downarrow$ Yellow soluble in boiling water
- $(CH_3COO)_2Pb$ & $Pb(NO_3)_2$ soluble
- $Pb(OH)_2\downarrow$ white ppt soluble in exc. NaOH.

Cu^{2+} →
- $CuS\downarrow$ Black ppt
- $K_3[Cu(CN)_4]$ stable and water soluble
- $Cu_2[Fe(CN)_6]$ chocolate brown ppt

$Al^{3+} \rightarrow Al(OH)_3\downarrow$ gelatanious white ppt

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ELP

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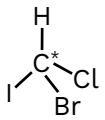
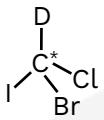
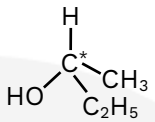
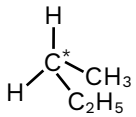
NEET-CHEMISTRY | **ELP NO.-1** | **OPTICAL ISOMERISM**

1. In which of the following molecules carbon atom marked with asterisk (*) is asymmetric?

(a) 

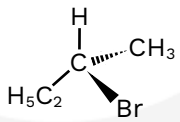
(b) 

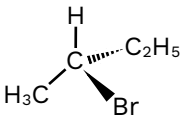
(c) 

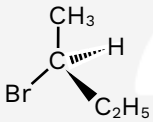
(d) 

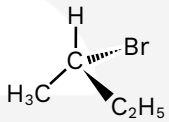
(1) a, b, c, d (2) a, b, c (3) b, c, d (4) a, c, d

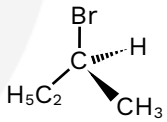
2. Which of the following structures is Enantiomeric with molecule (A) given below:

(A) 

(1) 

(2) 

(3) 

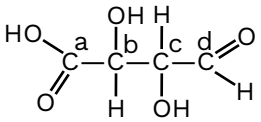
(4) 

3. Molecules whose mirror image is non superimposable over them are known as chiral. Which of the following molecules is chiral in nature?

(1) 2-Bromobutane (2) 1-Bromobutane

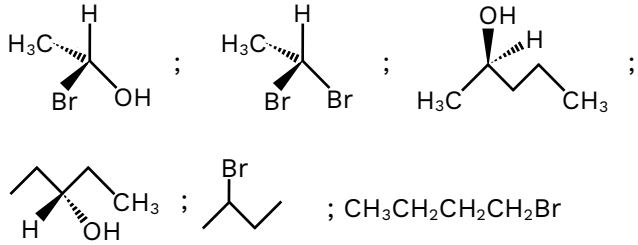
(3) 2-Bromopropane (4) 2-Bromopropan-2-ol

4. Which of the carbon atoms present in the molecule given below are asymmetric?



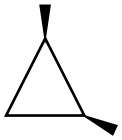
(1) a, b, c, d (2) b, c (3) a, d (4) a, b, c

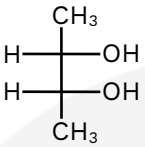
5. The number of chiral molecules and achiral molecules are respectively among given molecules

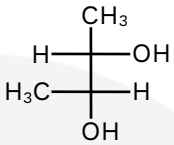


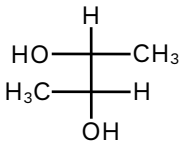
(1) 3, 3 (2) 4, 2 (3) 2, 4 (4) None of the above.

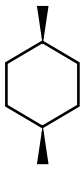
6. Which of the following compounds are meso?

(a) 

(b) 

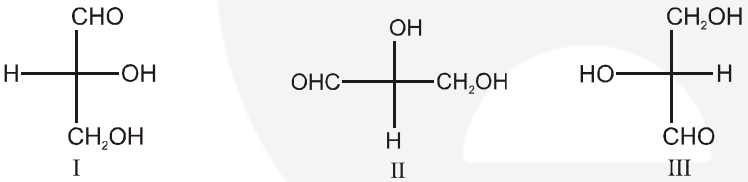
(c) 

(d) 

(e) 

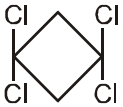
(1) a, b, c, d (2) a, b, c, d, e (3) a, b, e (4) a, b, c, e

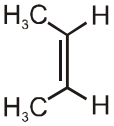
7. Which of the following statement is true regarding following structures?

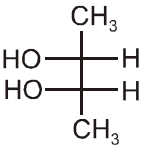


(1) I, II and III are identical.
(2) I and II are identical, while I and III are enantiomers.
(3) I and III are identical, while I and II are enantiomers.
(4) II and III are identical, while I and II are enantiomers.

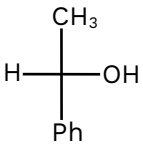
8. Meso isomer is

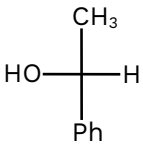
(1) 

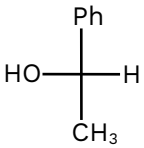
(2) 

(3) 

(4) All

9. (I) 

(II) 

(III) 

Which of the following statements is true about these molecules?
(1) I and II are nonsuperimposable mirror image of each other
(2) I and III are non-superimposable mirror image of each other
(3) I and III are identical
(4) Both (1) and (3)

10. $CH_3-\underset{\underset{OH}{|}}{CH}-CH=CH_2$

How many geometrical and optical isomers are possible in this compound?

(1) 0, 2 (2) 0, 3 (3) 2, 0 (4) 2, 2

11. A pair of enantiomers are

(1) A pair of nonsuperimposable mirror image of each other

(2) A pair of superimposable mirror image of each other

(3) Always optically active–if one is dextrorotatory then other will be levorotatory by same magnitude

(4) Both (1) and (3)

12. A pair of diastereomers are

(1) A pair of such stereoisomers which are not mirror image of each other

(2) A pair of non-superimposable mirror image of each other

(3) Always optically active

(4) Both (1) and (3)

13. A pair of diastereomers can be

(1) A pair of geometrical isomers

(2) A pair of such optical isomers which are not mirror image of each other

(3) Both (1) and (2)

(4) None of these

14. A mesomer is the one

(1) Which has superimposable mirror image

(2) Which has two or more similar asymmetric centres

(3) Which has opposite configuration on the similar asymmetric centres

(4) All of these

15. A racemic mixture is

(1) Always equimolar mixture of a pair of enantiomers

(2) Always equimolar mixture of a pair of diastereomers

(3) Always optically inactive

(4) Both (1) and (3)

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ELP

Educator Led Practice

NEET-CHEMISTRY | **ELP NO.-2** | **OPTICAL ISOMERISM**

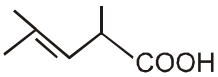
1. Meso stereoisomer is possible in which of the following compounds?

(I) 2,4-Dibromopentane (II) 2,3-Dibromopentane

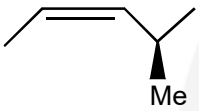
(III) 3-Bromo-2-pentanol (IV) 1,2-Dimethylcyclopentane

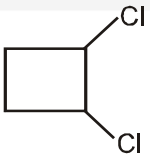
(1) I (2) I and III (3) I and IV (4) None of these

2. Which of the following structures can show geometrical as well as optical isomerism?

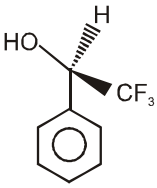
(1) 

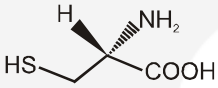
(2) HO–N=N–OH

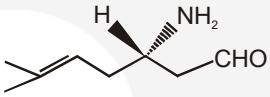
(3) 

(4) 

3. The R/S configuration of these compounds are respectively :





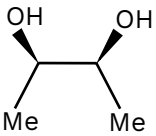


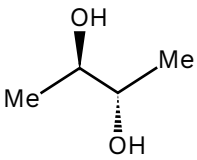
(1) R, R, S (2) R, S, R (3) R, S, S (4) S, S, S

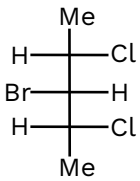
4. Minimum molecular weight of a hydrocarbon containing minimum number of C-atom to show optical isomerism :

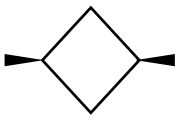
(1) 100 (2) 80 (3) 68 (4) 70

5. Which of the following is meso compound

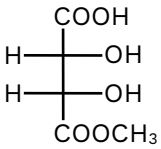
(a) 

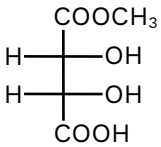
(b) 

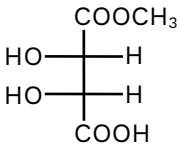
(c) 

(d) 

(1) a, b, c, d (2) a, b, c (3) a, c, d (4) a, b, d

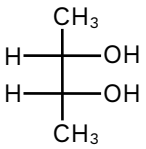
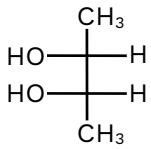
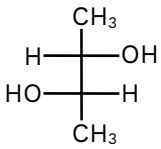
6. (I) 

(II) 

(III) 

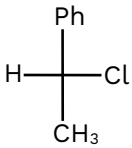
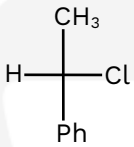
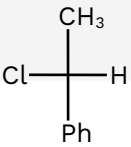
Which of the these structures represent configurationally indentical molecules?

(1) I and II (2) I and III (3) II and III (4) None of these

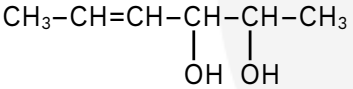
7. (I) 
(II) 
(III) 

Which of the following statements is true about these molecules?
(1) I and III are nonsuperimposable mirror image of each other
(2) I and II are superimposable mirror image of each other
(3) I and II are identical
(4) Both (2) and (3)

8. Which of the following statements is correct?
(1) All optical inactive compounds are called mesomers
(2) All mesomers are optically inactive compounds
(3) Both (1) and (2)
(4) None of these

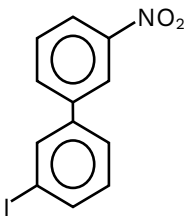
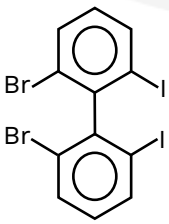
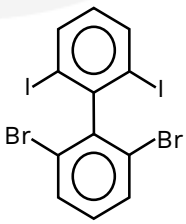
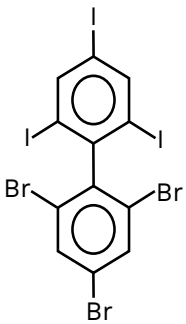
9. (I) 
(II) 
(III) 

Which of the following statements is true about these compounds?
(1) I and II are a pair of enantiomers
(2) I and III are identical
(3) I and III are diastereomers.
(4) Both (1) and (2)

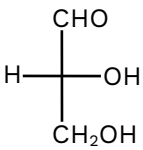
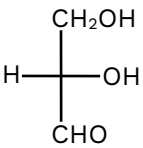
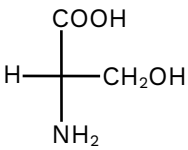
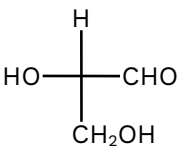
10. 

For the given structure how many stereoisomers and how many racemic mixtures are possible?
(1) 4, 2
(2) 8, 6
(3) 8, 4
(4) 6, 3

11. Which of the following biphenyls is optically active?

(1) 
(2) 
(3) 
(4) 

12. Identify D,L-configuration

(1) 
(2) 
(3) 
(4) 

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ELP

Educator Led Practice

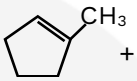
NEET-CHEMISTRY | **ELP NO.-1** | **HYDROCARBONS**

1. Arrange the following hydrogen halides in order of their decreasing reactivity with propene.

(1) HCl > HBr > HI (2) HBr > HI > HCl (3) HI > HBr > HCl (4) HCl > HI > HBr

2. Name and draw a structural formula for the product of each alkene addition reaction.

(a) $CH_3\overset{CH_3}{\overset{|}{C}} = CH_2 + HI \longrightarrow$

(b) 

+ HCl →

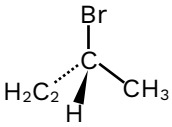
3. Arrange the following alkenes in decreasing order of reactivity towards acid-catalysed hydration?

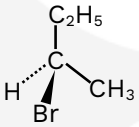
(I)

(II)

(III) $CH_2 = CH_2$

4. The addition of HBr to 1-butene gives a mixture of products (a), (b) and (c)

(a) 

(b) 

(c) $CH_3–CH_2–CH_2–CH_2–Br$

The mixture consists of

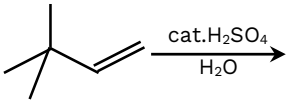
(1) (a) and (b) as major and (c) as minor products

(2) (b) as major and (a) and (c) minor products

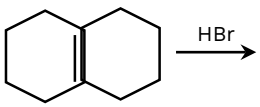
(3) (b) as minor and (a) and (c) as major products

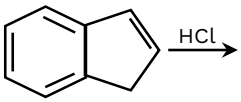
(4) (a) and (b) as minor and (c) as major products

5. Complete the following reactions:

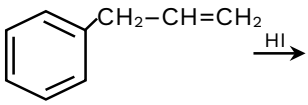
(i) 

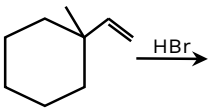
3,3-Dimethyl-1-butene

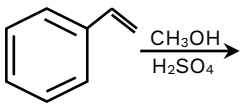
(ii) 

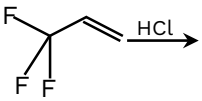
(iii) 

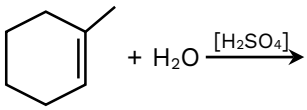
Indene

(iv) 

(v) 

(vi) 

(vii) 

(viii) 

6. Rank the following carbocations in each set from most stable to least stable:

(a) (i) $CH_3CH_2\overset{CH_3}{\underset{+}{C}}CH_3$ (ii) $CH_3CH_2\overset{+}{C}HCH_3$ (iii) $CH_3CH_2CH_2\overset{+}{C}H_2$

(b) (i) $CH_3\underset{Cl}{CH}CH_2\overset{+}{C}H_2$ (ii) $CH_3\underset{CH_3}{CH}CH_2\overset{+}{C}H_2$ (iii) $CH_3\underset{F}{CH}CH_2\overset{+}{C}H_2$

7. (a) How many σ bond orbitals are available for overlap with the vacant p orbital in

(i) isobutyl cation?

(ii) n–butyl cation?

(iii) sec–butyl cation?

(b) Which of the carbocations in part a is most stable ?

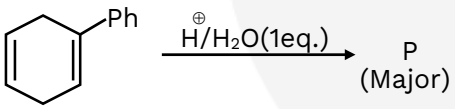
8. Incorrect statement is:

(1) Alkene & Alkyne can show electrophilic addition reaction.

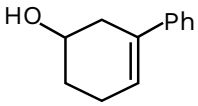
(2) Alkene can show free radical addition reaction as well as free radical substitution reaction.

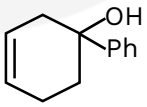
(3) Alkene is more reactive than alkyne towards electrophilic addition reaction.

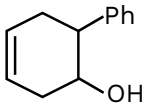
(4) Alkene & Alkyne are electrophilic in nature.

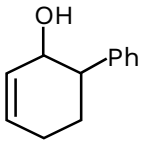
9. 

P should be

(1) 

(2) 

(3) 

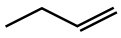
(4) 

10. In which of the following reaction product is not formed according to markovnikov's rule?

(1) CH_3-CH=CH_2

(2) $CH_3-\underset{CH_3}{C}=CH_2$

(3) CCl_3–CH=CH_2

(4) 

11. Incorrect statement is:

(1) Alkene & alkyne decolourize bromine water solution.

(2) Alkene & alkyne decolourize $kMnO_4$ solution.

(3) Alkane & benzene decolourize bromine water.

(4) Ozonolysis reaction is useful to detecting the position of double bond.

12. $A \xrightarrow[H_2O/zn]{O_3} 2CH_3-CH=0$ A is:

(1) But–1–ene

(2) But–2–ene

(3) But–1–yne

(4) But–2–yne

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ELP

Educator Led Practice

NEET-CHEMISTRY | **ELP NO.-2** | **HYDROCARBONS**

1. Which of the following statement is not correct regarding given reaction.

$CH_3-CH_2-CH=CH_2 \xrightarrow{H-X}$

(1) Carbocation is formed in rate determining step.

(2) Reactant H–X :- H–F > H–Cl > H–Br > H–I

(3) Major product is $CH_3-CH_2-\overset{*}{C}H(X)-CH_3$

(4) Minor product is $CH_3-CH_2-CH_2-CH_2(X)$

2. If carbocation formed as intermediate in reaction then

(1) It can rearrangement to attain maximum stability

(2) It can combine to nucleophile

(3) It can also show elimination reaction

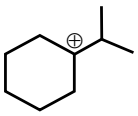
(4) All of the above

3. Which of the following carbocation can not show rearrangement phenomena

(1)

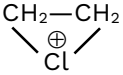
(2)

(3) $CH_3-\overset{\oplus}{C}=CH_2$

(4) 

4. Incorrect statement regarding given reaction:-

$CH_2=CH_2 \xrightarrow[CCl_4]{Cl_2}$

(1)  formed as intermediate

(2) Cl_2 act as electrophile

(3) Geminal dichloride formed as product

(4) This reaction is example of electrophilic addition reaction.

5. $CH_3-CH=CH-CH_3 \xrightarrow[CCl_4]{Br_2}$

Total number of products in above reaction?

(1) 1 (2) 3 (3) 2 (4) 4

6. Which of the following compound do not react with Br_2/CCl_4

(1) But-1-ene (2) But-1-yne (3) Cyclopropane (4) Benzene

7. $CH_3-CH=CH_2 \xrightarrow[(II)\ H_2O_2/\ \overset{\ominus}{O}H]{(I)\ B_2H_6,\ THF} CH_3-\underset{H}{\underset{|}{CH}}-\underset{OH}{\underset{|}{CH_2}}$

Which of the following statement is correct about above reaction.

(a) This reaction is acidic hydration of alkene.

(b) This is hydroboration oxidation reaction

(c) 4 member cyclic transition state formed during the reaction

(d) This reaction is example of syn addition mechanism.

(e) Addition of H & OH according to anti markovnikov rule

(f) Carbocation formed as intermediate

(1) b,c,d,f (2) b,c,d,e (3) a,b,c,d,e (4) b,c,d

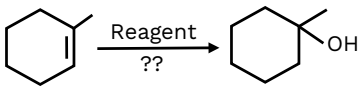
8. Which of the following statement is not correct?

(1) Acidic hydration of alkyne complete with slow rate as compared to alkene

(2) Acidic hydration alkyne give aldehyde or ketone as product

(3) Rate of hydration of alkyne can be increased by catalyst like Hg^{+2}

(4) Propyne give aldehyde as final product with dil. $H_2SO_4/HgSO_4$.

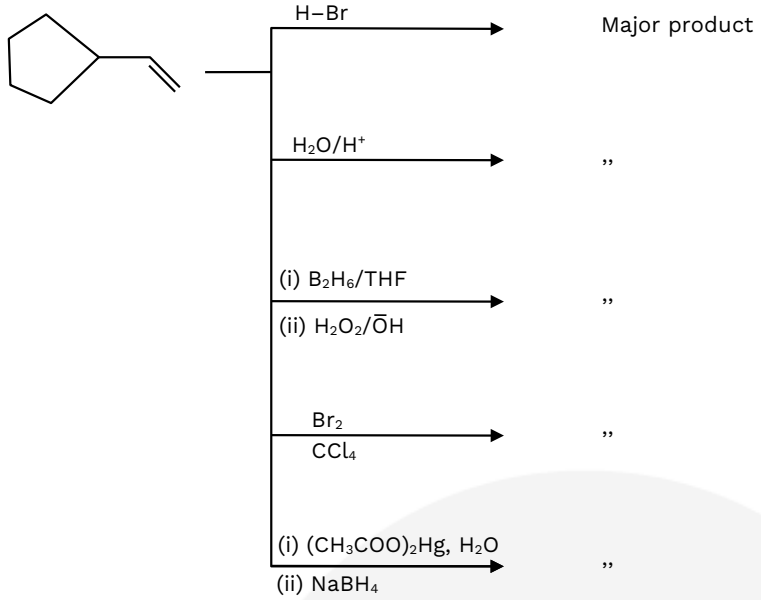
9. 

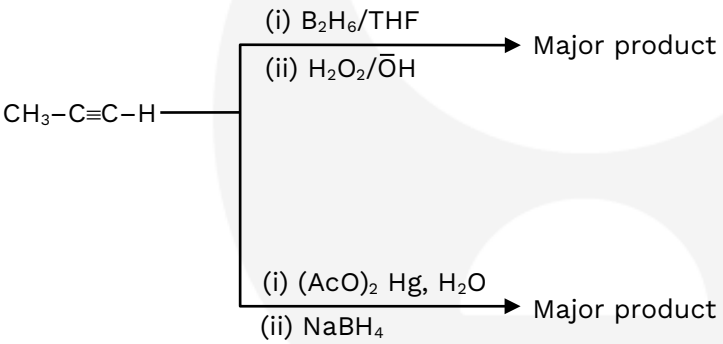
(1) H_2O/H^+

(2) $\dfrac{(i)\ (CH_3COO)_2\ Hg,\ H_2O}{(ii)\ NaBH_4}$

(3) $\dfrac{(i)\ B_2H_6\ /\ THF}{(ii)\ H_2O_2\ /\ \overline{O}H}$

(4) Both (1) & (2)

10. 

11. 

12. $CH_2=CH-C\equiv CH \xrightarrow[(1\,eq)]{H-Cl}$ major product (A)

Correct statement is/are:-

(1) A $\Rightarrow$ $CH_2=CH-\underset{\underset{Cl}{|}}{C}=CH_2$

(2) Chloroprene formed as major product

(3) Polymerisation of chloroprene give synthetic rubber (neoprene)

(4) All of the above

13. Match the column if alkene is treated with given reagent.

Reagent	**Reaction name**
(a) H_2O/H^+	(p) Free radical addition reaction
(b) H–X	(q) Hydroboration oxidation
(c) X_2/CCl_4	(r) Oxymercuration demarcuration
(d) $\xrightarrow[\text{(ii) } H_2O]{\text{(i) } B_2H_6/THF}$	(s) Hydroboration reduction
(e) $\xrightarrow[\text{(ii) } NaBH_4]{\text{(i) } (CH_3COO)_2Hg, H_2O}$	(t) Halogenation
(f) $\xrightarrow[\text{(ii) } H_2O_2/\bar{O}H]{\text{(i) } B_2H_6/THF}$	(u) Hydrohalogenation
(g) $\xrightarrow[\text{(ii) } R_2O_2]{H-Br}$	(v) Acidic hydration

14. Match the following if given reagent is treated with ethene

Reagent	Product
(a) H–X	(p) Alcohol
(b) H_2O/H^+	(q) Alkane
(c) X_2/CCl_4	(r) Alkyl halide
(d) $\xrightarrow[\text{(ii) } H_2O]{\text{(i) } B_2H_6/THF}$	(s) Vicinal dihalide
(e) $\xrightarrow[\text{(ii) } NaBH_4]{\text{(i) } (AcO)_2Hg, H_2O}$	

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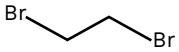
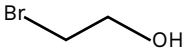
ELP

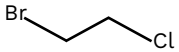
Educator Led Practice

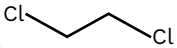
NEET-CHEMISTRY | **ELP NO.-3** | **HYDROCARBONS**

1. When ethene gas is passed into an aqueous solution containing bromine and sodium chloride. Which of the following is not formed?

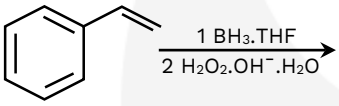
(1) 

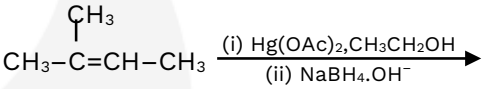
(2) 

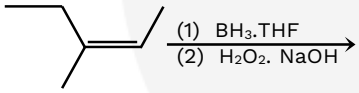
(3) 

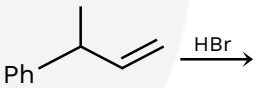
(4) 

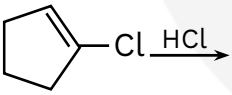
2. Complete the following reactions

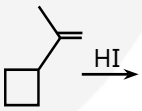
(i) 

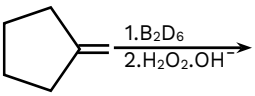
(ii) 

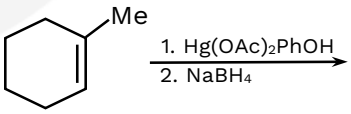
(iii) 

(iv) 

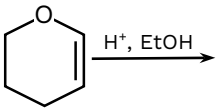
(v) 

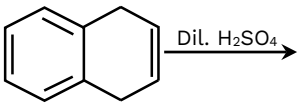
(vi) 

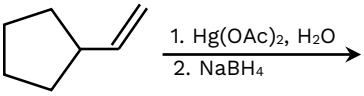
(vii) 

(viii) 

(ix) Proypylene $\xrightarrow[\text{NaI}]{\text{Br}_2}$

(x) 

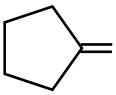
(xi) 

(xii) 

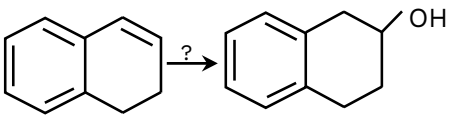
3. What alkylborane is formed from hydroboration of each alkene?

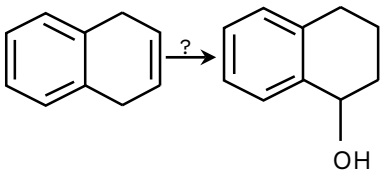
(i)

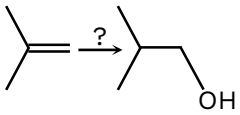
(ii)

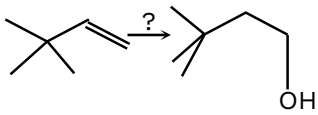
(iii) 

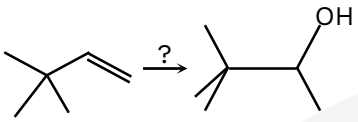
4. Suggest the reagents for the following conversions.

(i) 

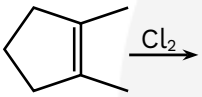
(ii) 

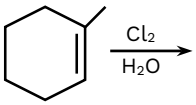
(iii) 

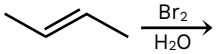
(iv) 

(v) 

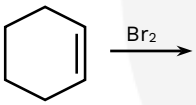
5. Draw the major product(s) of each reaction, including stereoisomers.

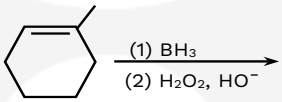
(i) 

(ii) 

(iii) 

trans-but-2-ene

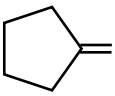
(iv) 

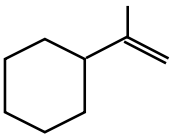
(v) 

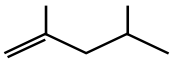
6. Draw the constitutional isomer formed when the following alkenes are treated with each set of reagents

(1) H_2O, H_2SO_4;

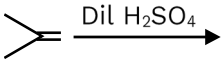
(2) BH_3 followed by H_2O_2, OH^-

(a) 

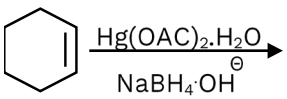
(b) 

(c) 

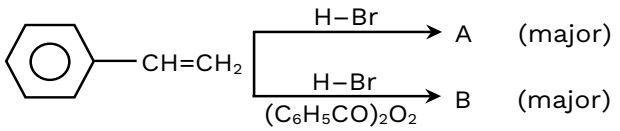
7. In which reaction recemisation will take place

(1) 

(2) $CH_3-CH=CH_2 \xrightarrow[CCl_4]{Br_2}$

(3) 

(4) $CH_2=CH_2 \xrightarrow[H_2O_2.OH^{\ominus}]{BH_3.THF}$

8. 

Incorrect statement:

(1) A = $Ph-\underset{\underset{Br}{|}}{CH}-CH_3$

(2) B = $Ph-CH_2-\underset{\underset{Br}{|}}{CH_2}$

(3) A & B are position isomer of each other

(4) A & B are chain isomer of each other

9. How many Alkene can be taken to form n-butane by hydrogenation method.

(1) 2 (2) 3 (3) 1 (4) 4

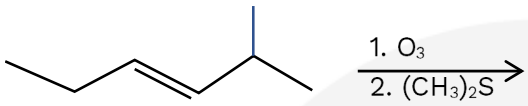
unacademy

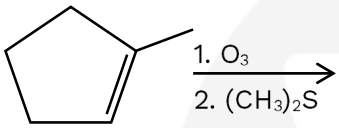
ELP

Educator Led Practice

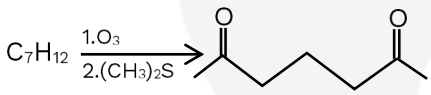
NEET-CHEMISTRY **ELP NO.-4** **HYDROCARBONS**

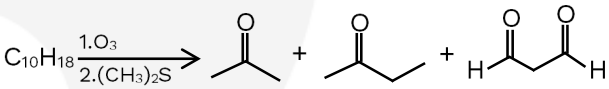
1. Draw structural formulas for the products of the following ozonolysis reactions and name the new functional groups formed in each oxidation.

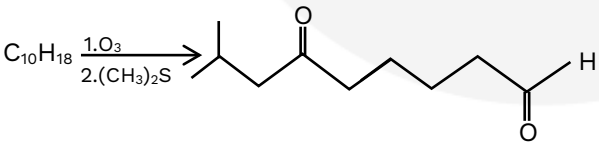
(a) 

(b) 

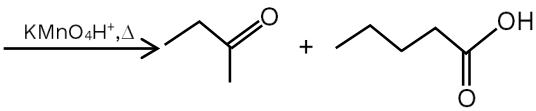
2. Draw the structural formula of the alkene that reacts with ozone followed by dimethyl sulfide to give each product or set of products

(1) 

(2) 

(3) 

3. What is X is given reaction?

Alkene 

4. Which of the following statement is incorrect

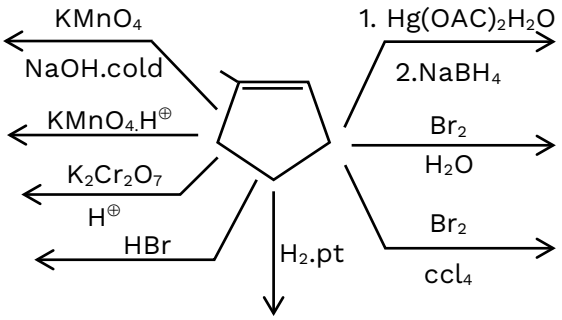
(i) o–xylene gives three products on O_3 ozonolysis.

(ii) m–xylene gives two products on O_3 ozonolysis.

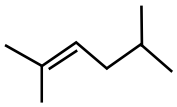
(iii) p–xylene gives two products on O_3 ozonolysis.

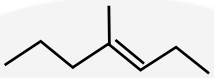
(iv) Benzene forms diozonide with ozone

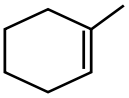
5. Predict the major product for each of the following reactions:



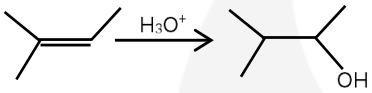
6. What product is formed when each alkene is treated with H_2 and a Pd catalyst?

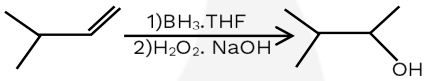
(a) 

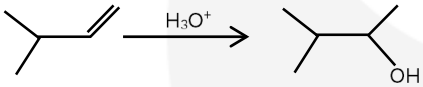
(b) 

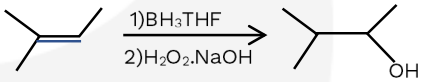
(c) 

7. Which of the following represents an efficient method for preparing the alcohol shown?

(a) 

(b) 

(c) 

(d) 

8. Incorrect statement is:

(1) Alkene & alkyne decolourize bromine water solution.

(2) Alkene & alkyne decolourize $kMnO_4$ solution.

(3) Alkane & benzene decolourize bromine water.

(4) Ozonolysis reaction is useful to detecting the position of double bond.

9. $CH_3-CH=CH_2 \xrightarrow[\text{(II) } H_2O_2 / \overset{\ominus}{O}H]{\text{(I) } B_2H_6, \text{ THF}} CH_3-\underset{H}{\underset{|}{CH}}-\underset{OH}{\underset{|}{CH_2}}$

Which of the following statement is correct about above reaction.

(a) This reaction is acidic hydration of alkene.

(b) This is hydroboration oxidation reaction

(c) 4 member cyclic transition state formed during the reaction

(d) This reaction is example of syn addition mechanism.

(e) Addition of H & OH according to anti markovnikov rule

(f) Carbocation formed as intermediate

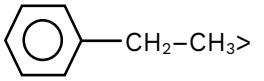
(1) b,c,d,f (2) b,c,d,e (3) a,b,c,d,e (4) b,c,d

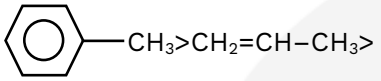
10. $CH_3-C\equiv C-H$

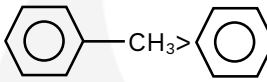
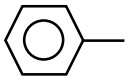
(i) B_2H_6/THF → Major product
(ii) $H_2O_2/\bar{O}H$

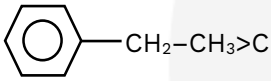
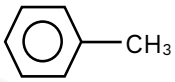
(i) $(AcO)_2$ Hg, H_2O → Major product
(ii) $NaBH_4$

11. Compare reactivity of following compound towards N.B.S.

(1) 
$CH_2-CH_3 > CH_3 > CH_2=CH-CH_3$

(2) 
$CH_3 > CH_2=CH-CH_3 > CH_2-CH_3$

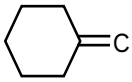
(3) $CH_2=CH-CH_3 >$ 
$CH_3 >$ 
CH_2-CH_3

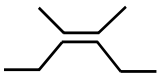
(4) 
$CH_2-CH_3 > CH_2=CH-CH_3 >$ 
CH_3

12. Which of the following compound give only aldehyde as product on ozonolysis.

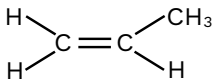
(1) But–1–ene
(2) But–2–ene
(3) Ethene
(4) All of the above

13. Which of the following alkene give mixture of aldehyde & ketone on ozonolysis.

(1) 
$CH-CH_3$

(2) 

(3) $CH_3-CH=CH-CH_3$

(4) 

14. Which of the following statement is correct.

(1) Alkene $\xrightarrow[H_2O/zn]{O_3}$ carbonyl compound

(2) Ozonolysis is highly useful in detecting the position of double bond.

(3) Ozonolysis of alkene involves the addition of ozone molecule to alkene to form ozonide

(4) All of the above

15. Which of the following is not correct.

(1) Alkene $\xrightarrow{H-Br}$ EAR

(2) Alkene $\xrightarrow[\text{Peroxide}]{H-Br}$ FRAR

(3) Alkene $\xrightarrow[\text{Peroxide}]{H-Cl}$ FRAR

(4) Both 2 & 3

16. Which of the following compound can not react with bromine water solution.

(1)

(2)

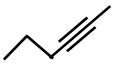
(3)

(4) Both 2 & 3

17. Which of the following reaction is not correct.

(1) + H_2 $\xrightarrow{Pd}$ n – butane

(2) + H_2 $\xrightarrow{Pd}$ n – butane

(3)  + $2H_2$ $\xrightarrow{Pd}$ n – hexane

(4) + $2H_2$ $\xrightarrow{Pd}$ n – butane

18. Trans – 2 – butene can be formed by.

(1) Complete hydrogenation of but–2–yne

(2) But–2–yne with lindlar catalyst

(3) But–1–yne with Na/liq NH_3

(4) But–2–yne with Na/liq NH_3

19. Incorrect statement is:

(1) Alkene & alkyne decolourize bromine water solution.

(2) Alkene & alkyne decolourize $kMnO_4$ solution.

(3) Alkane & benzene decolourize bromine water.

(4) Ozonolysis reaction is useful to detecting the position of double bond.

20. Which of the following alkane can not formed by hydrogenation of alkene.

(1) n-pentane (2) iso–pentane (3) iso-butane (4) Neo-pentane

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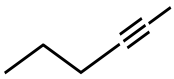
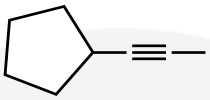
ELP

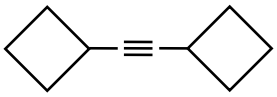
Educator Led Practice

NEET-CHEMISTRY | **ELP NO.-5** | **HYDROCARBONS**

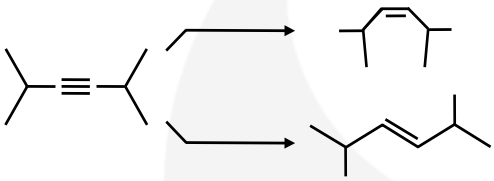
1. Draw the major product expected when each of the following alkynes is treated with sodium metal in liquid ammonia:

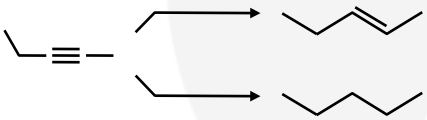
(1) 

(2) 

(3) 

2. Identify reagents that you could use to achieve each of the following transformations:

(1) 

(2) 

3. Predict the major product(s) expected for each of the following reactions:

(1) $CH_3-C\equiv CH \xrightarrow[\text{(excess)}]{HBr}$

(2) $CH-C\equiv C-CH_3 \xrightarrow{HBr} \xrightarrow[\text{Peroxide}]{HBr}$

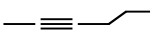
(3) $R-C\equiv CH \xrightarrow[\text{Dil}H_2SO_4]{HgSO_4}$

(4) $CH_3-C\equiv C-CH_3 \xrightarrow[H_3O^+]{Hg^{2+}}$

(5) $CH_3-C\equiv CH \xrightarrow[\text{2. } H_2O_2 \text{ . } OH^-]{\text{1. } BH_3\text{.THF}}$

(6) $HC\equiv CCH_3 \xrightarrow[CH_2Cl_2]{\text{excess } Br_2}$

(7) $CH_3CH_2C\equiv CCH_3+H_2 \xrightarrow[\text{catalyst}]{\text{Lindlar}}$

(8)  $\xrightarrow[NH_3\text{(liq)}\ -78°C]{Na}$

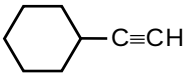
4. Identify reagents that you could use to achieve each of the following transformations:

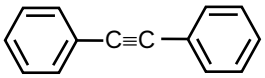
$$R-C\equiv CH \longrightarrow R-\underset{\underset{O}{\|}}{C}-CH_3$$

$$R-C\equiv CH \longrightarrow R-CH_2-CHO$$

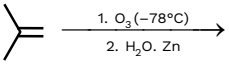
5. Draw the products formed when each alkyne is treated with O_3 followed by H_2O.

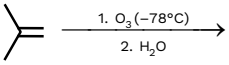
1. $CH_3-C\equiv C-CH_2CH_3$

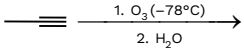
2. 

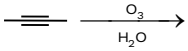
3. 

6. In which of the following reaction CO_2 gas is released?

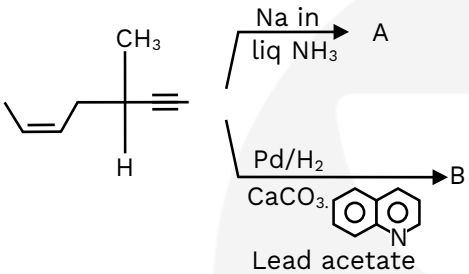
(a) 

(b) 

(c) 

(d) 

(e) $CH_3-CH=CH_2 \xrightarrow[2.\ H_2O_2]{1.\ O_3(-78°C)}$

7. 

Which statement is incorrect

(1) A is optically active

(2) B is optically inactive

(3) B is optically active

(4) All statements are correct

8. Which acid-base reaction(s) is/are feasible

1. $CH_3-C\equiv CH + NaNH_2 \rightleftharpoons CH_3C\equiv \overset{\ominus}{C}\overset{\oplus}{Na} + NH_3$

2. $CH_3C\equiv CH + NaOH \rightleftharpoons CH_3-C\equiv \overset{\ominus}{C}\overset{\oplus}{Na} + H_2O$

3. $CH_3C\equiv CH + CH_3COONa \rightleftharpoons CH_3C\equiv \overset{\ominus}{C}\overset{\oplus}{Na} + CH_3COOH$

4. $CH_3C\equiv CH + CH_3-MgBr \rightleftharpoons CH_3C\equiv CMgBr + CH_4$

9. Arrange the following in decreasing order of acidic strength

(1) CH_3-CH_3 (I) $CH_2=CH_2$ (II) $HC\equiv CH$ (III) (IV)

(2) CH_3COOH (I) $CH\equiv CH$ (II) H_2O (III) NH_3 (IV)

10. But–1–yne & But–2–yne can be distinguish by:

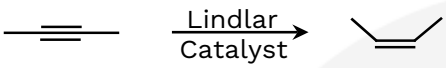
(1) Br_2/ccl_4

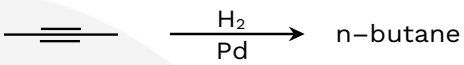
(2) $AgNO_3 + NH_4OH$

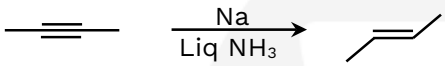
(3) $CuCl_2 + NH_4OH$

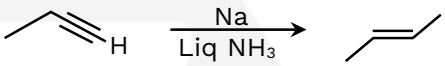
(4) Both (2) & 3

11. Incorrect reaction is:

(1) 

(2) 

(3) 

(4) 

12. $CH{\equiv}CH \xrightarrow[\text{Fe tube}]{\text{Red hot}} A$ is:

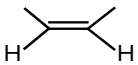
(1) Ethene

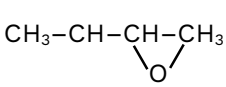
(2) Ethane

(3) Benzene

(4) None of these

13. Which of the following reaction is incorrect?

(1) $CH_3{-}C{\equiv}C{-}CH_3 \xrightarrow[\text{Catalyst}]{\text{Lindlar}}$ 

(2) $CH_3{-}CH{=}CH{-}CH_3 \xrightarrow{\text{MCPBA}}$ 

(3) $CH_3{-}C{\equiv}C{-}CH_3 \xrightarrow[\text{Reagent}]{\text{Tollen's}}$ white ppt formed

(4) Both (2) & (3)

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ELP

Educator Led Practice

NEET-CHEMISTRY **ELP NO.-6** **HYDROCARBONS**

1. Marsh gas would be obtained by which of the following reaction :-

(a) $CH_3MgBr + H_2O \rightarrow$

(b) $CH_3MgCl + NH_3 \rightarrow$

(c) $CH_3MgI + CH_3COOH \rightarrow$

(d) $IMgCH_3 + CH_3OH \rightarrow$

(1) Only a (2) only b and a (3) a, b, c, d (4) b, c, d only

2. Choose the correct reaction for which, the synthesis of an asymmetrical alkane is possible.

(1) $CH_3-Br + Na \xrightarrow{\text{Dry Ether}}$

(2) $CH_3-Br + C_2H_5-Br + Na \xrightarrow{\text{Dry Ether}}$

(3) $C_3H_7Br + Na \xrightarrow{\text{Dry Ether}}$

(4) $C_2H_5-Br + Na \xrightarrow{\text{Dry Ether}}$

3. Choose the possible products of the following chemical equation :-

$CH_3-Br + C_2H_5-Br + Na \xrightarrow[\text{Ether}]{\text{Dry}}$

(a) C_2H_6 (b) C_3H_8 (c) C_4H_{10} (d) C_5H_{10}

(1) I, II and III (2) I and II (3) I, II, III, and IV (4) Only II

4. Boiling points of n-pentane, iso-pentane and neopentane are (in_____)

(1) 309, 282.5, 301 (2) 309, 301, 282.5 (3) 301, 282.5, 309 (4) 282.5, 301, 309

5. Compound with the highest boiling point is:-

(1) Pentane (2) 2-methylbutane (3) 2,2-dimethylpropane (4) Hexane

6. $CH_4 \xrightarrow[500°C]{Cl_2} CH_3-Cl$ (Given), then

$CH_4 \xrightarrow[?]{Br_2} CH_3-Br$

(1) 510°C (2) 500°C (3) 490°C (4) None of the above

7. $CH_4 + Cl_2 \xrightarrow{h\nu}$ products

(I) CH_3Cl (II) CH_2Cl_2 (III) $CHCl_3$ (IV) CCl_4

(1) II only (2) I and II (3) I, II and III (4) I, II, III and IV

8. **Assertion :** Branched alkanes have lower boiling point than their unbranded isomer

Reason : Branched chain alkanes have relatively small surface area, so less London forces operate in molecules

(1) Both A & R are correct & R is the correct explanation of A.

(2) Both A & R are correct but R is not the correct explanation of A.

(3) A is correct R is incorrect

(4) A is incorrect R is correct

9. $RMgX + CH_3OH \rightarrow$ "A"

If the mol. wt of A = 44, then R is:-

(1) C_3H_7 (2) CH_3 (3) C_2H_5 (4) C_4H_9

10. $RMgX + CH_3OH \rightarrow A \xrightarrow{Br_2, h\nu} B$

If R = C_3H_7 no. of primary H in B is:

(1) 3 (2) 4 (3) 6 (4) 2

11. Write IUPAC name for a compound that doesn't contain 4 C–C single bonds and 12 C–H single bonds

(I) Butane (II) Pentane (III) Neo pentane (IV) Hexane

(1) I and III (2) II and III (3) I and IV (4) II and IV

12. Benzylmagnesiumbromide reacts with methanol to give

(1) Anisole + Mg(OH)Br (2) Benzene + Mg(OMe)Br

(3) Toluene + Mg(OMe)Br (4) Toluene + Mg(OH)Br

13. Which statement is not true for alkanes

(1) Large number of alkanes are soluble in water

(2) All alkanes have a lower density than water

(3) At room temp. some alkanes are liquids some are solids and some are gases

(4) Alkanes are called 'paraffins'

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ELP

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NEET-CHEMISTRY | **ELP NO.-7** | **HYDROCARBONS**

1. $R-H + X_2 \xrightarrow{hv} R-X + H-X$ Rate of X_2 is:-

(1) $F_2 > Cl_2 > Br_2 > I_2$

(2) $I_2 > Br_2 > Cl_2 > F_2$

(3) $Cl_2 > F_2 > Br_2 > I_2$

(4) $Cl_2 > Br_2 > F_2 > I_2$

2. $CH_4 + X_2 \rightarrow CH_3 - X + H-X$

If chain initiation is rate determining step of above reaction then reactivity of X_2 is:-

(1) $F_2 > Cl_2 > Br_2 > I_2$

(2) $I_2 > Br_2 > Cl_2 > F_2$

(3) $Cl_2 > Br_2 > F_2 > I_2$

(4) $I_2 > F_2 > Br_2 > Cl_2$

3. Which of the reaction is not correct?

(1) $\underset{(excess)}{CH_4} + Cl_2 \longrightarrow \underset{(major)}{CH_3 - Cl}$

(2) $CH_4 + \underset{(excess)}{Cl_2} \longrightarrow \underset{(major)}{CCl_4}$

(3) $CH_4 + Cl_2 \xrightarrow{dark}$ no rxn

(4) $CH_4 + Cl_2 \xrightarrow[sunlight]{bright} \underset{(major)}{CCl_4}$

4. Correct statement regarding halogenation of alkane

(1) carbon free radical formed as intermediate

(2) Reactivity order is 3°H > 2°H > 1°H

(3) Iodination is reversible reaction due to formation of H–I

(4) Fluorination complete with explosion

(5) Chlorination reaction in bright sunlight give C black as product

(6) Reactivity of X_2 :- $F_2 < Cl_2 < Br_2 < I_2$

(7) Chain initiation step is rate determining step.

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ELP

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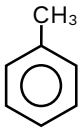
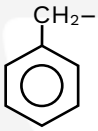
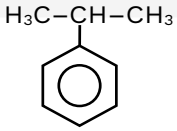
NEET-CHEMISTRY | **ELP NO.-8** | **HYDROCARBONS**

1. Arenium ion formed in:-
(1) Electrophilic addition reaction
(2) Free radical addition reaction
(3) Electrophilic aromatic substitution reaction
(4) Free radical substitution reaction.

2. Wmpare the rate of reaction towards electrophilic aromatic substitution reaction.

(a) 

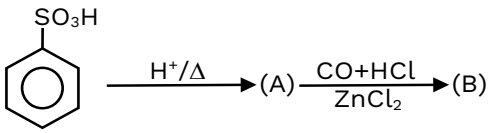
(b) 

(c) 

(d)

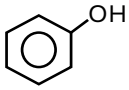
(1) a > b > c > d (2) b > a > c > d (3) d > c > b > a (4) c > b > a > d

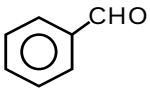
3. Which of the following statement is correct regarding nitration of benzene.
(a) Rate of E.S.R $C_6H_6 \simeq C_6D_6 \simeq C_6T_6$
(b) Polysubstitutin product possible
(c) Nitrobenzene is more reactive than benzene
(d) Conc. HNO_3 + conc.H_2SO_4 is used as reagent
(e) Neutronium ion is act as electrophile
(f) HNO_3 act as acid in nitrating mixture (HNO_3 + H_2SO_4)
(1) a, b, d (2) a, d, e
(4) a, b, c, d, e, f, (4) a, e, d, f

4. 

Which of the following not formed during the reaction

(1)

(2) 

(3) 

(4) Both 2 & 3

5. Which of the following is\are ortho-para directing group
(a) $-CCl_3$ (b) $-\overset{+}{N}H_3$ (c) $-\ddot{\underset{..}{O}}CH_3$ (d) $-CH_3$
(e) $-NH-CH_3$ (f) $-NH-CO-CH_3$ (g) $-CH=0$
(1) c, d, b, g (2) c, d, a, b (3) a, d, e, c (4) c, d, e, f

6. Which of the following statement is not correct?

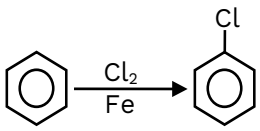
(1) $-NO_2$, $-CN$, $-CHO$ are meta directing groups

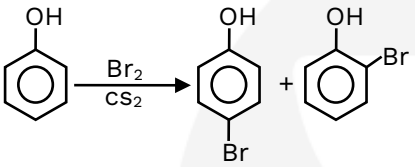
(2) Halogens are weak deactivator but ortho & para directing group

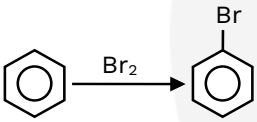
(3) $-OCH_3$, $-OH$, $-NH_2$ are ortho & para directing group

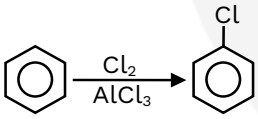
(4) $-M$ group are meta directing group because it decreases e^- density at ortho & para position whereas e^- density increases at meta positions

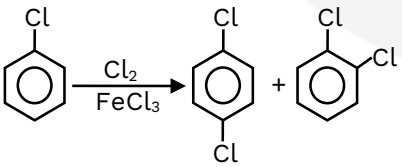
7. Incorrect reaction is:-

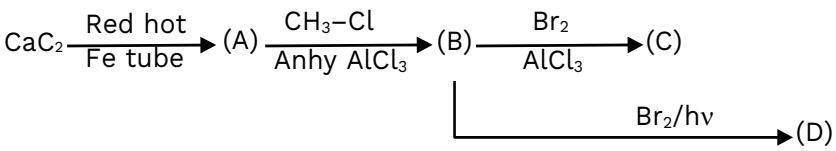
(1) 

(2) 

(3) 

(4) 

(5) 

8. 

9. Write the structure of major products expected form:-

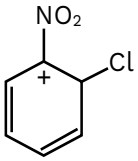
(1) Mononitration of 3-methyl phenol

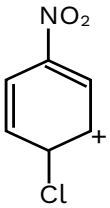
(2) Dinitration of 3-methyl phenol

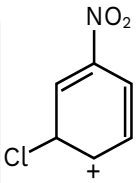
(3) Mononitration of phenyl methonoate

NEET-CHEMISTRY **ELP NO.-9** **HYDROCARBONS**

1. Which of following arenium ion is most stable when nitrobenzene is treated with Cl_2 in presence of anhydrous $AlCl_3$

(1) 

(2) 

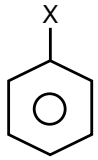
(3) 

(4) Both 1 & 3

2. **Statement-I:** Nitration of chlorobenzene leads to the formation of m-nitro chlorobenzene.
Statement-II: NO_2 group is m-directly group.
(1) Both Statement-I and Statement-II is correct.
(2) Both Statement-I and Statement-II is incorrect.
(3) Statement-I is correct and Statement-II is incorrect.
(4) Statement-I is incorrect and Statement-II is correct.

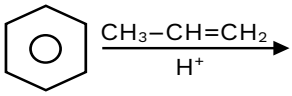
3. **Statement-I:** In monohaloarenes, further electrophilic substitution occurs at ortho & para position.
Statement-II: Halogen atom is ring deactivator.
(1) Both Statement-I and Statement-II is correct.
(2) Both Statement-I and Statement-II is incorrect.
(3) Statement-I is correct and Statement-II is incorrect.
(4) Statement-I is incorrect and Statement-II is correct.

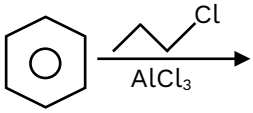
4.

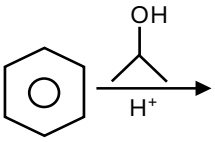
Column I	**Column II**
(i) $CH_3-\underset{\underset{X}{\vert}}{CH}-CH_3$	(a) Aryl halide
(ii) $CH_2=CH-CH_2-X$	(b) Alkyl halide
(iii) 	(c) Vinyl halide
(iv) $CH_2=CH-X$	(d) Allyl halide

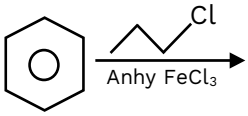
(1) (i) → (c), (ii) → (a), (iii) → (d), (iv) → (b)
(2) (i) → (b), (ii) → (d), (iii) → (a), (iv) → (c)
(3) (i) → (d), (ii) → (c), (iii) → (b), (iv) → (a)
(4) (i) → (a), (ii) → (b), (iii) → (c), (iv) → (d)

5. Which of the following reaction will form n-propyl benzene

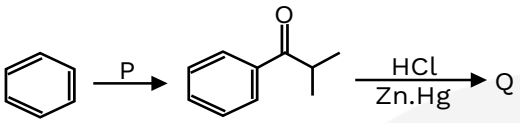
(1) 

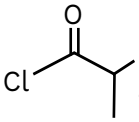
(2) 

(3) 

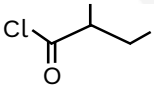
(4) 

6. Find out P & Q in the following reaction.

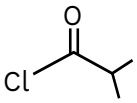


(1) P = 

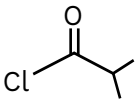
+ $AlCl_3$, Q = H_2/Pd

(2) P = 

+ $AlCl_3$, Q = Red P/HI

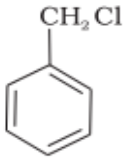
(3) P = 

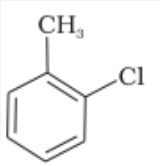
+ $AlCl_3$, Q = Zn–Hg/Hd

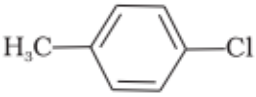
(4) P = 

+ $AlCl_3$, Q = $NaBH_4$

7. The reaction of toluene with chlorine in the presence of iron and in the absence of light yields _____.

(1) 

(2) 

(3) 

(4) Mixture of (ii) and (iii)

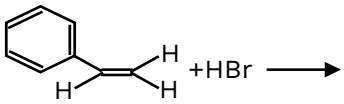
8. $CH{\equiv}CH \xrightarrow[\text{Fe tube}]{\text{Red hot}} (A) \xrightarrow[\text{Anhy } AlCl_3]{CH_3-Cl} (B) \xrightarrow[AlCl_3]{Br_2} (C)$ (Major)

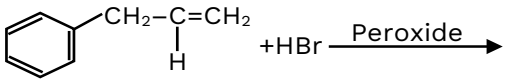
$(B) \xrightarrow{Br_2/h\nu} (D)$

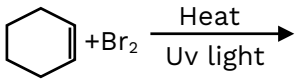
9. Find out A, B, C & D in the following reaction.

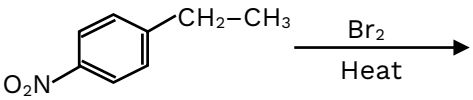
$$CHCl_3 \xrightarrow{Ag} A \xrightarrow[\text{Fe tube}]{\text{Red hot}} B \xrightarrow[Cl_2]{Fe} C \xrightarrow{N.M.} D + E$$

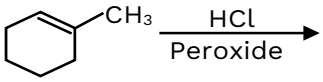
10. Write the product of the following reaction.

(i) 

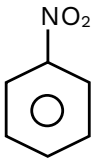
(ii) 

(iii) 

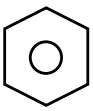
(iv) 

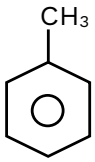
(v) 

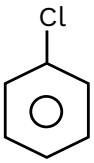
11. Which of the following cannot give Friedel craft reaction.

(i) 

(ii) Aniline

(iii) 

(iv) 

(v) 

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ELP

Educator Led Practice

NEET-CHEMISTRY | **ELP NO.-1** | **HALOALKANE & HALOARENE**

1. Which of the following is an example of vic-dihalide?

(1) Dichloromethane (2) 1,2-dichloroethane

(3) Ethylidene chloride (4) Allyl chloride

2. The position of –Br in the compound in $CH_3CH{=}CHC(Br)(CH_3)_2$ can be classified as _____.

(1) Allyl (2) Aryl (3) Vinyl (4) Secondary

3. A primary alkyl halide would prefer to undergo _____.

(1) S_N1 reaction (2) S_N2 reaction (3) α–Elimination (4) Racemisation

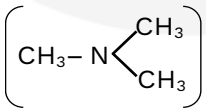
4. Which of the following alkyl halides will undergo S_N1 reaction most readily?

(1) $(CH_3)_3C—F$ (2) $(CH_3)_3C—Cl$ (3) $(CH_3)_3C—Br$ (4) $(CH_3)_3C—I$

5. Ethylidene chloride is a/an _____.

(1) vic-dihalide (2) gem-dihalide (3) allylic halide (4) vinylic halide

6. Chloromethane on treatment with excess of ammonia yields mainly.

(1) N,N-Dimethylmethanamine 

(2) N–methylmethanamine ($CH_3—NH—CH_3$)

(3) Methanamine (CH_3NH_2)

(4) Mixture containing all these in equal proportion

7. Reaction of $C_6H_5CH_2Br$ with aqueous sodium hydroxide follows _____.

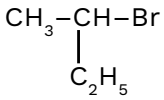
(1) S_N1 mechanism

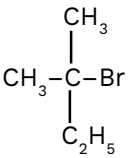
(2) S_N2 mechanism

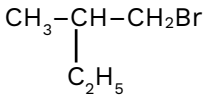
(3) Any of the above two depending upon the temperature of reaction

(4) Saytzeff rule

8. Which of the following compounds will give racemic mixture on nucleophilic substitution by OH^- ion?

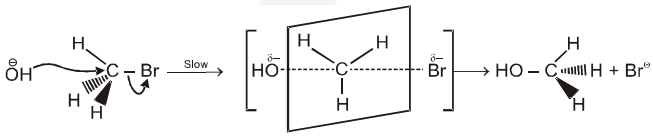
(a) 

(b) 

(c) 

(1) (a) (2) (a), (b), (c) (3) (b), (c) (4) (a), (c)

Consider the following reaction and answer the questions no. 09–11.



(a) (b) (c) (d) (e)

9. Which of the statements are correct about above reaction?

(1) (a) and (e) both are nucleophiles.

(2) In (c) carbon atom is sp^3 hybridised.

(3) In (c) carbon atom is sp^2 hybridised.

(4) (a) and (e) both are electrophiles.

10. Which of the following statements are correct about this reaction?

(1) The given reaction follows S_N2 mechanism.

(2) (b) and (d) have opposite configuration.

(3) (b) and (d) have same configuration.

(4) The given reaction follows S_N1 mechanism.

11. Which of the following statements are correct about the reaction intermediate?

(1) Intermediate (c) is unstable because in this carbon is attached to 5 atoms.

(2) Intermediate (c) is unstable because carbon atom is sp^2 hybridised.

(3) Intermediate (c) is stable because carbon atom is sp^2 hybridised.

(4) Intermediate (c) is less stable than the reactant (b).

12. Which of the following compounds can be classified as aryl halides?

(1) $p\text{-}ClC_6H_4CH_2CH(CH_3)_2$

(2) $p\text{-}CH_3CHCl(C_6H_4)CH_2CH_3$

(3) $o\text{-}BrH_2C\text{-}C_6H_4CH(CH_3)CH_2CH_3$

(4) $C_6H_5\text{-}Cl$

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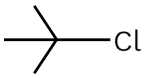
ELP

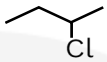
Educator Led Practice

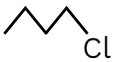
NEET-CHEMISTRY | **ELP NO.-2** | **HALOALKANE & HALOARENE**

1. Compare the reactivity of following compound towards S_N1 reaction.

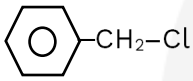
(i) (a) 
Tert. butyl Chloride

(b)
Isobutyl Chloride

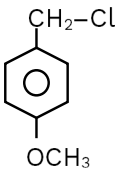
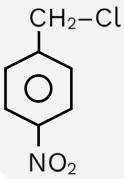
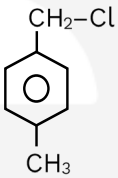
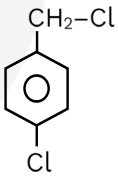
(c) 
Sec.butyl Chloride

(d) 
n-butyl Chloride

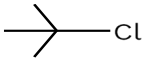
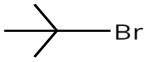
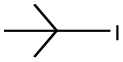
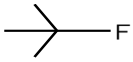
(1) a > b > c > d (2) a > b > d > c (3) a > c > b > d (4) a > c > d > b

(ii) (a) 
(b) $CH_2=CH-CH_2-Cl$ (c) $CH_2=CH-Cl$

(1) a > b > c (2) b > a > c (3) a > c > b (4) c > a > b

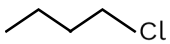
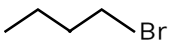
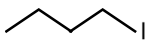
(iii) (a) 
(b) 
(c) 
(d) 

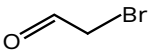
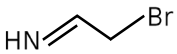
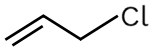
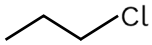
(1) a > b > c > d (2) a > c > b > d (3) c > a > b > d (4) a > c > d > b

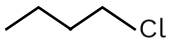
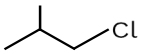
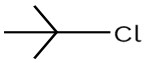
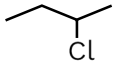
(iv) (a) 
(b) 
(c) 
(d) 

(1) a > b > c > d (2) c > b > a > d (3) d > a > b > c (4) c > d > a > b

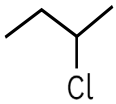
2. Compare reactivity of following compound towards S_N2 rxn.

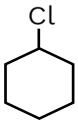
(i) (a) 
(b) 
(c) 

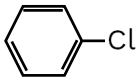
(ii) (a) 
(b) 
(c) 
(d) 

(iii) (a) 
(b) 
(c) 
(d) 

3. Which of the following compounds cannot give S_N1 as well as S_N2.

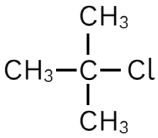
(a) 

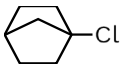
(b) 

(c) 

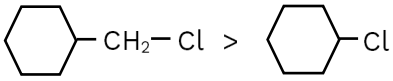
(d) $CH_2=CH-CH_2-Cl$

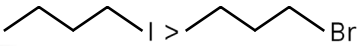
(e) $CH_2=CH-Cl$

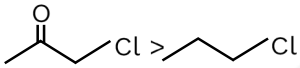
(f) 

(g) 

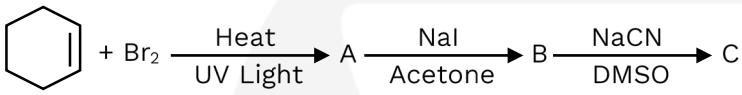
4. In the following pairs of halogen compounds have correct reactivity order for S_N2.

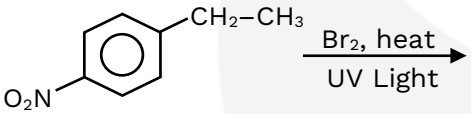
(1) 

(2) 

(3) 

(4) All of the above

5. 

6. 

7. Find incorrect one :-

(1) $CH_3-Br + AgF \longrightarrow CH_3-F + AgBr$
Swarts reaction

(2) $CH_3-Br + NaI \xrightarrow{\text{Dry acetone}} CH_3-I + NaBr$
Finkelstein rxn

(3) $R-X + AgCN \longrightarrow R-CN + Agx$

(4) $R-X + \overset{+}{N}a\overset{-}{C}\equiv N \longrightarrow R-C\equiv N$

8. **Statement-1 :-** Nucleophile is not involved in the rate determining step of S_N1 mechanism so, there is no effect of nucleophile concentration on rate of S_N1.

Statement-2 :- Nucleophile involved in the rate determining step of S_N2 mechanism, so nucleophile concentration effect rate of S_N2

(1) Statement 1 is correct
(2) Statement 2 is correct
(3) Both statement is correct
(4) Both statement is incorrect

1. Which of the statement is incorrect

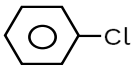
(1) Chlorobenzene do not give S_N1 because phenyl cation is unstable.

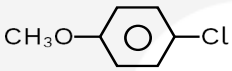
(2) Chlorobenzene do not give S_N2 because nucleophile repel with πe^- of phenyl.

(3) There is partial double bond character in carbon-chlorine bond, because of that bond strength increases.

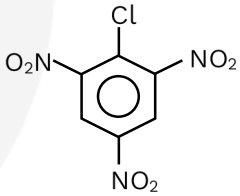
(4) In chlorobenzene chlorine attached to Sp^3 carbon atom because of that bond strength increase between carbon & chlorine.

2. Which of the following aryl halide can react with warm water.

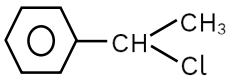
(1) 

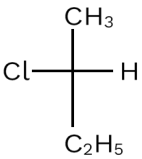
(2) 

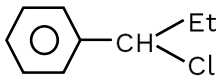
(3)

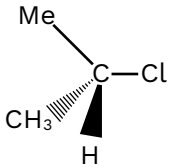
(4) 

3. Which of the following compound do not give enantiomeric pair with H_2O.

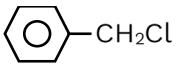
(1) 

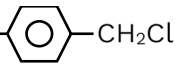
(2) 

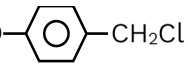
(3) 

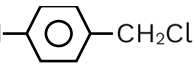
(4) 

4. Consider the following chlorides

(i) 

(ii) 

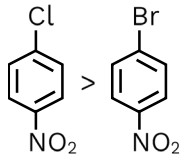
(iii) 

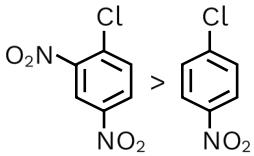
(iv) 

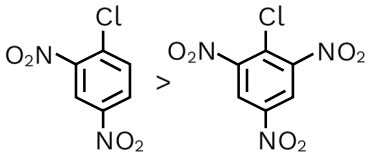
The order of reactivity of (i), (ii), (iii) and (iv) towards hydrolysis by S_N1 mechanism is

(1) i < ii < iii < iv (2) iv < iii < ii < i (3) iv < i < ii < iii (4) iii < ii < i < iv

5. Identify correct reactivity order for S_NAr

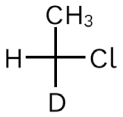
(1) 

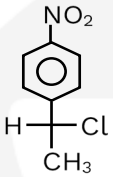
(2) 

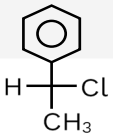
(3) 

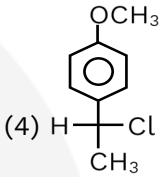
(4) (a) and (b) correct

6. Under identical conditions, solvolysis of which of the following substrates would lead to maximum racemization?

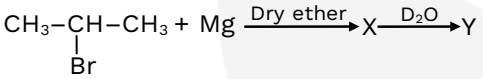
(1) 

(2) 

(3) 

(4) 

7. Identify the products X and Y in the given reaction,

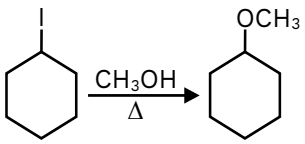


(1) $X = CH_3-\underset{\underset{Br}{|}}{CH}-CH_2Mg$, $Y = CH_3CH_2CH_2OH$

(2) $X = CH_3-\underset{\underset{MgBr}{|}}{CH}-CH_3$, $Y = CH_3-\underset{\underset{D}{|}}{CH}-CH_3$

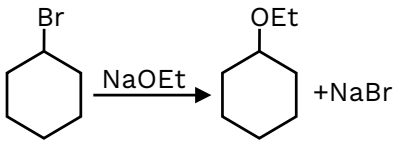
(3) $X = CH_3-\underset{\underset{MgBr}{|}}{CH}-CH_3$, $Y = CH_3-\underset{\underset{OD}{|}}{CH}-CH_3$

(4) $X = CH_3-\underset{\underset{Br}{|}}{CH}-CH_2Mg$, $Y = CH_3-\underset{\underset{OH}{|}}{CH}-CH_3$

8. 

This reaction follows which of the following pathways predominantly?

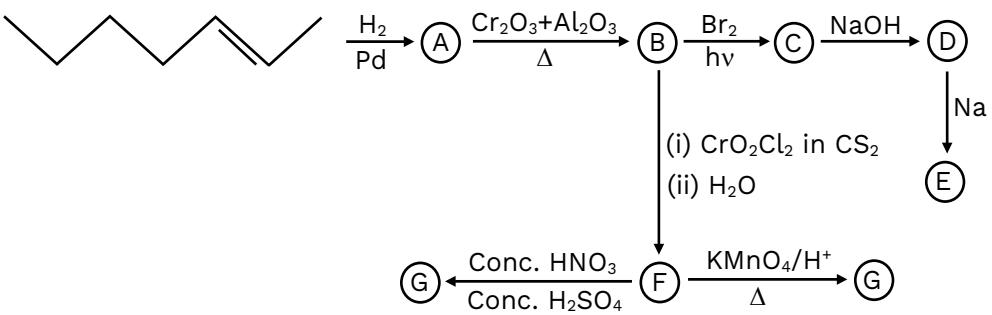
(1) S_N1 (2) S_N2 (3) Both equally (4) None of these

9. 

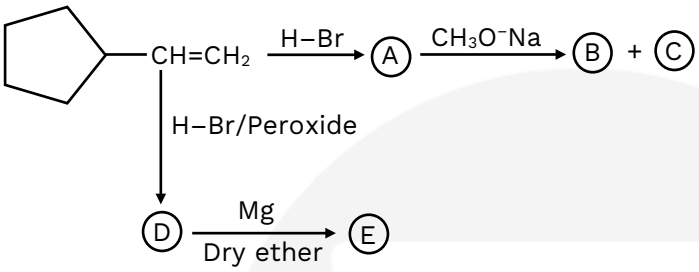
This reaction follows which of the following pathways predominantly?

(1) S_N1 (2) S_N2 (3) Both equally (4) None of these

10.


H2
Pd
A
Cr2O3+Al2O3
Δ
B
Br2
hν
C
NaOH
D
Na
E
(i) CrO2Cl2 in CS2
(ii) H2O
G
Conc. HNO3
Conc. H2SO4
F
KMnO4/H+
Δ
G

11.


CH=CH2
H–Br
A
CH3O⁻Na
B
+
C
H–Br/Peroxide
D
Mg
Dry ether
E

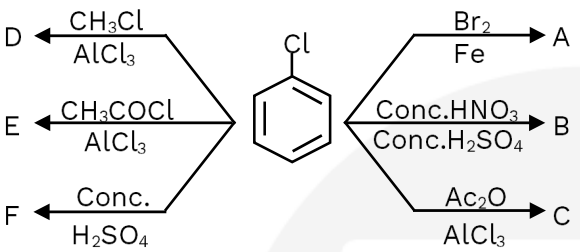
unacademy

ELP

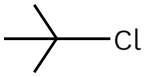
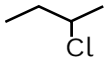
Educator Led Practice

NEET-CHEMISTRY | **ELP NO.-4** | **HALOALKANE & HALOARENE**

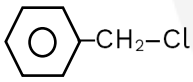
1. Identify A, B, C, D, E and F



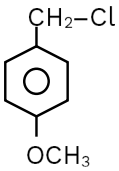
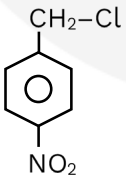
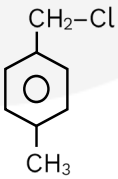
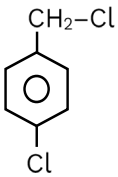
2. Compare the reactivity of following compound towards S_N1 reaction.

(i) (a)  Tert. butyl Chloride (b) Isobutyl Chloride (c)  Sec.butyl Chloride (d) n-butyl Chloride

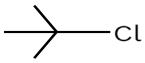
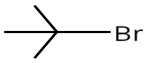
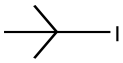
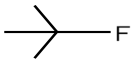
(1) a > b > c > d (2) a > b > d > c (3) a > c > b > d (4) a > c > d > b

(ii) (a)  (b) $CH_2=CH-CH_2-Cl$ (c) $CH_2=CH-Cl$

(1) a > b > c (2) b > a > c (3) a > c > b (4) c > a > b

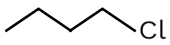
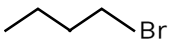
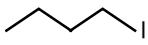
(iii) (a)  (b)  (c)  (d) 

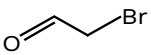
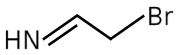
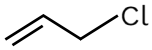
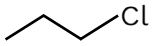
(1) a > b > c > d (2) a > c > b > d (3) c > a > b > d (4) a > c > d > b

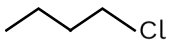
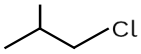
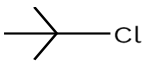
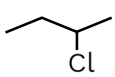
(iv) (a)  (b)  (c)  (d) 

(1) a > b > c > d (2) c > b > a > d (3) d > a > b > c (4) c > d > a > b

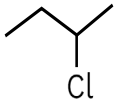
3. Compare reactivity of following compound towards S_N2 rxn.

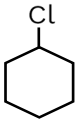
(i) (a)  (b)  (c) 

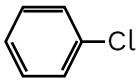
(ii) (a)  (b)  (c)  (d) 

(iii) (a)  (b)  (c)  (d) 

4. Which of the following compounds cannot give S_N1 as well as S_N2.

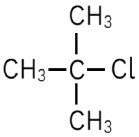
(a) 

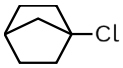
(b) 

(c) 

(d) $CH_2=CH-CH_2-Cl$

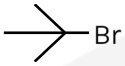
(e) $CH_2=CH-Cl$

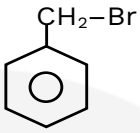
(f) 

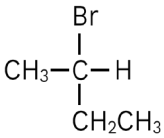
(g) 

5. Which of the following alkyl halide can give racemisation on treated with aq. KOH

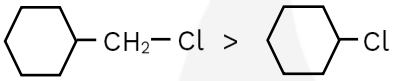
(1)

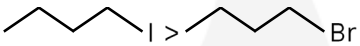
(2) 

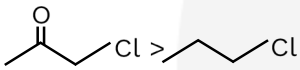
(3) 

(4) 

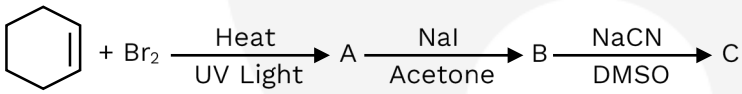
6. In the following pairs of halogen compounds have correct reactivity order for S_N2.

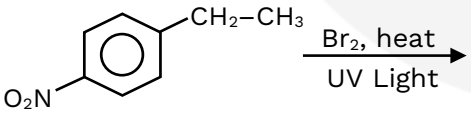
(1) 

(2) 

(3) 

(4) All of the above

7. 

8. 

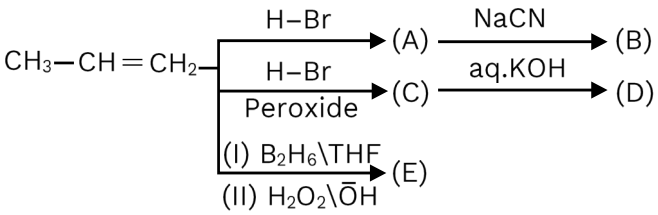
9. Find incorrect one :-

(1) $CH_3-Br + AgF \longrightarrow CH_3-F + AgBr$
Swarts reaction

(2) $CH_3-Br + NaI \xrightarrow{\text{Dry acetone}} CH_3-I + NaBr$
Finkelstein rxn

(3) $R-X + AgCN \longrightarrow R-CN + Agx$

(4) $R-X + \overset{+}{N}a\overset{-}{C}\equiv N \longrightarrow R-C\equiv N$

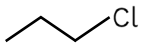
10. 

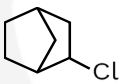
11. **Statement-1 :-** Nucleophile is not involved in the rate determining step of S_N1 mechanism so, there is no effect of nucleophile concentration on rate of S_N1.

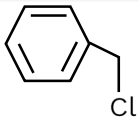
Statement-2 :- Nucleophile involved in the rate determining step of S_N2 mechanism, so nucleophile concentration effect rate of S_N2

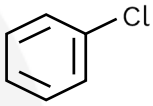
(1) Statement 1 is correct
(2) Statement 2 is correct
(3) Both statement is correct
(4) Both statement is incorrect

12. Which of the following compound do not give S_N1 as well as S_N2.

(1) 

(2) 

(3) 

(4) 

13. Which of the statement is incorrect

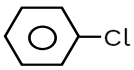
(1) Chlorobenzene do not give S_N1 because phenyl cation is unstable.

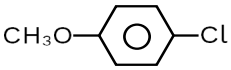
(2) Chlorobenzene do not give S_N2 because nucleophile repel with πe^- of phenyl.

(3) There is partial double bond character in carbon-chlorine bond, because of that bond strength increases.

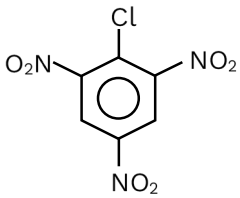
(4) In chlorobenzene chlorine attached to Sp^3 carbon atom because of that bond strength increase between carbon & chlorine.

14. Which of the following aryl halide can react with warm water.

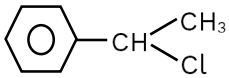
(1) 

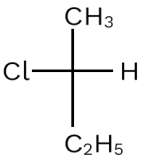
(2) 

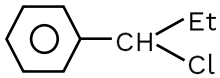
(3)

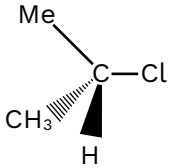
(4) 

15. Which of the following compound do not give enantiomeric pair with H_2O.

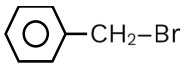
(1) 

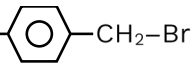
(2) 

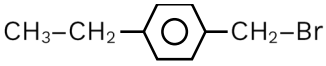
(3) 

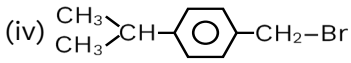
(4) 

16. Arrange the following compounds in order of decreasing rate of hydrolysis for S_N1 reaction

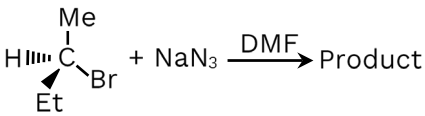
(i) 

(ii) 

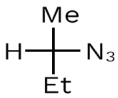
(iii) 

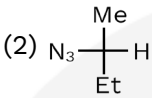
(iv) 

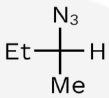
(1) iii > iv > ii > i (2) iv > iii > ii > i (3) ii > iii > iv > i (4) i > ii > iii > iv

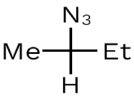
17. 

The correct representation of the product is

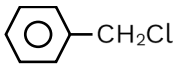
(1) 

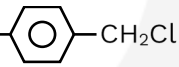
(2) 

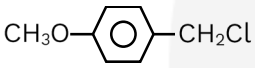
(3) 

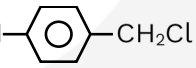
(4) 

18. Consider the following chlorides

(i) 

(ii) 

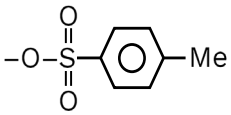
(iii) 

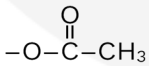
(iv) 

The order of reactivity of (i), (ii), (iii) and (iv) towards hydrolysis by S_N1 mechanism is

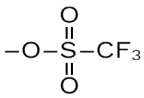
(1) i < ii < iii < iv (2) iv < iii < ii < i (3) iv < i < ii < iii (4) iii < ii < i < iv

19. Rank the group in order of decreasing leaving group ability

(i) 

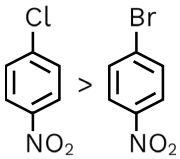
(ii) 

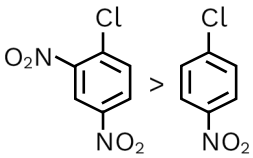
(iii) –OMe

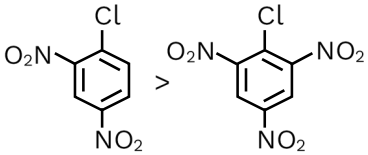
(iv) 

(1) i > ii > iii > iv (2) iv > i > ii > iii (3) i > iii > ii > iv (4) iii > ii > iv > i

20. Identify correct reactivity order for S_NAr

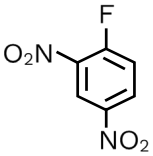
(1) 

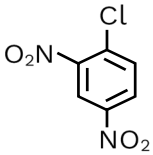
(2) 

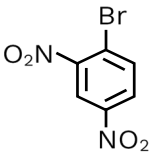
(3) 

(4) (a) and (b) correct

21. Identify correct reactivity order for S_NAr reaction

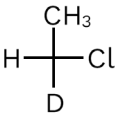
(i) 

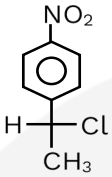
(ii) 

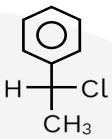
(iii) 

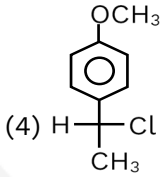
(1) i > ii > iii (2) ii > iii > i (3) i > iii > ii (4) iii > i > ii

22. Under identical conditions, solvolysis of which of the following substrates would lead to maximum racemization ?

(1) 

(2) 

(3) 

(4) 

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ELP

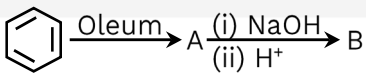
Educator Led Practice

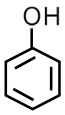
NEET-CHEMISTRY | **ELP NO.-1** | **ALCOHOL, PHENOL & ETHERS**

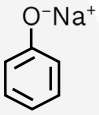
1. Give the major product obtained from the reaction of Methyl magnesium bromide with acetaldehyde followed by hydrolysis

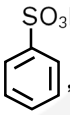
(1) CH_3CH_2OH (2) CH_3OH (3) $CH_3-\underset{CH_3}{\overset{OH}{C}}-H$ (4) $CH_3-\underset{CH_3}{\overset{OH}{C}}-CH_3$

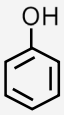
2. Give the structure of product A & B in the following reaction:

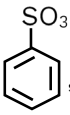


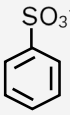
(1) A → 

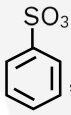
, B → 

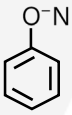
(2) A → 

, B → 

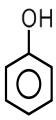
(3) A → 

, B → 

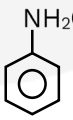
(4) A → 

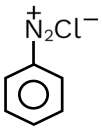
, B → 

3. What is the product obtained when Benzene diazonium chloride is warmed with water

(1) 

(2)

(3) 

(4) 

4. Give the structure of product obtained from the following reaction

Isopropyl benzene $\xrightarrow[h\nu]{O_2}$ P $\xrightarrow{H^+/H_2O}$ Q

5. Write the structure of the product obtained from following reaction

(1) $CH_3-CH=CH_2 \xrightarrow{H_2O/H^+} P$

(2) $H-\underset{CH_3}{\overset{CH_3}{C}}-CH=CH_2 \xrightarrow{H_2O/H^+} Q$

(3) $H-\underset{CH_3}{\overset{CH_3}{C}}-CH=CH_2 \xrightarrow[NaBH_4]{Hg(OAc)_2} R$

(4) $H-\underset{CH_3}{\overset{CH_3}{C}}-CH=CH_2 \xrightarrow[(ii)\ H_2O_2/OH^-]{(i)\ B_2H_6/THF} S$

6. Arrange the following set of compounds in order of their increasing boiling plant.

(a) Pentan-1-ol (b) n-Butane (c) Pentanal (d) Ethoxy ethane

(1) a < b < c < d (2) d < c < b < a

(3) a < d < c < b (4) b < d < c < a

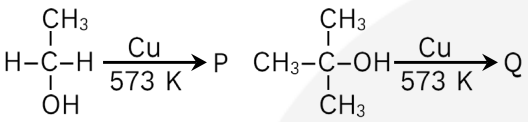
7. Arrange the following compound in decreasing order of their acidic strength.

(a) Ethanol (b) m-Cresol (c) o-Cresol (d) p-Cresol (e) Phenol

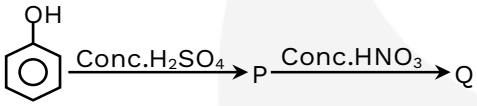
(1) a > b > c > d > e (2) e > b > d > c > a

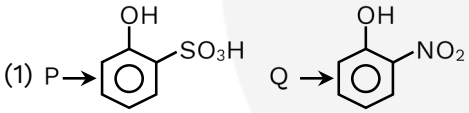
(3) e > b > c > a > d (4) e > d > b > c > a

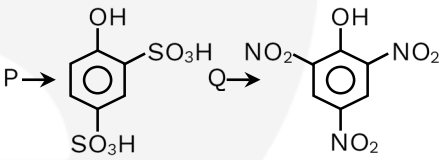
8. Complete the following reaction

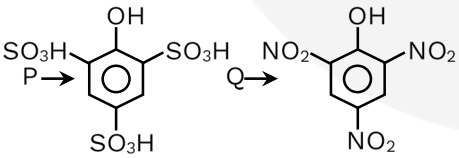


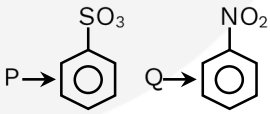
9. Predict the product obtained in the following reaction



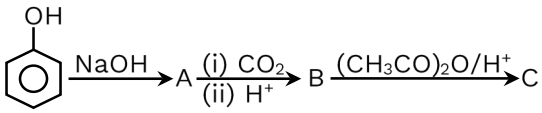
(1) 

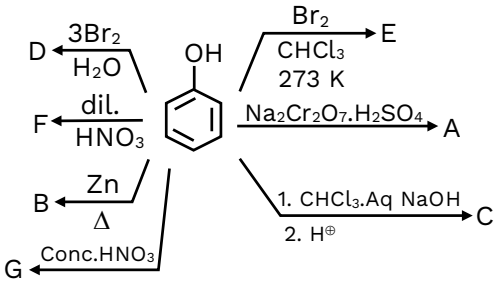
(2) 

(3) 

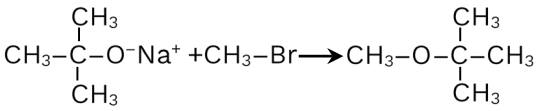
(4) 

10. Predict the product in the following reaction

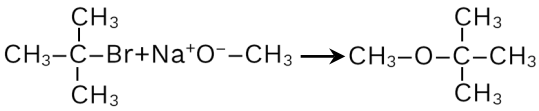


11. 

12. R–1



R–2



Which reaction is appropriate for the preparation of an ether

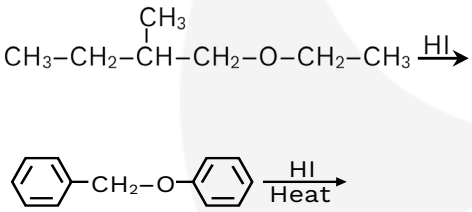
(1) Both R_1 & R_2

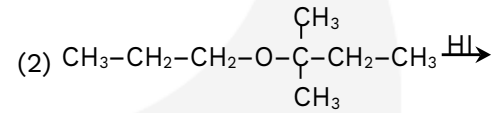
(2) Only R_1

(3) Only R_2

(4) Both R_1 & R_2 wrong

13. Give the major product of the following reaction

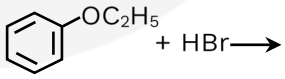
(1) 

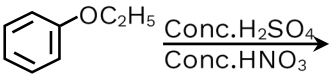
(2) 

(3)

14. Predict the product of following reactions: -

(1) $CH_3–CH_2–\ CH_2–O–\ CH_3 + HBr \rightarrow$

(2) 

(3) 

(4) $(CH_3)C–OC_2H_5 \xrightarrow{HI}$

15. Correct order of following hydrogen halide for the reaction with an ether

(1) HBr > HCl > HI

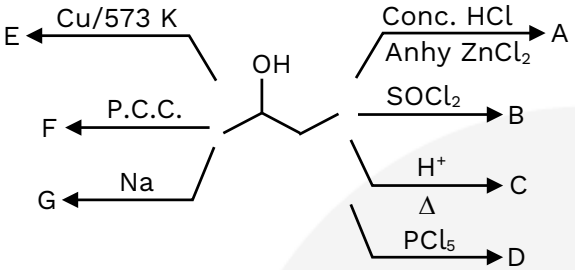
(2) HCl > HBr > HI

(3) HI > HCl > HBr

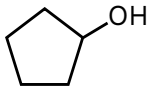
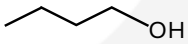
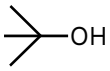
(4) HI > HBr > HCl

NEET-CHEMISTRY | **ELP NO.-2** | **ALCOHOL, PHENOL & ETHERS**

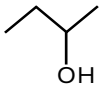
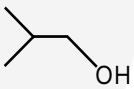
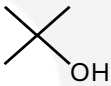
1.



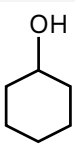
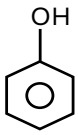
2. Which of the following alcohol gives immediate turbidity with HCl in presence of Anhydrous $ZnCl_2$.

(1) $CH_2 = CH - OH$ (2)  (3)  (4) 

3. Which of the following alcohol is most easily dehydrated with conc. H_2SO_4.

(1)  (2)  (3)  (4)

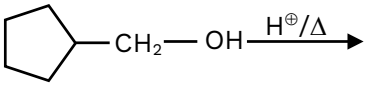
4. Identify the organic compound in which hydroxyl group is not easily replace by Cl when it treated with thionyl chloride.

(1) (2) $Ph-CH_2-Cl$ (3)  (4) 

5. Most suitable organic compound & reagent for the formation of butanenitrile

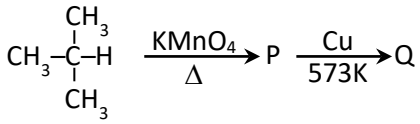
(1) + AgCN (2) + NaCN

(3) + KCN (4) + NaCN

6. 

major product

7. Complete the following reaction



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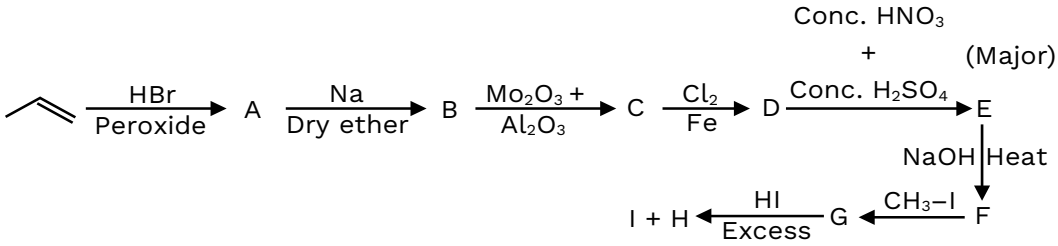
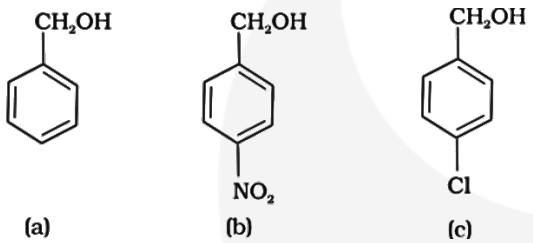


1. Monochlorination of toluene in sunlight followed by hydrolysis with aq. NaOH yields.

(1) o-Cresol (2) m-Cresol

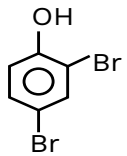
(3) 2, 4-Dihydroxytoluene (4) Benzyl alcohol

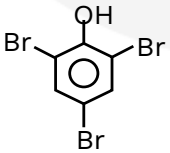
2. Mark the correct increasing order of reactivity of the following compounds with HBr/HCl.

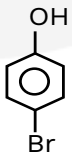


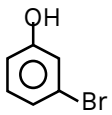
(1) a < b < c (2) b < a < c (3) b < c < a (4) c < b < a

3. When phenol is treated with bromine water, white precipitate is obtained. The product obtained is:

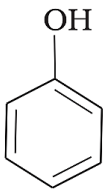
(1) 

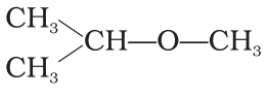
(2) 

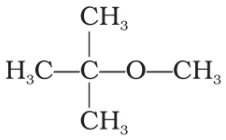
(3) 

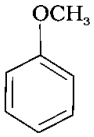
(4) 

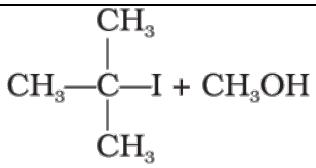
4. Match the starting materials given in Column I with the products formed by these (Column II) in the reaction with HI.

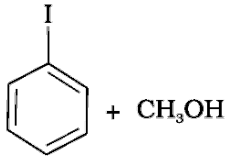
Column-I	**Column-II**
(i) $CH_3–O–CH_3$	(a)  + CH_3I

(ii) 

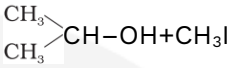
(iii) 

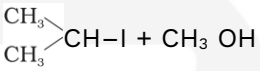
(iv) 

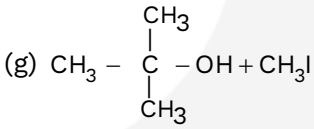
(b) 

(c) 

(d) $CH_3–OH+CH_3–I$

(e) 

(f) 

(g) 

5. **Statement-I:** p-nitrophenol is more acidic than phenol.

Statement-II: Nitro group helps in the stabilisation of the phenoxide ion by dispersal of negative charge due to resonance.

(1) Statement 1 is correct but statement 2 is incorrect

(2) Statement 2 is correct but statement 1 is incorrect

(3) Both statement is correct

(4) Both statement is incorrect

6. **Statement-I:** Like bromination of benzene, bromination of phenol is also carried out in the presence of Lewis acid.

Statement-II: Lewis acid polarises the bromine molecule.

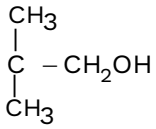
(1) Statement 1 is correct but statement 2 is incorrect

(2) Statement 2 is correct but statement 1 is incorrect

(3) Both statement is correct

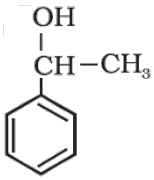
(4) Both statement is incorrect

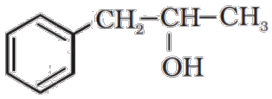
8. Classify the following as primary, secondary and tertiary alcohols:.

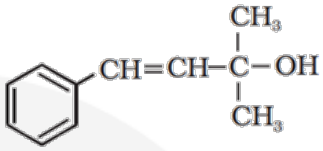
(i) 

(ii) $HC_2 = CH–CH_2OH$

(iii) $CH_3–CH_2–CH_2–OH$

(iv) 

(v) 

(vi) 

9. Arrange the following compounds in increasing order of their acid strength:

(i) Propan-1-ol

(ii) 2,4,6-Trinitrophenol

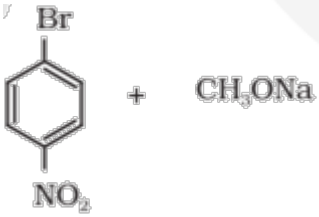
(iii) 3-Nitrophenol

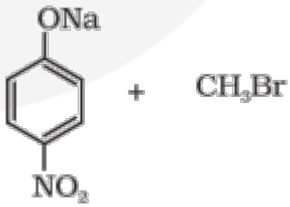
(iv) 3,5-Dinitrophenol

(v) Phenol

(vi) 4-Methylphenol.

10. Which of the following is an appropriate set of reactants for the preparation of 1-methoxy-4-nitrobenzene and why?

(i) 

(ii) 

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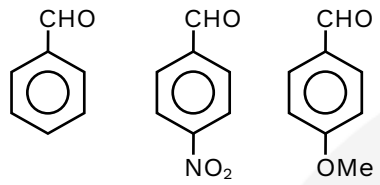
ELP

Educator Led Practice

NEET-CHEMISTRY **ELP NO.- 1**

ALDEHYDES, KETONES, CARBOXYLIC ACID & DERIVATIVES

1.

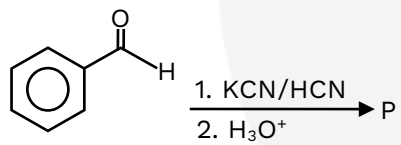


I II III

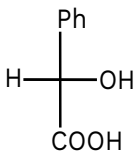
Which of the following orders is correct of the ease of nucleophilic addition among these substrates?

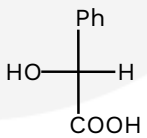
(1) I > II > III (2) III > II > I (3) III > I > II (4) II > I > III

2.



P has which of the following stereoisomeric forms?

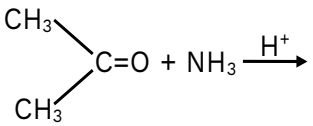
(1) 

(2) 

(3) An equimolar mixture of both a and b

(4) None of these

3.



This reaction falls under:

(1) Acid-base reactions

(2) Condensation reaction

(3) Electrophilic substitution reaction

(4) Nucleophilic substitution reaction

4. Which of the following reagents is least reactive?

(1) CH_3Li (2) CH_3Na (3) CH_3MgBr (4) $(CH_3)_2Cd$

5. $CH_3CH_2{-}MgBr + CO_2 \xrightarrow[2.\ H_3O^{\oplus}]{1.\ \text{Ether}}$

The major product which can be isolated from this reaction is:

(1) Et-COOH (2) Et-CHO

(3) $CH_2{=}CH{-}COOH$ (4) None of these

6. Identify the products X and Y in the given reaction,

$$CH_3{-}\underset{\underset{Br}{|}}{CH}{-}CH_3 + Mg \xrightarrow{\text{Dry ether}} X \xrightarrow{D_2O} Y$$

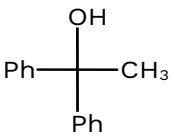
(1) $X{=}CH_3{-}\underset{\underset{Br}{|}}{CH}{-}CH_2Mg,\ Y{=}CH_3CH_2CH_2OH$

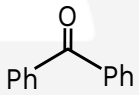
(2) $X{=}CH_3{-}\underset{\underset{MgBr}{|}}{CH}{-}CH_3,\ Y{=}CH_3{-}\underset{\underset{D}{|}}{CH}{-}CH_3$

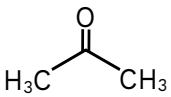
(3) $X{=}CH_3{-}\underset{\underset{MgBr}{|}}{CH}{-}CH_3,\ Y{=}CH_3{-}\underset{\underset{OD}{|}}{CH}{-}CH_3$

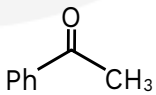
(4) $X{=}CH_3{-}\underset{\underset{Br}{|}}{CH}{-}CH_2,Mg\ Y{=}CH_3{-}\underset{\underset{OH}{|}}{CH}{-}CH_3$

7. $PhMgBr + H_3C{-}C{\equiv}N \xrightarrow{H_3O^{\oplus}}$ Product:

(1) 

(2) 

(3) 

(4) 

8. $CH_3CHO + NH_2OH \rightarrow CH_3CH{=}N{-}OH$

The above reactions is carried out at:

(1) pH=1 (2) pH=4.5 (3) pH=12 (4) pH=14

9. In the given reaction,

$$R-\overset{\overset{\displaystyle O}{\|}}{C}-Cl \xrightarrow{R_2Cd} [X]$$

[X] will be:

(1) $R-\overset{\overset{\displaystyle O}{\|}}{C}-R$ (2) $R-\overset{\overset{\displaystyle O}{\|}}{C}-H$ (3) $R-\overset{\overset{\displaystyle O}{\|}}{C}-CH_2R$ (4) $RCH_2-\overset{\overset{\displaystyle O}{\|}}{C}-CH_2R$

10. Schiff's base is prepared from:

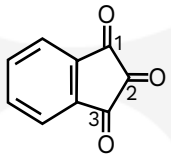
(1) Carbonyl compound and primary amine

(2) Carbonyl compound and secondary amine

(3) Carbonyl compound and tertiary amine

(4) All of the above

11. Which carbonyl group of the given compound is most reactive for nucleophilic addition reaction?



(1) 1 (2) 2 (3) 3 (4) All have equal reactivity

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NEET-CHEMISTRY **ELP NO.- 2**

ALDEHYDES, KETONES, CARBOXYLIC ACID & DERIVATIVES

1. The hydrolysis of benzal chloride gives–

(1) Benzyl alcohol (2) Benzoic acid (3) Benzaldehyde (4) Benzophenone

2. Ketones are first oxidation products of–

(1) Primary alcohols (2) Secondary alcohols

(3) Both (4) None

3. Calcium acetate when dry distilled gives–

(1) Formaldehyde (2) Acetaldehyde (3) Acetone (4) Acetic anhydride

4. What is the function of $BaSO_4$ in Rosamund reaction–

(1) To stop further oxidation of aldehyde completely

(2) To stop further reduction of aldehyde completely

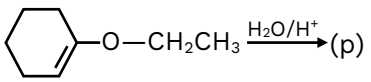
(3) Act as a poisonous catalyst

(4) It checks the reactivity of Pd.

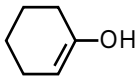
5. Toluene on treatment with CrO_2Cl_2 gives –

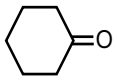
(1) Chlorotoluene (2) Benzyl chloride (3) Benzaldehyde (4) Benzoic acid

6. In the given reaction,



(P) wiil be:

(1) 

(2) 

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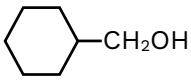
(4) 

7. HCHO with conc. alkali forms two compounds. The change in oxidation number would be–

(1) (0 to –2) in both the compounds

(2) (0 to +2) in both the compounds

(3) (0 to +2) in one compound and (0 to –2) in the second compound

(4) All are correct

8. $C_3H_8O\ [O] \xrightarrow[K_2Cr_2O_7\ /\ H_2SO_4]{[O]} C_3H_6O \xrightarrow{I_2+NaOH(aq.)} CHI_3,$

In this reaction the first compound is –

(1) $CH_3CH_2CH_2OH$

(2) $CH_3-\underset{\underset{OH}{|}}{CH}-CH_3$

(3) $CH_3OCH_2CH_3$

(4) CH_3CH_2CHO

9. $CH_3-CH_2-CHO \xrightarrow[\text{alkali}]{\text{Dil.}}$ product. The product in the above reaction is-

(1) CH_3-CH_2COOH

(2) $CH_3-CH_2-CH_2OH$

(3) $CH_3-CH_2-\underset{\underset{OH}{|}}{CH}-CH_2-CHO$

(4) CH_3-CH_2-CHO

10. In the Cannizzaro reaction given below –

$2Ph-CHO \xrightarrow{OH^-} ph-CH_2OH + PhC$

the slowest step is –

(1) The attack of OH^- at the carbonyl group

(2) The transfer of hydride to the carbonyl group

(3) The abstraction of proton from the carboxylic group

(4) The deprotonation of Ph – CH_2OH

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NEET-CHEMISTRY **ELP NO.- 3**

ALDEHYDES, KETONES, CARBOXYLIC ACID & DERIVATIVES

1. In Which of the following crossed aldol condensations, only one kind of cross aldol is formed –

(1) CH_3CHO & CH_3CH_2CHO (2) CH_3CHO & $(CH_3)_2CO$

(3) $(CH_3)_2CO$ & $(C_2H_5)_2CO$ (4) C_6H_5CHO & CH_3CHO

2. Alkaline hydrolysis of $C_4H_8Cl_2$ gives a compound (A) which on heating with NaOH and I_2 produces a yellow precipitate of CHI_3.The compound (A) should be.

(1) $CH_3CH_2CH_2CHO$ (2) $CH_3CH_2\underset{\underset{O}{\|}}{C}-CH_3$

(3) $CH_3-CH_2-\underset{\underset{OH}{|}}{CH}-\underset{\underset{OH}{|}}{CH_2}$ (4) $CH_3-CH_2-CH-\underset{\underset{OH}{|}}{CH_2}$

3. The following statement is true for Cannizzaro reaction–

(1) The aldehyde is oxidised as well as reduced

(2) The aldehydes not containing -Hydrogen atoms give the reaction

(3) The reaction is not given by aldehydes containing -Hydrogen atoms

(4) All of these

4. Which of the following compounds would under go the Cannizzaro's reaction–

(1) Acetaldehyde (2) Benzaldehyde (3) Propionaldehyde (4) Anisole

5. Product obtained on the addition of an aqueous alkali to benzaldehyde followed by acid hydrolysis is–

(1) Benzoic acid (2) Benzyl alcohol (3) Benzyl benzoate (4) All of the above

6. Which of the following compounds would not form a silver mirror with Tollen's reagent–

(1) R.CHO (2) Ar.CHO (3) $CH_3.CO.R$ (4) $R-\underset{\underset{O}{\|}}{C}-\underset{\underset{O}{\|}}{C}-H$

7. Acetaldehyde on warming with Fehling solution gives a red precipitate of –

(1) Elemental copper (2) Cuprous oxide

(3) Cupric oxide (4) Mixture of all of the above

8. If acetaldehyde is treated with Benedict's or Fehling's solution, the following change occurs in the system–

(1) $Ag^{+} \rightarrow Ag^{o}$ (2) $Cu^{+2} \rightarrow Cu^{o}$ (3) $Cu^{+2} \rightarrow Cu^{+}$ (4) $Na^{+} \rightarrow Na^{o}$

9. For distinction between CH_3CHO and C_6H_5CHO the reagent used is–

(1) KCN (2) HCN (3) NH_2OH (4) PCl_5

10. $CH_3–CH = CH.CHO$ is oxidised to

$CH_3CH = CH.COOH$ by using–

(1) Alkaline $KMnO_4$ (2) Selenium dioxide

(3) Osmium tetroxide (4) Ammoniacal $AgNO_3$

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NEET-CHEMISTRY **ELP NO.- 4**

ALDEHYDES, KETONES, CARBOXYLIC ACID & DERIVATIVES

1. Acetaldehyde and acetone can be distinguished by all the following except–

(1) Iodine + alkali (2) Tollen's reagent (3) Fehling solution (4) Schiff reagent

2. Schiff's reagent is–

(1) Magenta solution decolourised with sulphur dioxide

(2) Magenta solution decolourised with chlorine

(3) Ammonical cobalt chloride solution

(4) Ammonical manganese sulphate solution

3. Which of the following does not turn schiff's reagent to pink –

(1) Formaldehyde (2) Benzaldehyde (3) Acetone (4) Acetaldehyde

4. $C_2H_2 \xrightarrow[\text{Dil}H_2SO_4]{HgSO_4} P \xrightarrow{(O)} Q \xrightarrow[\text{Pyridine}]{SOCl_2} R \xrightarrow{(C_2H_5)_2Cd} S$

The end product in the above sequence of reactions is–

(1) Ethylethanal (2) 2-butanone (3) Propanal (4) Propanone

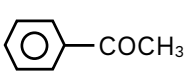
5. Main product obtained by the oxidation of C2H5COC3H7 by acidified dichromate–

(1) C_3H_7COOH (2) C_2H_5COOH (3) C_3H_8 (4) CH_3COOH

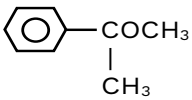
6. Following is chemoselective for the reduction of carbonyl compounds to corresponding alcohol–

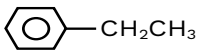
(1) $LiAlH_4$ (2) $\{(CH_3)_2CHO\}$ Al / $(CH_3)_2CHOH$

(3) B_2H_6 (4) H_2/Pt

7. 

$\xrightarrow[\text{(ii) alcoholic KOH}]{\text{(i) } NH_2-NH_2}$ product X is:

(1) 

(2) 

(3) Both correct (4) None is correct

8. $CH_3CHO \xrightarrow{Al(OC_2H_5)_3} A \xrightarrow{C_2H_5ONa} B$; 'A' and 'B' are –

(1) $CH_3COOC_2H_5$, $CH_3COCH_2COOC_2H_5$
(Tischenko) (Claisen)

(2) CH_3COOH, $CH_3COOC_2H_5$

(3) CH_3COOH, C_2H_5OH

(4) All incorrect

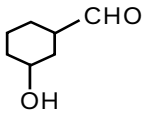
9. Which one of the following reactions can be used to distinguish between benzaldehyde and benzyl alcohol–

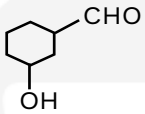
(1) $KMnO_4$/oxidation

(2) CrO_3 oxidation

(3) Sodium metal

(4) Flame test

10. 

forms 

on reaction with–

(1) $K_2Cr_2O_7 + H_2SO_4$

(2) Ag_2O/OH^-

(3) $KMnO_4$

(4) All of these

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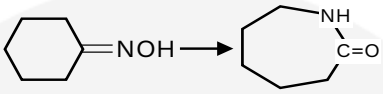
NEET-CHEMISTRY **ELP NO.-5**

ALDEHYDES, KETONES, CARBOXYLIC ACID & DERIVATIVES

1. The following preparation of caprolactum form the oxime of cyclohexanone involves are arrangement called –



(1) Pinacol-Pinacolone rearrangement

(2) Claisen rearrangement

(3) Beckmann rearrangement

(4) Curtius rearrangement

2. A mixture of benzladehyde and formaldehyde on heating with aqueous NaOH solution gives –

(1) Benzyl alcohol and sodium formate

(2) Sodium benzoate and methyl alcohol

(3) Sodium benzoate and sodium formate

(4) Benzyl alcohol and methyl alcohol

3. Which one of the following compounds will give dimethyl glyoxal with SeO_2:

(1) Acetone (2) Acetophenone

(3) Ethyl methyl ketone (4) Propanaldehyde

4. Which of the following is correct increasing order of the boiling point of given compounds?

$CH_3-\underset{\underset{O}{\|}}{C}-CH_3$ (I) $C_2H_5-O-CH_3$ (I) $CH_3-CH_2-CH_2-CH_2-OH$ (I)

(1) III < I < II (2) I < II < III (3) II < I < III (4) I < III < II

5. The number of aldols formed by CH_3CHO and CH_3-CH_2-CHO is–

(1) 2 (2) 3 (3) 4 (4) 1

6. $2D-\overset{\overset{D}{|}}{C}=O+OH^- \xrightarrow{\text{Cannizzaro}}$ X and Y

(Y is alcohol, D is deuterium)

X and Y will have structure–

(1) $D-\underset{\underset{H}{|}}{\overset{\overset{D}{|}}{C}}-\bar{O},D-\underset{\underset{C}{||}}{\overset{\overset{O}{||}}{}}-OH$

(2) $D-\underset{\underset{D}{|}}{\overset{\overset{D}{|}}{C}}-\bar{O},D-\underset{\underset{C}{||}}{\overset{\overset{O}{||}}{}}-OH$

(3) $H-\underset{\underset{C}{||}}{\overset{\overset{O}{||}}{}}-\bar{O},D-\underset{\underset{D}{|}}{\overset{\overset{D}{|}}{C}}-OH$

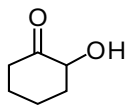
(4) None is correct

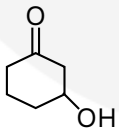
7. Which of the amino group in semi carbazide will react with carbonyl group:

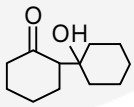
$$\underset{(1)}{H_2N}-\overset{\overset{O}{||}}{C}-\underset{(2)}{NH}-\underset{(3)}{NH_2}$$

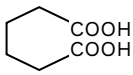
(1) 1 (2) 2 (3) 3 (4) 1 & 3

8. When cyclohexanone is treated with Na_2CO_3 solution, we get

(1) 

(2) 

(3) 

(4) 

9. Principal product of following reaction is isolated in form of :

$CH_2 = C = O + H_2S \rightarrow ?$

(1) $CH_2=\underset{\underset{SH}{|}}{\overset{\overset{SH}{|}}{C}}$

(2) $CH_3\overset{\overset{O}{||}}{C}-SH$

(3) $CH_3\underset{\underset{S}{||}}{C}-OH$

(4) $CH_2=\overset{\overset{OH}{|}}{C}-SH$

10. Above compound is hydrated maximum at which position?

(1) 1 (2) 2 (3) 3 (4) Equal

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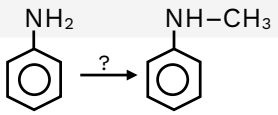
NEET-CHEMISTRY **ELP NO.-1** **AMINES**

1. Arrange the following in the correct order of their Basic character in gaseous phase

(a) NH_3 (b) RNH_2 (c) R_2NH (d) R_3N

(1) d > c > b > a (2) c > d > b > a (3) c > b > d > a (4) a > b > c > d

2. For the following conversion, which of the given reagents would be preferred?



(1) CH_3I (2) C_6H_5Cl (3) CH_4 (4) CH_3NH_2

3. 2, 4, 6-tribromo aniline is obtained by

(1) Electrophilic addition on $C_6H_5NH_2$ (2) Electrophilic substitution on $C_6H_5NH_2$

(3) Nucleophilic addition on $C_6H_5NH_2$ (4) Nucleophilic substitution on $C_6H_5NH_2$

4. **Assertion:** Benzylamine is more basic than aniline

Reason: $-NH_2$ group is an electron releasing group.

(1) A and R are true and R is the correct explanation of A

(2) A and R are true but R is the not the correct explanation of A

(3) A is true R is false

(4) A is false R is true

5. Correct order of the basicity of the following compounds:

(a) NH_3 (b) CH_3NH_2 (c) $C_6H_5NH_2$

(1) c > b > a (2) b > c > a (3) b > a > c (4) a = b = c

6. Aniline dissolves in aqoues HCl due to the formation of

(1) Anilinium chloride (2) o–chloroaniline

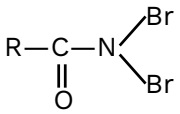
(3) Azodye (4) Diazonium chloride

7. Which of the following amines cannot be synthesized by Gabriel phthalimide reaction

(1) Benzylamine (2) Aniline

(3) Ethylamine (4) Methylamine

8. Identify the correct intermediates of Hoffmann Bromamide reaction:

(a) RCONHBr (b) $\left[R-CO\overset{\ominus}{N}-Br\right]Na^{+}$ (c) RNCO (d) 

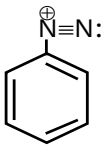
(1) a and c (2) a, b, c (3) a, b, c, d (4) a, c, d

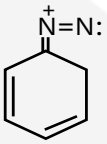
9. Aniline reacts with HCl and forms 'X'. The type of bonds X are:

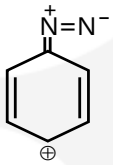
(1) Ionic, covalent (2) Ionic, covalent, coordinate bond

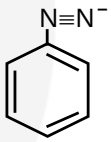
(3) Only covalent (4) Only Ionic

10. Choose the incorrect resonance structure of Benzene Diazonium ion :

(1) 

(2) 

(3) 

(4) 

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NEET-CHEMISTRY **ELP NO.-2** **AMINES**

1. Aniline doesn't react with :

(1) Dil.HCl (2) Dil.NaOH (3) CH_3COCl (4) Br_2 water

2. How many isomeric ammines with the formula C_7H_9N contain a benzene rings:

(1) Two (2) Three (3) Four (4) Five

3. Ethyl isocyanide is prepared by the reaction between.

(1) C_2H_5Br + KCN (2) C_2H_5Br + AgCN (3) C_2H_5Br + HCN (4) C_2H_5Br + NH_3

4. Which of the following reagents may be used for the given conversion:

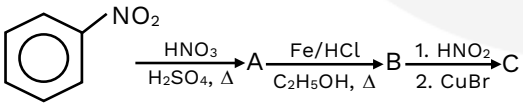
$$CH_3CH_2Br \longrightarrow C_2H_5CN$$

(1) Alcoholic KCN (2) Alcoholic AgCN (3) NH_3 (4) None of these

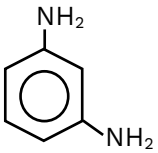
5. The hybridization of "N" atom in Pyridine is

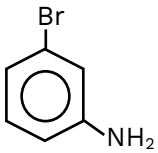
(1) sp^2 (2) sp^3 (3) sp (4) None

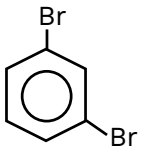
6.

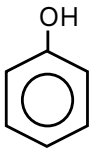


'C' is

(1) 

(2) 

(3) 

(4) 

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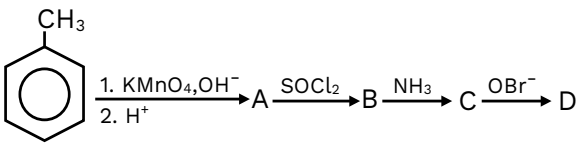
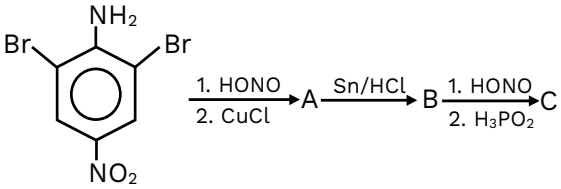
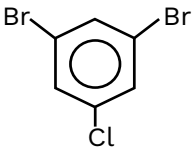


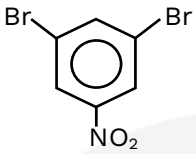
D is

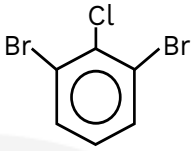
(1) $C_6H_5CONH_2$ (2) P—$CH_3C_6H_4NO_2$ (3) $C_6H_5CH_2NH_2$ (4) $C_6H_5NH_2$

8. 

'C' is

(1) 

(2) 

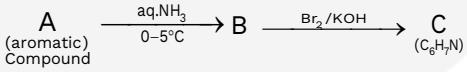
(3) 

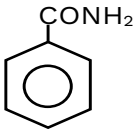
(4) None of these

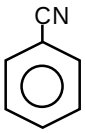
9. What type of ammine is t-Butylamine

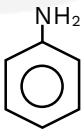
(1) Primary (2) Secondary (3) Tertiary (4) Quaternary

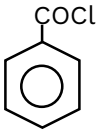
10. For the following conversion, the compound 'A' may be:



(1) 

(2) 

(3) 

(4) 

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ELP

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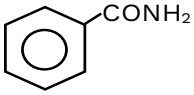
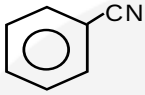
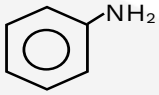
NEET-CHEMISTRY **ELP NO.-3** **AMINES**

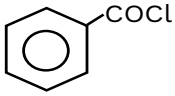
1. $\underset{\text{(aromatic) Compound}}{A} \xrightarrow[0-5°C]{aq.NH_3} B \xrightarrow{Br_2/KOH} \underset{(C_6H_7N)}{C}$

The compound "B" is

(1) 

(2) 

(3) 

(4) 

2. $\underset{\text{(aromatic) Compound}}{A} \xrightarrow[\Delta]{aq.NH_3} B \xrightarrow{Br_2,KOH} \underset{(C_6H_7N)}{C}$

For above sequence, the conversion of B to C is

(1) Hofmann Bromamide degradation

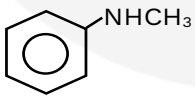
(2) Bromoform reaction

(3) Wurtz Fittig reaction

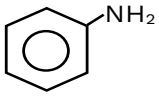
(4) Hofmann mustard oil reaction

3. Which of the following has the maximum pK_b value

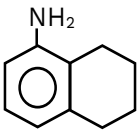
(1) $CH_3CH_2NH_2$

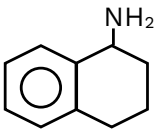
(2) 

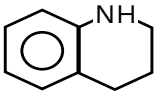
(3) $(CH_3CH_2)_2NH$

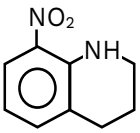
(4) 

4. Which of the following is the strongest base:

(1) 

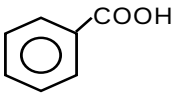
(2) 

(3) 

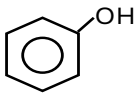
(4) 

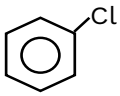
5. $C_6H_6 \xrightarrow[\Delta]{HNO_3, H_2SO_4} W \xrightarrow{Zn/HCl} X \xrightarrow{NaNO_2+HCl} Y \xrightarrow[H_3PO_2]{H_2O} Z$

"Z" is:

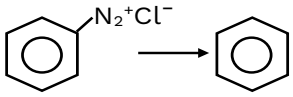
(1) 

(2)

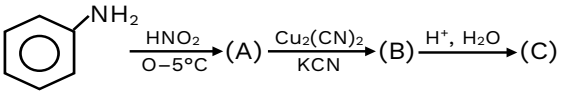
(3) 

(4) 

6. Which of the following can be used for the conversion



(1) H_3PO_3 (2) C_2H_5OH (3) H_2O (4) HBF_4

7. 

'C' is

(1) $C_6H_5CH_2NH_2$ (2) C_6H_5COOH (3) C_6H_5OH (4) All of the above

8. Which of the following shows optical activity ?

(1) Butan-1-amine (2) Butan-2-amine (3) Isopropyl amine (4) Ethyl methyl amine

9. Which one of the following is the strongest base in aqueous solution

(1) Trimethyl amine (2) Aniline (3) Dimethyl amine (4) Methyl amine

10. Amongst the following, the most appropriate for preparing 2° amine:

(1) 2° R—Br + NH_3

(2) 2° R–Br + NaCN followed by H_2/Pt

(3) R—NH_2 + RCHO followed by H_2/Pt

(4) 1° R–Br (2 mole) + potassium phthalimide by H_3O^+/Δ

11. Which of the following amides will not undergo Hoffmann Bromamide reaction

(1) CH_3CONH_2 (2) $CH_3CH_2CONH_2$ (3) $C_6H_5CONH_2$ (4) $CH_3CONHCH_3$

12. $CaC_2 \xrightarrow{H_2O} A \xrightarrow[\text{Cu tube}]{\text{Red hot}} B \xrightarrow[H_2SO_4]{HNO_3+} C \xrightarrow{Fe+HCl} D \xrightarrow[+HCl]{NaNO_2} E$

'E' is:

(1) Aniline black (2) Benzene diazonium chloride

(3) Phenyl Osazone (4) Benzoyl chloride

13. Which of the following compound gives a product with foul smell when reacted with chloroform in presence of an alkali

(1) $(CH_3)_2NH$ (2) CH_3NH_2 (3) $CH_3-\overset{\overset{O}{\|}}{C}-NH_2$ (4) $CH_3-\underset{\underset{CH_3}{|}}{N}-NH_2$

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ELP

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NEET-CHEMISTRY **ELP NO.-1** **BIOMOLECULES**

1. When glucose reacts with Br water, the product will be :

(1) Gluconic acid (2) Saccharic acid (3) n-Hexane (4) Tartaric acid

2. Which of the following reagent used to convert glucose into saccharic acid ?

(1) Br_2 water (2) HI, Δ (3) Nitric acid (4) Ammonium hydroxide

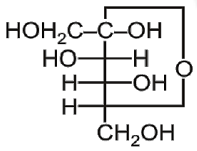
3. How many of given compound is/are monosaccharides ?

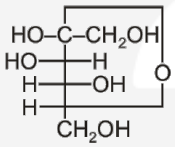
(a) Glucose (b) Mannose (c) Fructose (d) Galactose

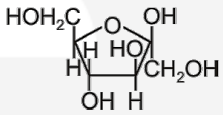
(e) Lactose (f) Sucrose (g) Ribose

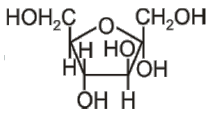
(1) 6 (2) 5 (3) 4 (4) 3

4. Which of the following is β-D-fructose (β–D–(–)-Fructofuranose) ?

(a) 

(b) 

(c) 

(d) 

(1) b, c (2) a, c (3) a, d (4) b, d

5. Which of the following statement is incorrect ?

(1) Monosaccharides are those carbohydrates which upon hydrolysis gives simpler unit of polyhydroxy aldehyde or ketone.

(2) Maltose and Lactose are reducing sugar.

(3) Oligosaccharides are those carbohydrate which are hydrolysed to give 2 to 10 unit of monosaccharides.

(4) Fructose is ketohexose.

6. Polymer of β-D-glucopyranose is ?

(1) Starch (2) Amylose (3) Cellulose (4) Glycogen

7. Which of the following statement is incorrect ?

(1) Sucrose does not form osazone.

(2) All monosaccharides are reducing sugar.

(3) D-glucose and D-mannose are C-2 epimer.

(4) Sucrose is laevorotatory compound.

8. Amylopectin is composed of :

(1) α-D-glucose, C1-C4 and C1-C6 glycosidic linkage.

(2) α-D-glucose, C1-C4 glycosidic linkage.

(3) β-D-glucose, C1-C4 and C1-C6 glycosidic linkage.

(4) β-D-glucose, C1-C4 glycosidic linkage.

9. Which of the following given statement is incorrect about glucose ?

(1) Glucose exists in two crystalline forms α and β.

(2) Glucose form hydrogensulphite addition product with $NaHSO_3$.

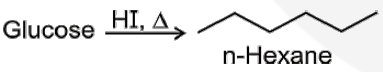
(3) Pentaacetate of glucose does not form oxime.

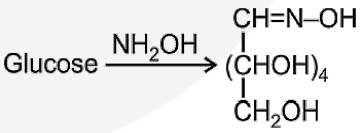
(4) Glucose forms oxime with hydroxylamine.

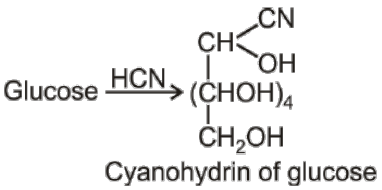
10. α-D-glucose and β-D-glucose are :

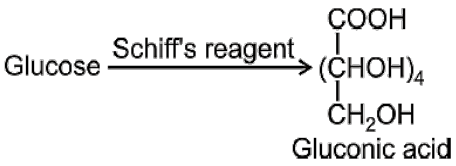
(1) Anomer (2) Homologous (3) Enantiomer (4) All of the above

11. Which of the following reaction is incorrect ?

(1) 

(2) 

(3) 

(4) 

12. Match the following :

(a)	Cellulose	(p)	Peptide linkage
(b)	Protein	(q)	β-glycosidic linkage
(c)	Glucose	(r)	Non reducing sugar
(d)	Sucrose	(s)	Mutarotation

(1) a $\rightarrow$ q, b $\rightarrow$ p, c $\rightarrow$ s, d $\rightarrow$ r (2) a $\rightarrow$ r, b $\rightarrow$ p, c $\rightarrow$ q, d $\rightarrow$ s

(3) a $\rightarrow$ q, b $\rightarrow$ s, c $\rightarrow$ p, d $\rightarrow$ r (4) a $\rightarrow$ s, b $\rightarrow$ r, c $\rightarrow$ p, d $\rightarrow$ q

13. Maltose upon hydrolysis gives :

(1) D-Galactose and D-Glucose (2) D-Glucose

(3) D-Glucose and D-Fructose (4) D-Fructose

14. Which of the following statement is incorrect :

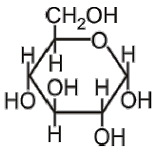
(1) Lactose is a disaccharide and it contains 8 hydroxyl groups.

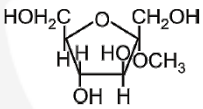
(2) Starch is a polymer of β-D-glucose.

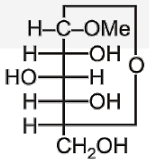
(3) All monosaccharides are reducing sugar.

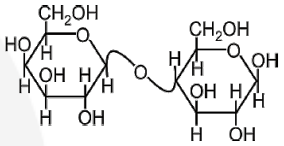
(4) Melting point of β-glucose is more than α-glucose.

15. Which of the following is/are nonreducing sugar ?

(a) 

(b) 

(c) 

(d) 

(1) a, b, d (2) b, c, d (3) b, c (4) c, d

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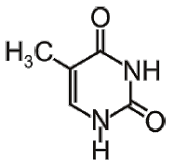
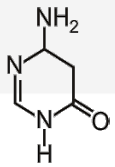
NEET-CHEMISTRY **ELP NO.-2** **BIOMOLECULES**

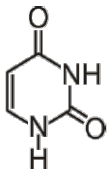
1. Which of the following vitamin can be stored in our body ?

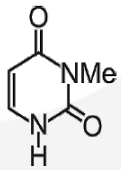
(1) B_1 (2) B_2 (3) B_6 (4) B_{12}

2. Among the following compound which one is found in RNA ?

(1) 

(2) 

(3) 

(4) 

3. Which of the following statement is incorrect ?

(1) Cellulose acetate is called rayon.

(2) Glycogen is also found in yeast and fungi.

(3) Fibrous protein generally insoluble in water and globular protein usually soluble in water.

(4) Insulin and albumin are fibrous protein

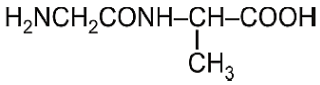
4. Which of the following is non-essential amino acid ?

(1) Alanine (2) Valine (3) Leucine (4) Threonine

5. The number of amino acids and peptide bonds in a tripeptide respectively :

(1) 3, 2 (2) 2, 3 (3) 3, 3 (4) 2, 2

6. The name of given dipeptide is :



(1) Glycyl alanine (2) Glycyl glycine (3) Glycine alanine (4) Alanine glycine

7. Pyrimidine bases present in nucleic acids is/are ?

(a) Uracil (b) Thiamine (c) Cytosine (d) Adenine (e) Guanine

(1) a, b, c (2) d, e (3) a, c (4) b, c

8. Match the following:

Column-I		**Column-II**	
(i)	Riboflavin	(A)	Beriberi
(ii)	Thiamine	(B)	Scurvy
(iii)	Pyridoxine	(C)	Cheilosis
(iv)	Asciorbic Acid	(D)	Convulsions

(1) i $\rightarrow$ C; ii $\rightarrow$ A; iii $\rightarrow$ D; iv $\rightarrow$ B (2) i $\rightarrow$ C; ii $\rightarrow$ D; iii $\rightarrow$ A; iv $\rightarrow$ B

(3) i $\rightarrow$ A; ii $\rightarrow$ D; iii $\rightarrow$ C; iv $\rightarrow$ B (4) i $\rightarrow$ D; ii $\rightarrow$ B; iii $\rightarrow$ A; iv $\rightarrow$ C

9. Which pairing is found in DNA :

(1) Adenine with thymine (2) Thymine with guanine

(3) Guanine with adenine (4) Uracil with adenine

10. Thymine is :

(1) 5-Methyluracil (2) 4-Methyluracil (3) 3-Methyluracil (4) 1-Methyluracil

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ELP

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NEET-CHEMISTRY **ELP NO.-1**

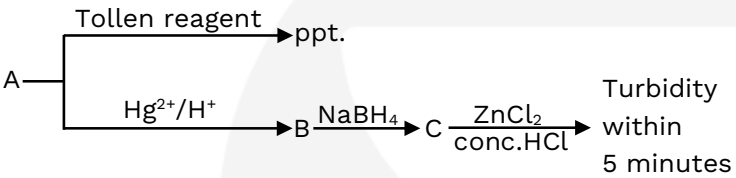
PRACTICALS RELATED TO ORGANIC CHEMISTRY

1. From amongst the following alcohols the one that would react fastest with cone. HCl and anhydrous $ZnCl_2$, is:

(1) 1-Butanol (2) 2-Butanol

(3) 2-Methylpropan-2-ol (4) 2-Methylpropanol

2. Consider the following reactions



'A' is :

(1) $CH \equiv CH$ (2) $CH_3 - C \equiv CH$

(3) $CH_2 = CH_2$ (4) $CH_3 - C \equiv C - CH_3$

3. 2,4-DNP test can be used to identify:

(1) Amine (2) Aldehyde (3) Ether (4) Halogens

4. Ceric ammonium nitrate and $CHCl_3$/alc. KOH are used for the identification of functional groups present in _____ and _____ respectively.

(1) Alcohol, phenol (2) Amine, alcohol

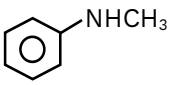
(3) Alcohol, amine (4) Amine, phenol

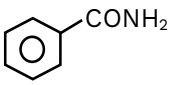
5. Primary amine + $CHCl_3$ + KOH $\rightarrow$ product, here product will be:

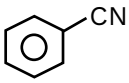
(1) Cyanide (2) Isocyanide

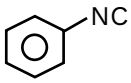
(3) Amine (4) Alcohol

6. Carbylamine test is used to detect the presence of primary amino group in an organic compound. Which of the following compound is formed when this test is performed with aniline?

(1) 

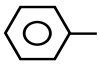
(2) 

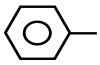
(3) 

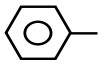
(4) 

7. Hinsberg reagent is .....I..... which reacts with .....II..... amines to form sulphonamides Identify I and 11 for the given statement and choose the correct option.

(1) I → SO_2Cl; II → Primary and secondary

(2) I →  SO_2Cl; II → secondary and tertiary

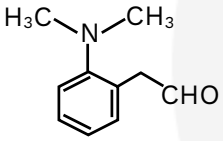
(3) I →  CH_2Cl; II → Primary and secondary

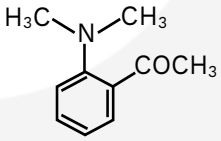
(4) I →  CH_2Cl; II → secondary and tertiary

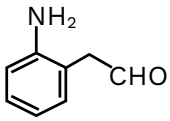
8. The test performed on compound X and their inferences are:

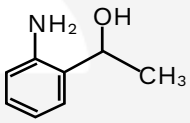
Test	**Inference**
(i) 2,4-DNP test	Coloured precipitate
(ii) Iodoform test	Yellow precipitate
(iii) Azo-dye test	No dye formation

Compound 'x' is:

(1) 

(2) 

(3) 

(4) 

9. The compound that do not liberate CO_2, on treatment with aqueous sodium bicarbonate solution, is:

(1) Benzoic acid
(2) Benzene sulphonic acid
(3) Salicylic acid
(4) Carbolic acid

10. Which of the following tests are correctly matched?

(1) Phenol – Phthalein test
(2) Benzyl amine – Azo dye test
(3) Protein – Molisch test
(4) CH_3CONH_2 – Carbylamine test

11. Which of the following statements is incorrect?

(1) Phenol gives positive bromine water test.
(2) Aniline gives foul smelling compound on reaction with $CHCl_3$ + KOH.
(3) Formic acid gives positive Tollen's test.
(4) Nitrobenzene gives positive Tollen's test.

12.

Column I	**Column II**
(Functional group)	**(Test for detection**
(a) Carboxyl group	(i) Lucas test
(b) Alcoholic group	(ii) Neutral FeCl3 t ~ t
(c) Phenolic group	(iii) Carbyhunine te 't
(d) Amino group	(iv) Sodhtm bic·1rb 11 ·1t

(1) (a) → (iv); (b) → (i); (c) → (ii); (d) → (iii)

(2) (a) → (i); (b) → (iv); (c) → (ii); (d) → (iii)

(3) (a) → (iv); (b) → (ii); (c) → (i); (d) → (iii)

(4) (a) → (i); (b) → (ii); (c) → (iv); (d) → (iii)

13. Primary, secondary and tertiary amines can be separated using:

(1) Para-Toluene sulphonyl chloride

(2) Chloroform and KOH

(3) Benzene sulphonic acid

(4) Acetyl amide

14. Hinsberg's reagent is:

(1) $C_6H_5SO_2Cl$ (2) C_6H_5COCl (3) $SOCl_2$ (4) $(COCl)_2$

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ELP

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ANSWER KEY **SOLUTION**

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	2	3	4	1	1	2	3	2	2	4

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	2	1	1	1	4	3	3	1	1

ELP-3

Que.	1	2	3	4	5	6	7
Ans.	1	2	3	1	4	1	3

ELP-4

1	2	3	4	5	6	7	8	9	10
4	1	3	2	2	1	1	3	1	4

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	3	1	3	3	2	4	1	2	1

ELP-6

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	4	3	2	3	2	1	2	1	3

ELP-7

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1,2	i-e, ii-c, iii-d, iv-b, v-a	1	3,4	1	1	1	2,3	1,4	4

ELP-8										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	3	1	1	1	2	1	2	3	1	1

ELP-9										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	2	2	1	3	4	1	1	2	2	2

ELP-10										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	3	1,2	1,3	2	2,3	1,2	(i-c, ii-e, iii-d, iv-a, v-b)	1	2	(i-d, ii-c, iii-a, iv-b, v-f, vi-e)

ELP-11										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	1	1	4	3	2	1	1	2	2	4

ELP-12										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	2	3	2	3	1	4	3	1	2	2

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ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12
Ans.	2	1	2	1	2	2	1	2	4	3	4	1

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12
Ans.	3	4	2	1,2	2	1,2	1,3	1	3	4	1	1

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	2	1	1	2	3	3	3	3	2

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	1	3	3	3	2	3	2	2	1

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	2	3	2	4	1	1	2	1	3	3

ELP-6

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	2	2	4	4	3	3	3	1,2	1	2,4

ELP-7

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	2	2	4	3	4	2	2	4	2

ELP-8

Que.	1	2	3	4	5
Ans.	3	1	1	1	5

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ELP

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ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11
Ans.	3	3	3	3	2	1	1	2	3	3	1

ELP-2

Que.	1	2	3	4	5	6	7	8	9
Ans.	2	4	4	3	4	3	1	3	2

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	2	4	2	4	2	3	1	3	1

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	3	1	4	3	2	2	5	4	3

ELP-5

Que.	1	2	3	4	5	6	7	8
Ans.	1	2	1,4	4	(i) b, (ii) a, (iii) d, (iv) c	4	3	3

ELP-6

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	3	1,4	2	4	4	(i) $\rightarrow$ a, (ii) $\rightarrow$ b, (iii) $\rightarrow$ b, (iv) $\rightarrow$ a	1	1,4	4

ELP-7

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	2	1	3	2	1	2	2	2	3	2

ELP-8										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	3	3	3	1	2	1	2	3	3	1

ELP-9										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	4	4	1	1	4	1	4	3	1	3

ELP-10										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	1	2	4	1	4	2	4	1	1	3

ELP-11											
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Ans.	3	2	2	1	2, 4	3	2	1,4	1	4	3

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ELP

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ANSWER KEY **PRACTICALS RELATED TO PHYSICAL CHEMISTRY**

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ans.	1	4	4	4	3	1	1	1	2	3	4	3	4	2

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	3	4	4	1	2	3	2	4	1	1	4	4	3	3	3

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	3	4	4	2	4	3	3	4	4	1	4	3	1	2

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ELP

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ELP-1

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	4	2	2	2	2	4	4	4	3	3

ELP-2

Que.	1	2	3	4	5	6	7	8
Ans.	3	3	1	4	1	3	1	2

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	3	2	3	3	1	1	3	1	3	3	2	1	2	3	3
Que.	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Ans.	2	3	3	2	2	1	1	2	1	2	3	2	1	3	3

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	1	1	4	3	3	3	1	4	1	3	2	4	4	2	4
Que.	16	17	18	19	20	21	22	23	24						
Ans.	4	1	4	1	3	1	2	3	1						

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	1	3	3	3	1	1	3	1	1	1	3	2	3	4	3
Que.	16	17	18	19	20										
Ans.	1	3	1	3	2										

ELP-6

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	2	4	3	1	1	3	1	4	3	2

ELP-7

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	2	4	1	4	2	4	3	2	2	1	3	4	1	2
Que.	16	17	18	19	20	21	22	23	24	25					
Ans.	2	2	2	4	4	2	3	2	1	1					

ELP-8

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	3	1	3	4	2	4	1	2	3	3	1	3	3	2	1
Que.	16	17													
Ans.	1	3													

ELP-9

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	1	1	3	4	4	4	2	2	2	3	1	4	1	4
Que.	16	17	18	19	20										
Ans.	1	1	2	4	4										

ELP-10

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	1	2	3	1	3	2	4	3	4	2	1	2	4	4	3

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ELP

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ANSWER KEY **CHEMICAL BONDING**

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	3	2	2	1	1	4	4	3	3	3	4	1	1	2	3
Que.	16	17	18	19	20										
Ans.	2	1	2	4	2										

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	3	4	1	2	4	1	2	2	4	2	2	3	3	4
Que.	16	17	18	19	20										
Ans.	4	4	1	1	3										

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	4	2	3	4	3	2	3	4	3	1	4	4	4	1	3
Que.	16	17	18	19	20										
Ans.	4	4	1	1	2										

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	3	4	4	4	3	4	2	1	3	4	4	1	2	4	3
Que.	16	17	18	19	20										
Ans.	3	2	2	1	4										

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	4	3	3	2	2	3	2	2	3	3	1	2	3	3	2
Que.	16	17	18	19	20										
Ans.	3	4	4	1	1										

ELP-6

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	NA	1	4	2	2	2	1	4	2	4	3	2	4	1	2
Que.	16	17	18												
Ans.	2	2	4												

ELP-7

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	2	4	2	4	2	4	1	4	1	4	1	1	1	1
Que.	16	17	18	19	20										
Ans.	4	1	2	1	4										

ELP-8

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	3	2	4	2	1	3	4	1	3	2	4	1	3	3
Que.	16	17	18	19	20										
Ans.	1	1	1	3	4										

ELP-9

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	1	2	1	3	3	4	2	1	4	2	1	2	4	4	4
Que.	16	17	18	19	20										
Ans.	1	1	2	3	3										

ELP-10

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	3	2	1	2	2	3	2	2	2	2	1	4	3	3	4
Que.	16	17	18	19	20										
Ans.	3	3	3	3	3										

ELP-11

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	4	4	1	2	1	4	1	4	2	2	1	3	1	20
Que.	16	17	18	19	20										
Ans.	1	4	1	1	2										

ELP-12

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	4	2	4	1	2	1	3	1	1	2	1	1	4	1	4
Que.	16	17	18	19	20										
Ans.	1	1	1	3	1										

ELP-13

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	2	1	3	2	1	4	4	2	2	1	2	3	3	3
Que.	16	17	18	19	20										
Ans.	2	4	1	1	4										

ELP-14

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	1	3	4	3	2	4	3	1	4	4	2	1	3	2
Que.	16	17	18	19	20										
Ans.	1	1	4	2	4										

ELP-15

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	3	4	3	2	3	1	4	4	1	3	2	4	4	1	2
Que.	16	17	18	19											
Ans.	1	3	4	1											

ELP-16

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	4	3	1	4	2	2	1	2	2

ELP-17

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	4	2	4	2	1	4	4	3	3	2	3	2	4	3	4

ELP-18

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	4	4	1	4	3	3	4	1	4	2	2	4	2	4	1
Que.	16	17	18	19											
Ans.	1	3	2	2											

ELP-19

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13
Ans.	3	3	1	4	2	2	4	3	2	3	2	4	1

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ELP

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ANSWER KEY **CO-ORDINATION COMPOUNDS**

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	3	4	1	3	2	3	2	2	3	1	4	4	2	4	3
Que.	16	17	18	19	20	21									
Ans.	4	1	2	2	2	4									

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	4	2	3	3	2	1	1	1	1	3	2	2	2	3	4
Que.	16	17	18	19											
Ans.	2	2	3	1											

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	3	2	4	4	1	2	3	4	1	2	2	3	4	1	2
Que.	16	17													
Ans.	4	3													

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	3	4	2	1	1	2	1	1	3	3	1	4	2	2	2
Que.	16	17	18	19	20										
Ans.	2	2	1	2	4										

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ans.	3	1	3	2	2	2	1	3	4	4	2	3	3	3

ELP-6															
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Ans.	3	1	1	2	2	1	2	2	2	3	3	1	3	4	1
Que.	**16**	**17**													
Ans.	4	1													

ELP-7														
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Ans.	3	1	3	2	3	3	4	4	2	2	2	2	3	2

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ELP-1

Que.	1					2							
Ans.	(i) 4 (ii) 4 (iii) 5 (iv) 0 (v) 0 (vi) 0					(i) Fe^{3+} (ii) Cu^{+}, Sc^{3+}, Ti^{4+} $\rightarrow$ Colour less, Fe^{2+}, Mn^{2+}, Cr^{3+} Coloured							
Que.	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	4	4	3	2	1	3	4	1	4	3	2	2
Que.	16	17	18	19	20								
Ans.	1	1	4	3	1								

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	4	1	2	2	3	3	2	1	2	3	1	3	2	1
Que.	16	17	18	19	20	21									
Ans.	1,2	3	1	1	2	2									

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ELP

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ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	4	3	2	1	3	4	3	4	2	4	3	4	1	4	3

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	4	3	3	4	1	2	1	3	4	1	2	2	4	4	2

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	1	2	4	3	4	3	2	1	1	4	4	3	2	4	1

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	1	3	4	3	4	4	4	4	1	2	1	3	3	1	3
Que.	16	17	18	19	20										
Ans.	1	2	3	3	3										

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ans.	4	3	3	1	2	3	2	3	2	3	2	1	3	1

ELP-6

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	4	2	3	3	2	3	2	3	1	4	4	4	4	3	1

ELP-7

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Ans.	1	2	1	2	4	3	4	2	1	4	1	3	3	2	1	1	2

ELP-8															
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Ans.	4	3	2	3	1	3	1	4	2	4	2	1	2	3	3
Que.	**16**	**17**	**18**	**19**											
Ans.	1	1	1	1											

ELP-9															
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Ans.	4	1	3	1	3	3	1	3	1	4	3	3	4	4	1
Que.	**16**	**17**	**18**	**19**											
Ans.	1	3	2	4											

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ELP

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ANSWER KEY **PRACTICALS RELATED TO INORGANIC CHEMISTRY**

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11
Ans.	4	3	3	3	3	4	3	4	1	1	3

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ans.	2	4	2	1	3	2	3	3	3	2	4	1	1	1	1	1

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ELP

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ANSWER KEY **OPTICAL ISOMERISM**

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	1	1	2	1	1	3	3	4	1	4	1	3	4	4

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12
Ans.	3	4	1	3	2	2	4	2	4	3	2	1-D, 2-L, 3-L, 4-D

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ELP

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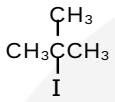
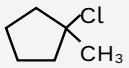
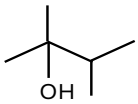
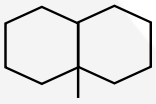
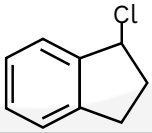
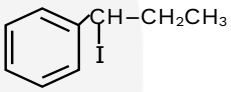
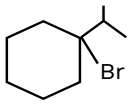
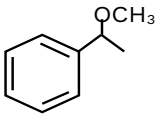
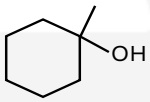
ELP-1

Que.	1	2 (a)	2 (b)	3	4
Ans.	3	 2-Iodo-2-methylpropane	 1-Chloro-1-methylcyclopentane	I > II > III	1

Que.	5 (i)	5 (ii)	5 (iii)	5 (iv)	5 (v)
Ans.					

Que.	5 (vi)	5 (vii)	5 (viii)	6 (a)	6 (b)
Ans.		$F_3C-CH_2-CH_2-Cl$		i > ii > iii	ii > i > iii

Que.	7 (a) (i)	7 (a) (ii)	7 (a) (iii)	7 (b)
Ans.	One	Two	Five	Sec. Butyl cation

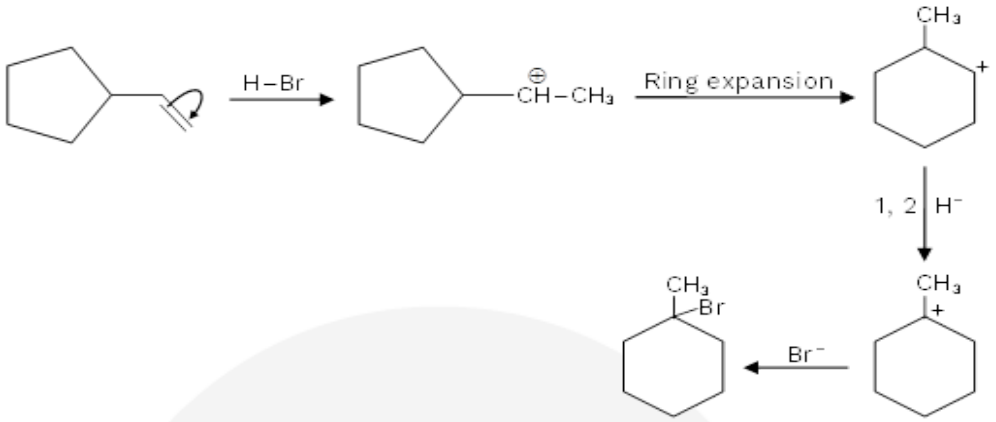
Que.	8	9	10	11	12
Ans.	4	2	3	3	2

ELP-2

Que.	1	2	3	4	5	6	7	8	9
Ans.	2	4	3	3	2	4	2	4	4

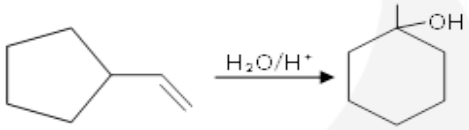
Que. 10 (a)

Ans.



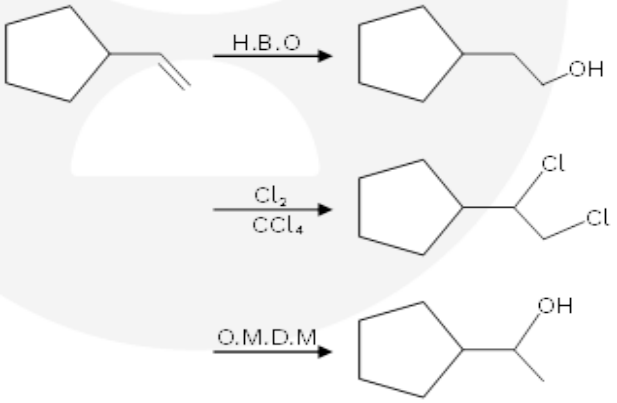
Que. 10 (b)

Ans.



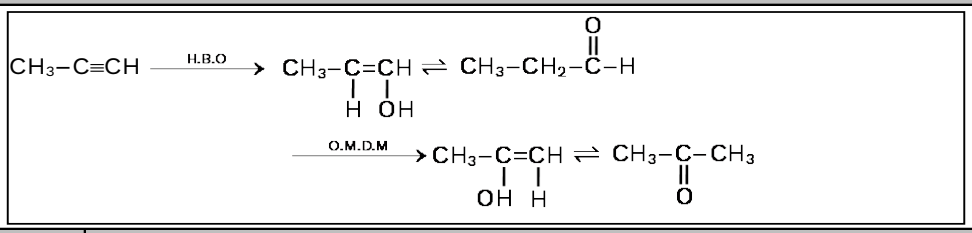
Que. 10 (c)

Ans.



Que. 11

Ans.

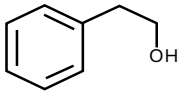
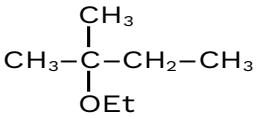
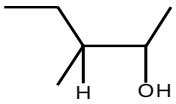
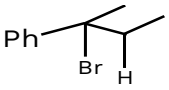


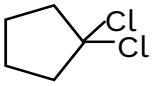
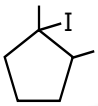
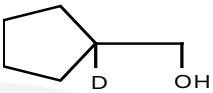
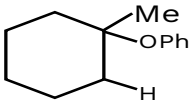
Que.	12	13
Ans.	4	(a) → v, (b) → u, (c) → t, (d) → s, (e) → r, (f) → q, (g) → p

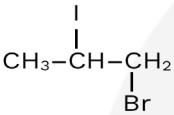
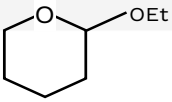
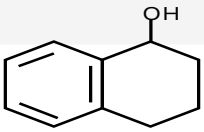
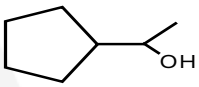
Que. 14

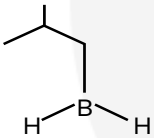
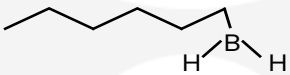
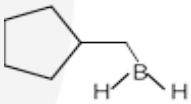
Ans. (a) → r, (b) → p, (c) → s, (d) → q, (e) → p

ELP-3

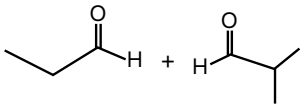
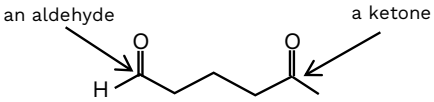
Que.	1	2			
		(i)	(ii)	(iii)	(iv)
Ans.	4				

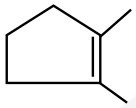
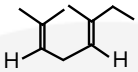
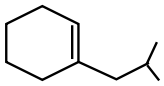
Que.	2			
	(v)	(vi)	(vii)	(viii)
Ans.				

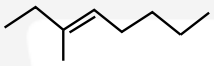
Que.	2			
	(ix)	(x)	(xi)	(xii)
Ans.				

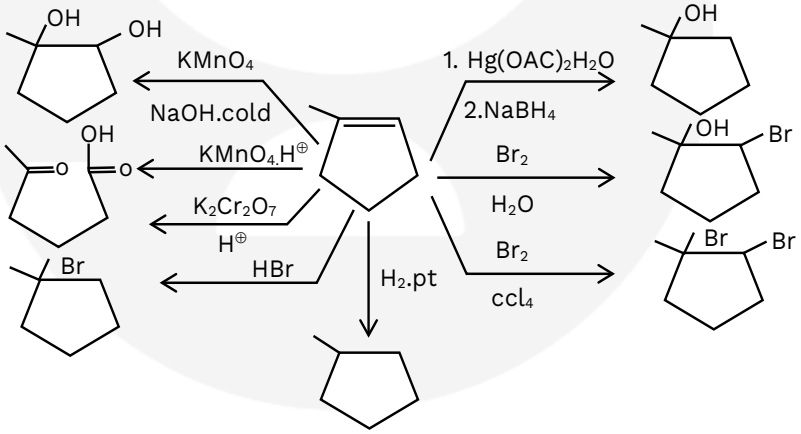
Que.	3		
	(i)	(ii)	(iii)
Ans.			

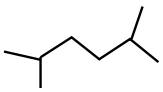
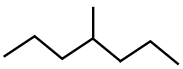
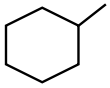
ELP-4

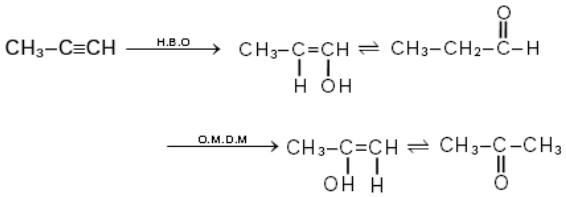
Que.	1	
	(a)	(b)
Ans.	 Propanal (an aldehyde) 2-Methylpropanal (an aldehyde)	 5-Oxohexanal (a ketoaldehyde)

Que.	2		
	(a)	(b)	(c)
Ans.			

Que.	3	4
Ans.	 (X)	4

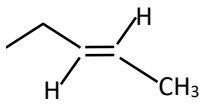
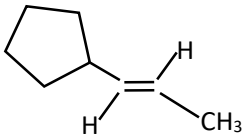
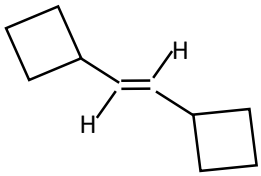
Que.	5
Ans.	

Que.	6		
	(a)	(b)	(c)
Ans.			

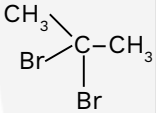
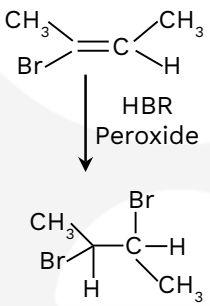
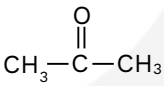
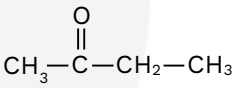
Que.	7	8	9	10
Ans.	4	3	2	

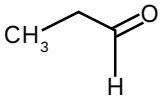
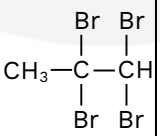
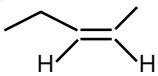
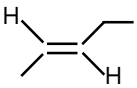
Que.	11	12	13	14	15	16	17	18	19	20
Ans.	1	4	1	4	3	4	4	4	3	4

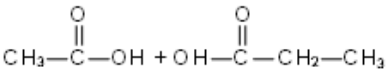
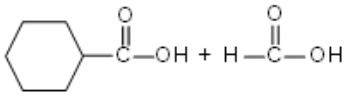
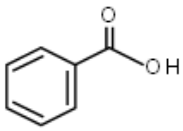
ELP-5

Que.	1		
	1	2	3
Ans.			

Que.	2	
	1	2
Ans.	$\xrightarrow[\text{Lindlar Catalyst}]{H_2}$ $\xrightarrow[\text{liq } NH_3]{Na}$	$\xrightarrow[\text{liq } NH_3]{Na}$ $\xrightarrow[\text{(Pt, Pd or Ni)}]{H_2}$

Que.	3			
	1	2	3	4
Ans.				

Que.	3			
	5	6	7	8
Ans.				

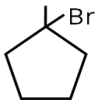
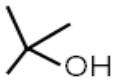
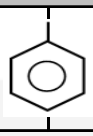
Que.	4	5
Ans.	$\xrightarrow[\text{2. } H_2SO_4\text{(dil.)}]{\text{1. } HgSO_4}$ $\xrightarrow[\text{2. } H_2O_2.OH^{\ominus}]{\text{1. } BH_3.THF}$	1.  2.  3. 2 

ELP-6

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13
Ans.	3	2	1	2	4	1	4	1	1	3	3	3	1

ELP-7

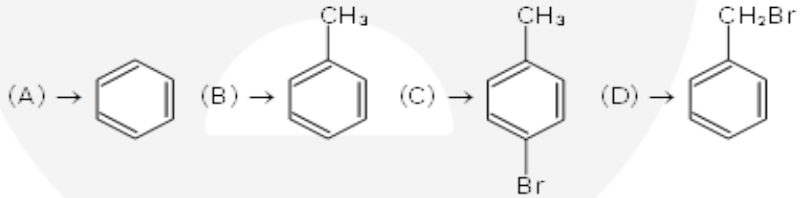
Que.	1	2	3	4	5	6
Ans.	1	4	4	1, 2, 3, 4, 5	3	2

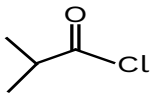
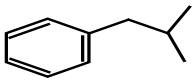
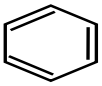
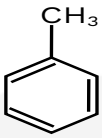
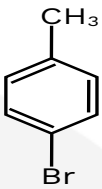
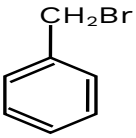
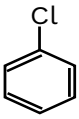
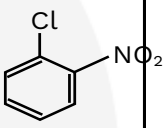
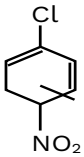
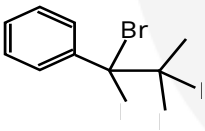
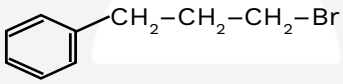
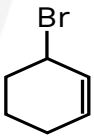
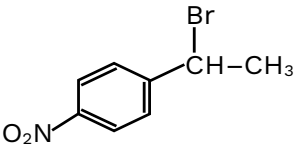
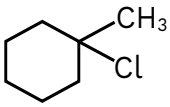
Que.	7				
	1	2	3	4	5
Ans.				$R-SO_3H$	$CH_3-\underset{\underset{NO_2}{\vert}}{CH}-CH_3$ (major)

Que.	8
Ans.	2

ELP-8

Que.	1	2	3	4	5	6	7
Ans.	3	1	2	2	4	4	3

Que.	8
Ans.	

ELP-9							
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Ans.	3	2	1	2	4	P →  Q → 	4
Que.	**8**						
Ans.	(A) →  (B) →  (C) →  (D) → 						
Que.	**9**						
Ans.	A → CH≡CH	B →	C → 	D → 	E → 		
Que.	**10**						
	1	**2**	**3**				
Ans.							
Que.	**10**						**11**
	4		**5**				
Ans.							(i) and (ii)

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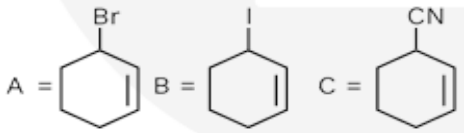
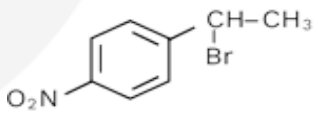
ELP

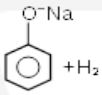
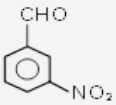
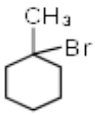
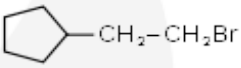
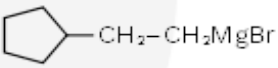
Educator Led Practice

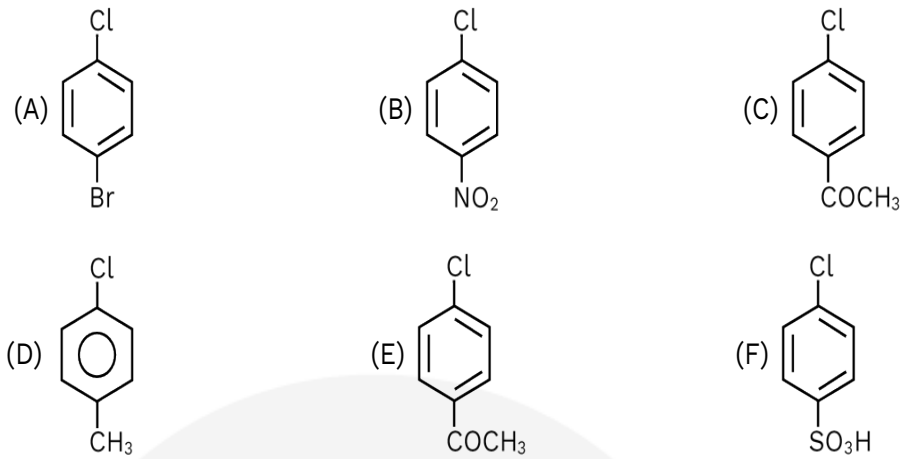
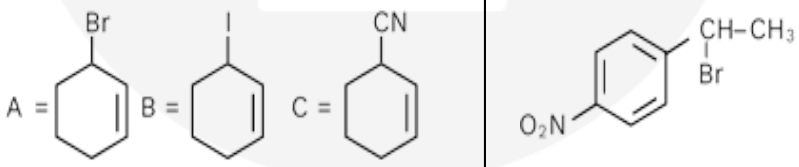
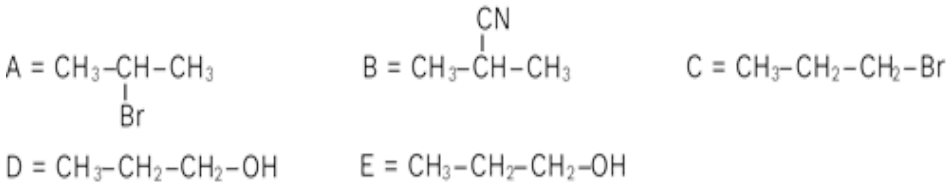
ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12
Ans.	2	1	2	4	2	3	1	1	1, 3	1, 2	1, 4	1, 4

ELP-2

Que.	1	
Ans.	(i) → (3), (ii) → (1), (iii) → (4), (iv) → (2)	
Que.	2	
Ans.	(i) c > b > a, (ii) a > b > c > d, (iii) a > b > d > c	
Que.	3	4
Ans.	(c, e, g)	4
Que.	5	6
Ans.		
Que.	7	8
Ans.	3	3

ELP-3									
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Ans.	4	4	4	3	4	4	2	1	2
Que.	**10**				**11**				
Ans.	(A) (B) (C) (D) (E)  (F) (G)  (H)				(A)  (B) (C) (D)  (E) 				

ELP-4						
Que.	**1**					
Ans.						
Que.	**2**					
Ans.	(i) → (3), (ii) → (1), (iii) → (4), (iv) → (2)					
Que.	**3**					
Ans.	(i) c > b > a , (ii) a > b > c > d, (iii) a > b > d > c					
Que.	**4**	**5**	**6**			
Ans.	(c, e, g)	4	4			
Que.	**7**	**8**	**9**			
Ans.			3			
Que.	**10**					
Ans.						
Que.	**11**	**12**	**13**	**14**	**15**	**16**
Ans.	3	4	4	4	4	3
Que.	**17**	**18**	**19**	**20**	**21**	**22**
Ans.	1	3	2	4	1	4

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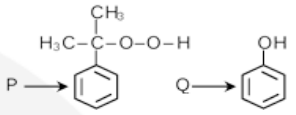
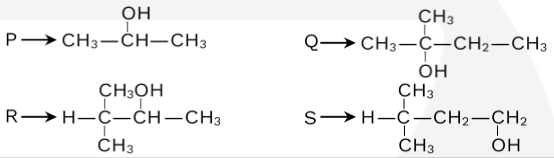
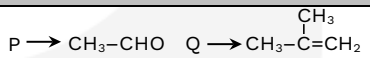
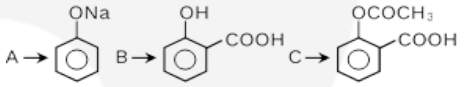
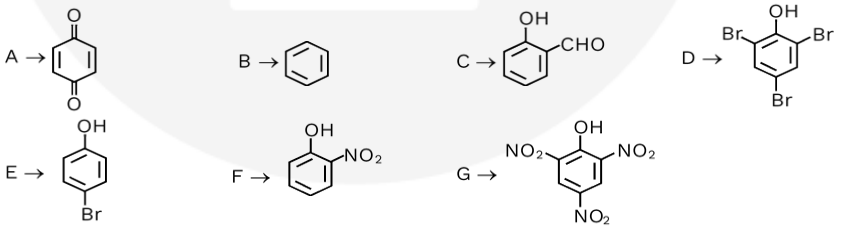
ELP-1

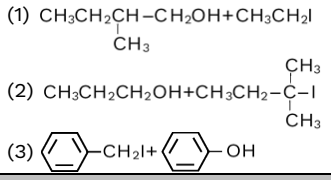
Que.	1	2	3	4
Ans.	3	2	1	

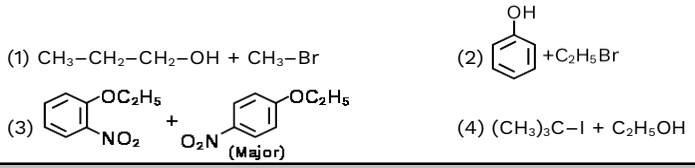
Que.	5
Ans.	

Que.	6	7	8
Ans.	4	2	

Que.	9	10
Ans.	2	

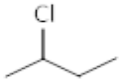
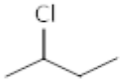
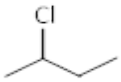
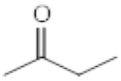
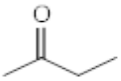
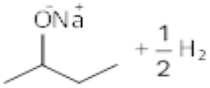
Que.	11
Ans.	

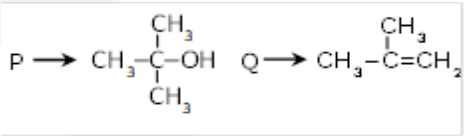
Que.	12	13
Ans.	2	

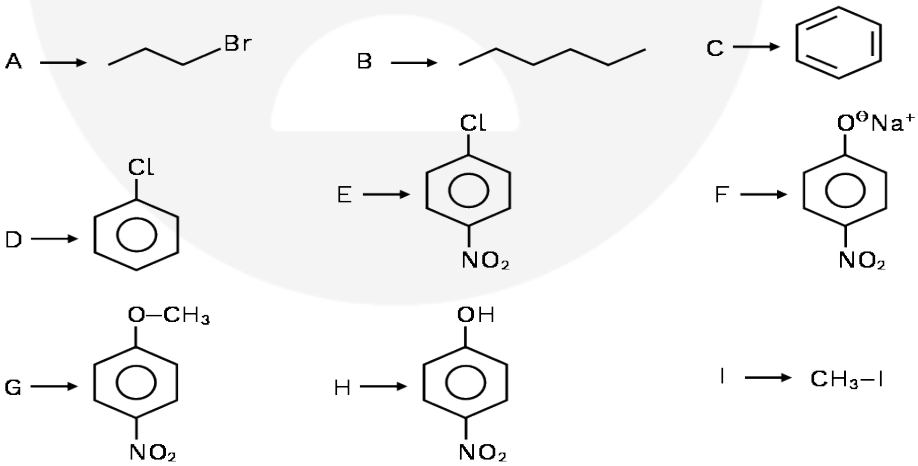
Que.	14
Ans.	

Que.	15
Ans.	4

ELP-2

Que.	1
Ans.	(A)  (B)  (C) (D)  (E)  (F)  (G) 

Que.	2	3	4	5	6	7
Ans.	4	3	4	2		

Que.	8
Ans.	

ELP-3				
Que.	**1**	**2**	**3**	
Ans.	4	3	1	
Que.	**4**		**5**	**6**
Ans.	(i) → (d), (ii) → (e), (iii) → (b), (iv) → (a)		3	2
Que.	**8**			
Ans.	(i) → Primary,	(ii) → Primary,	(iii) → Primary,	
	(iv) → Secondary,	(v) → Secondary,	(vi) → Tertiary	

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ELP

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ANSWER KEY **ALDEHYDES, KETONES, CARBOXYLIC ACID & DERIVATIVES**

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11
Ans.	4	3	2	4	1	2	4	2	1	1	2

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	2	3	4	3	2	2	4	2	3

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	4	2	4	2	4	3	2	3	1	4

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	1	3	2	2	1	2	1	3	2

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	1	3	3	3	4	3	3	3	2

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ANSWER KEY **AMINES**

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	1	2	2	3	1	2	2	2	4

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	2	4	2	1	1	3	4	3	1	4

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13
Ans.	1	1	4	2	2	2	2	2	3	3	4	2	2

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ANSWER KEY **BIOMOLECULES**

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	1	3	2	1	1	3	4	1	2	1	4	1	2	2	3

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	4	3	4	1	1	1	3	1	1	1

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ELP

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ANSWER KEY **PRACTICAL RELATED TO ORGANIC CHEMISTRY**

ELP-1														
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
Ans.	3	2	2	3	2	4	1	2	4	1	4	1	1	1