Table of Contents

S.No.	Chapter Name	Pg. No.
1.	Some Basic Concepts of Chemistry	1-8
2.	Structure of Atom	9-27
3.	Thermodynamics	28-50
4.	Chemical Equilibrium	51-68
5.	Ionic Equilibrium	69-80
6.	Redox Reactions	81-91
7.	Classification of Elements and Periodicity in Properties	92-105
8.	Chemical Bonding	106-137
9.	The p-Block Elements	138-147
10.	Classification and Nomenclature	148-159
11.	Isomerism	160-169
12.	General Organic Chemistry	170-185
13.	Hydrocarbons	186-206
14.	Purification and Analysis of Organic Compounds	207-210
Answer Key		**211-236**

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NEET-CHEMISTRY **ELP NO.-1** **SOME BASIC CONCEPT OF CHEMISTRY**

1. Which is an example of matter according to physical state at room temperature and pressure.
(1) Solid (2) Liquid (3) Gas (4) All of these

2. Which of the following example of a Homogeneous mixture.
(1) Water + Alcohol (2) Water + Sand
(3) Water + Oil (4) None of these

3. Which mixture is called as solution.
(1) Heterogeneous mixture (2) Homogeneous mixture
(3) Both (1) and (2) (4) None of these

4. Which of the following is a compound.
(1) Graphite (2) Producer gas (3) Cement (4) Marble

5. A pure substance can only be: -
(1) A compound (2) An element
(3) An element or a compound (4) A heterogenous mixture

6. Which one of the following is not a mixture
(1) Tap water (2) Distilled water (3) Salt in water (4) Oil in water

7. Convert 152 cm of Hg into atm.
(1) 1 atm (2) 3 atm (3) 2.5 atm (4) 2 atm

8. Convert 380 torr into atm.
(1) 2 atm (2) 0.5 atm (3) 4 atm (4) 1 atm

9. Convert 10 dm^3 into mL.
(1) 10 mL (2) 20 mL (3) 1000 mL (4) 10^4 mL

10. Covert 250 cm^3 into litre.
(1) 0.25 L (2) 0.3 L (3) 1 L (4) 4 L

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NEET-CHEMISTRY **ELP NO.-2** **SOME BASIC CONCEPT OF CHEMISTRY**

1. Convert 35°C into kelvin (K).

(1) 300 K (2) 310 K (3) 308 K (4) 350 K

2. Convert 2 atm into torr.

(1) 760 torr (2) 1520 torr (3) 380 torr (4) 200 torr

3. Convert 10^3 dm^3 into Cc.

(1) 10^3 Cc (2) 10^4 Cc (3) 10^5 Cc (4) 10^6 Cc

4. Convert 8.4 joules into calorie.

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

5. Number of proton, electron & neutron in $_{20}Ca^{40}$ respectively are.

(1) 20, 40, 20 (2) 20, 20, 20 (3) 20, 10, 20 (4) 20, 40, 40

6. What is the mass number & atomic number respectively for $_9F^{19}$ atom?

(1) 9, 19 (2) 19, 9 (3) 9, 9 (4) 19, 19

7. Which of following pairs have same number of neutrons?

(1) $_{19}K^{39}$, $_{20}Ca^{40}$ (2) $_1H^3$, $_2He^4$ (3) $_{17}Cl^{37}$, $^{38}_{18}Ar$ (4) All of the above

8. Sum of neutrons, protons & electrons for $_5B^{11}$ is.

(1) 5 (2) 11 (3) 12 (4) 16

9. Which of the following pairs have same number of protons?

(1) $^{12}_6C$, $^{13}_6C$ (2) $_8O^{16}$, $_8O^{17}$ (3) ^1_1H, ^3_1H (4) All of the above

10. Which of the following pairs have same mass number?

(1) $_1H^3$, $_2He^3$ (2) $_{19}K^{40}$, $_{20}Ca^{40}$ (3) $_5B^{11}$, $_6C^{13}$ (4) Both (1) & (2)

NEET-CHEMISTRY **ELP NO.-3** **SOME BASIC CONCEPT OF CHEMISTRY**

1. The modern atomic weight scale is based on:

(1) ${}_6C^{12}$ (2) ${}_8O^{16}$ (3) ${}_1H^{1}$ (4) ${}_6C^{13}$

2. 1 amu is equal to:

(1) $\frac{1}{12}$ of C–12 (2) $\frac{1}{14}$ of O–16 (3) 1g of H_2 (4) 1.66 x 10^{-24}kg

3. The actual molecular mass of chlorine is:

(1) 58.93x10^{-24}g (2) 117.86x10^{-24}g

(3) 58.93x10^{-24}kg (4) 117.86x10^{-24}kg

4. Calculate the number of atoms in 11.2 litre of O_2 gas at STP:

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

5. Which of the following has maximum mass:

(1) 0.1 gram atom of carbon (2) 0.1 mol of ammonia

(3) 6.02x10^{22} molecules of hydrogen (4) 1120 Cc of carbon dioxide at STP

6. The total number of electrons present in 180 mL of water:

(1) 6.02x10^{22} (2) 6.02x10^{23} (3) 6.02x10^{24} (4) 6.02x10^{25}

7. The volume of 16g of oxygen at NTP is:

(1) 11.2L (2) 1.12L (3) 22.4L (4) 12L

8. 11 grams of a gas occupy 5.6 litres of volume at STP, the gas is:

(1) No (2) N_2O_4 (3) CO (4) CO_2

9. At NTP, 5.6 litre of a gas weights 4 gram. The vapour density of gas is:

(1) 32 (2) 16 (3) 8 (4) 4

10. The vapour densities of two gases are in the ratio of 1:5. Their molecular masses will be in the ratio of:

(1) 1:5 (2) 1:2 (3) 2:3 (4) 3:1

11. If the atomic mass of Sodium is 23, the number of moles in 46 g of sodium is:

(1) 1 (2) 2 (3) 2.3 (4) 4.6

12. Which of the following contains the greatest number of atoms?

(1) 1.0 g of butane (C_4H_{10}) (2) 1.0 g of nitrogen (N_2)

(3) 1.0 g of silver (Ag) (4) 1.0 g of water (H_2O)

13. A gaseous mixture contains $CO_2(g)$ and $N_2O(g)$ in 2:5 ratio by mass. The ratio of the number of molecules of $CO_2(g)$ and $N_2O(g)$ is:

(1) 5:2 (2) 2:5 (3) 1:2 (4) 5:4

14. The weight of a molecule of the compound $C_{60}H_{22}$ is:

(1) 1.09×10^{-21} g (2) 1.24×10^{-21} g

(3) 5.025×10^{-23} g (4) 16.023×10^{-23} g

15. Which of the following expressions is correct (n = no. of moles of the gas, N_A = Avogadro constant, m = mass of 1 molecule of the gas, N = no. of molecules of the gas)?

(1) $n = m N_A$ (2) $m = N_A$ (3) $N = nN_A$ (4) $m = mn/N_A$

NEET-CHEMISTRY **ELP NO.-4** **SOME BASIC CONCEPT OF CHEMISTRY**

1. Calculate the mass in gm of 2 g atom of Mg.
(1) 12 gm (2) 24 gm (3) 6 gm (4) 48 gm

2. In 5 g atom of Ag (at. wt. = 108), calculate the number of atoms of Ag.
(1) N_A (2) $3N_A$ (3) 5 N_A (4) 7 N_A

3. Calculate the mass in gm of 2 N_A molecules of CO_2
(1) 22 gm (2) 44 gm (3) 88 gm (4) 11 gm

4. How many carbon atoms are present in 0.35 mol of $C_6H_{12}O_6$
(1) 6.023×10^{23} carbon atoms (2) 1.26×10^{23} carbon atoms
(3) 1.26×10^{24} carbon atoms (4) 6.023×10^{24} carbon atoms

5. What is the weight of 3.01×10^{23} molecules of ammonia
(1) 17 gm (2) 8.5 gm (3) 34 gm (4) 68 gm

6. An atom of an element weighs 6.644×10^{-23}g. Calculate g-atoms of element in 40kg.
(1) 10 g atom (2) 100 g atom (3) 1000 g atom (4) 10^4 g atom

7. The density of O_2 at NTP is 1.429 g/litre. Calculate the standard molar volume of gas
(1) 22.4 lit (2) 11.2 lit (3) 33.6 lit (4) 5.6 lit

8. Which of the following will weighs maximum amount
(1) 40g iron (2) 1.2g atom of N
(3) 1×10^{23} atom of carbon (4) 1.12 litre of O_2 at STP

9. Which of the following contains the least number of molecules
(1) 22 g of CO_2 (2) 8 g of O_2 (3) 56 g of N_2 (4) 6 g of H_2

10. Calculate the number of atoms in 1.6 gm of CH_4–
(1) 3.011×10^{23} atoms (2) 6.023×10^{23} atoms
(3) 12.046×10^{23} atoms (4) None of these

NEET-CHEMISTRY **ELP NO.-5** **SOME BASIC CONCEPT OF CHEMISTRY**

1. A sample of aluminium has a mass of 54.0 g. What is the mass of the same number of magnesium atoms? (At. wt. Al = 27, Mg=24)

(1) 12 g (2) 24 g (3) 48 g (4) 96 g

2. Four 1-1 litre flasks are separately filled with the gases H_2, He, O_2 and O_3 at the same temperature and pressure. The ratio of total number of atoms of these gases present in different flask would be:

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

3. Under the same conditions, two gases have the same number of molecules. They must

(1) be noble gases (2) have equal volumes

(3) have a volume of 22.4 dm^3 each (4) have an equal number of atoms

4. The charge on 1 gram ions of Al^{3+} is: (N_A = Avogadro number, e = charge on one electron)

(1) $\frac{1}{27}N_Ae$ coulomb (2) $\frac{1}{3}$x N_Ae coulomb (3) $\frac{1}{9}$x N_Ae coulomb (4) 3 x N_Ae coulomb

5. The atomic weights of two elements A and B are 40 and 80 respectively. If x g of A contains y atoms, how many atoms are present in 2 x g of B?

(1) $\frac{y}{2}$ (2) $\frac{y}{4}$ (3) Y (4) 2y

6. A virus is found to have 16% oxygen by mass. Calculate the minimum molecule mass.

(1) 100 (2) 200 (3) 50 (4) 150

7. The sodium salt of methyl orange has 7% sodium. What is the minimum molecular weight of the compound?

(1) 420 (2) 375 (3) 329 (4) 295

8. Which of the following will contain same number of atoms as 20g of calcium?

(1) 24g of magnesium (2) 12g of carbon

(3) 8g of oxygen gas (4) 16g of oxygen atom

9. A certain compound has the molecular formula X_4O_6. If 10g of X_4O_6 has 5.72g X, atomic mass of X is:

(1) 32 amu (2) 37 amu (3) 42 amu (4) 98 amu

10. A sample of ammonium phosphate $(NH_4)_3PO_4$ contains 3.18 mol of H atoms. The number of mol of O atoms in the sample is:

(1) 0.265 (2) 0.795 (3) 1.06 (4) 3.18

NEET-CHEMISTRY **ELP NO.-6** **SOME BASIC CONCEPT OF CHEMISTRY**

1. The vapour density of a gas A is twice that of a gas B. If the molecular weight of B is M, the molecular weight of A will be:

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

2. The empirical formula of a compound of molecular mass 120 is CH_2O. The molecular formula of the compound is:

(1) $C_2H_4O_2$ (2) $C_4H_8O_4$ (3) $C_3H_6O_3$ (4) all of these

3. Calculate the molecular formula of compound which contains 20% Ca and 80% Br (by wt.) if molecular weight of compound is 200. (Atomic wt. Ca = 40, Br = 80)

(1) $Ca_{1/2}Br$ (2) $CaBr_2$ (3) CaBr (4) Ca_2Br

4. The simplest formula of a compound containing 50% of element X (atomic mass = 10) and 50% of the element Y (atomic mass = 20) by weight is:-

(1) XY (2) X_2Y (3) XY_2 (4) x_2Y_3

5. A hydrocarbon contains 80% C. The vapour density of compound is 30. Empirical formula of compound is:-

(1) CH_3 (2) C_2H_6 (3) C_4H_{12} (4) C_4H_8

6. Two elements X (Atomic weight = 75) and Y (Atomic weight =16) combine to give a compound having 75.8% of X. The empirical formula of compound is:

(1) XY (2) X_2Y (3) X_2Y_2 (4) X_2Y_3

7. In a compound element A (Atomic weight = 12.5) is 25% and element B (Atomic weight = 37.5) is 75% by weight. The Empirical formula of the compound is:

(1) AB (2) A_2B (3) A_2B_2 (4) A_2B_3

8. A gas is found to have the formula $(CO)_x$. It's VD is 70 the value of x must be:-

(1) 7 (2) 4 (3) 5 (4) 6

9. A compound contains 38.8% C, 16.0% H and 45.2% N. The formula of the compound would be:

(1) CH_3NH_2 (2) CH_3CN (3) C_2H_5CN (4) $CH_2(NH)_2$

10. A gas is found to contain 2.34 g of Nitrogen and 5.34 g of oxygen. Simplest formula of the compound is:-

(1) N_2O (2) NO (3) N_2O_3 (4) NO_2

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NEET-CHEMISTRY **ELP NO.-7** **SOME BASIC CONCEPT OF CHEMISTRY**

1. According to following reaction; $N_2 + 3H_2 \rightarrow 2NH_3$
If 6 moles of H_2 were used, then find the moles of NH_3 produced.
(1) 4 mol (2) 2 mol (3) 5 mol (4) 6 mol

2. On heating 200 g of $CaCO_3$ completely. Calculate the volume of CO_2 produced at STP
$CaCO_3 \rightarrow CaO + CO_2$
(1) 22.4 L (2) 44.8 L (3) 11.2 L (4) 5.6 L

3. For the following reaction if 10 L of H_2 is used then calculate volume of HCl produced.
$H_2(g) + Cl_2(g) \rightarrow 2HCl(g)$
(1) 10 L (2) 5 L (3) 20 L (4) 40 L

4. How many moles of potassium chlorate ($KClO_3$) need to be heated to produce 22.4 L oxygen at NTP
$KClO_3 \rightarrow KCl + \frac{3}{2}O_2$
(1) $\frac{1}{3}$mol (2) $\frac{3}{2}$mol (3) $\frac{2}{3}$mol (4) 1 mol

5. For the reaction A + 2B → C. The amount of product formed when 5 mole of B is used.
(1) 2.5 mol (2) 5 mol (3) 4 mol (4) 2 mol

6. For the reaction; $2Al + \frac{3}{2}O_2 \rightarrow Al_2O_3$
If 16g of oxygen is present then amount of product (Al_2O_3) formed.
(1) 34g (2) 8g (3) 16g (4) 100g

7. At 100°C for complete combustion of 3g ethane (C_2H_6) the required volume of O_2 at STP will be.
(1) 22.4 L (2) 44.8 L (3) 7.84 L (4) 11.2 L

8. At 25°C for complete combustion of 5 mole propane (C_3H_8). The required volume of O_2 at STP will be.
(1) 22.4 L (2) 560 L (3) 44.8 L (4) 11.2 L

9. At 100°C for complete combustion of 1.12 litre of butane (C_4H_{10}), the produced volume of $H_2O_{(g)}$ & CO_2 at STP will be.
(1) $V_{H_2O(g)} = 5.6\ L;\ V_{CO_2(g)} = 4.48\ L$ (2) $V_{H_2O(g)} = 5.6\ L;\ V_{CO_2(g)} = 2.24\ L$
(3) $V_{H_2O(g)} = 2.24\ L;\ V_{CO_2(g)} = 5.6\ L$ (4) None of these

10. 13 cc of CO_2 are passed over red hot coke. The volume of CO evolved is:
(1) 13 cc (2) 10 cc (3) 32 cc (4) 26 cc

NEET-CHEMISTRY **ELP NO.-1** **STRUCTURE OF ATOM**

1. Which of the following order of mass is correct for α-particle, proton, neutron and electron.

(1) $m_\alpha < m_p < m_n < m_e$ (2) $m_e < m_p < m_n < m_\alpha$

(3) $m_e = m_p = m_n = m_\alpha$ (4) $m_e < m_\alpha < m_n < m_p$

2. Which of the following is correct sequence for specific charge

(1) $n > p > e^- > \alpha$ (2) $e^- > n > p > \alpha$ (3) $e^- > \alpha > p > n$ (4) $e^- > p > \alpha > n$

3. Mass of proton is

(1) $\frac{1}{1837}$ times of mass of electron

(2) 1837 times of mass of electron

(3) Equal to the mass of electron

(4) Negligible with respect to mass of electron

4. Which of the following is correct sequence for magnitude of charge

(1) $\alpha > e^- = p > n$ (2) $\alpha > p > n > e^-$ (3) $\alpha > n > p > e^-$ (4) $n > p > e^- > \alpha$

5. The ratio of the "e/m" (specific charge) values of a proton and an α-particle is -

(1) 2 : 1 (2) 1 : 1 (3) 1 : 2 (4) None of these

6. Which of the following conclusions could not be derived from Rutherford's α-particle scattering experiment?

(1) Most of the space in the atom is empty.

(2) The radius of the atom is about 10^{-10} m while that of nucleus is 10^{-15} m.

(3) Electrons move in a circular path of fixed energy called orbits

(4) Electrons and the nucleus are held together by electrostatic forces of attraction.

7. Which of the following properties of atom could be explained correctly by Thomson Model of atom?

(1) Overall neutrality of atom.

(2) Spectra of hydrogen atom.

(3) Position of electrons, protons and neutrons in atom.

(4) Stability of atom.

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NEET-CHEMISTRY **ELP NO.-2** **STRUCTURE OF ATOM**

1. The radius of the nucleus $_{13}Al^{27}$ will be

(1) 1.2×10^{-15}m (2) 2.7×10^{-15}m (3) 10.8×10^{-15}m (4) 4×10^{-15}m

2. Which of the following elements has maximum density of nucleus.

(1) $_{14}Si^{30}$ (2) $_{15}P^{31}$

(3) $_{8}O^{16}$ (4) All have same density

3. Select iso electronic set :-

(a) Na^+, H_3O^+, NH_4^+ (b) CO_3^{-2},NO_3^-,H_2CO_3 (c) P^{-3}, HCl, $C_2H_5^-$ (d) F^- Ne, Na^+

(1) a, b, d (2) b, c, d (3) a, b, c (4) a, b, c, d

4. It is known that atoms contain protons, neutrons and electrons. If the mass of neutron is assumed to be half of its original value whereas that of electron is assumed to be twice of this original value. The atomic mass of $_6C^{12}$ will be:

(1) Twice (2) 75% less

(3) 25% less (4) One-half of its original value

5. The mass number of dispositive Zn ion is 70. The total number of neutrons is–

(1) 34 (2) 40 (3) 36 (4) 38

6. Total number of neutron and proton in all isotopes of hydrogen is

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

7. If number of protons in x^{-2} ion is 16 then number of electrons in x^{+2} is:

(1) 14 (2) 16 (3) 18 (4) None of these

8. Identify the pairs which are not of isotopes?

(1) $^{12}_{6}X$, $^{13}_{6}Y$ (2) $^{35}_{17}X$, $^{37}_{17}Y$ (3) $^{14}_{7}X$, $^{15}_{7}Y$ (4) $^{8}_{4}X$, $^{8}_{5}Y$

NEET-CHEMISTRY **ELP NO.-3** **STRUCTURE OF ATOM**

1. Two atoms are said to be isobars if.

(1) They have same atomic number but different mass number

(2) They have same number of electrons but different number of neutrons.

(3) They have same number of neutrons but different number of electrons.

(4) Sum of the number of protons and neutrons is same but the number of protons is different.

2. **Assertion (A) :** All isotopes of a given element show the same type of chemical behaviour.

Reason (R) : The chemical properties of an atom are controlled by the number of electrons in the atom.

(1) Both A and R are true and R is the correct explanation of A.

(2) Both A and R are not true but R is not the correct explanation of A.

(3) A is true but R is false

(4) Both A and R are false

3. Calculate the frequency & energy of a photon of wavelength 4000 Å.

(1) $7.5 \times 10^{14}\ s^{-1}$, 4.96×10^{-19} J

(2) $6 \times 10^{10}\ s^{-1}$, 9×10^{-19} J

(3) $3 \times 10^{8}\ s^{-1}$, 5×10^{-19} J

(4) $5 \times 10^{9}\ s^{-1}$, 9×10^{-19} J

4. Which has a higher energy?

(A) A photon of violet light with wavelength 4000 Å

(B) A photon of red light with wavelength 7000 Å

(1) A

(2) B

(3) Both A & B have same energy

(4) None of the above

5. A 1kw radio transmitter operates at a frequency of 800 Hz. How many photons per second does it emit.

(1) 1.71×10^{21}

(2) 1.88×10^{33}

(3) 6.02×10^{23}

(4) 2.85×10^{20}

6.

(i)	$_{26}Fe^{54}$, $_{26}Fe^{56}$	(a)	Isotopes
(ii)	$_{1}H^{3}$, $_{2}He^{3}$	(b)	Isotones
(iii)	$_{32}Ge^{76}$, $_{33}As^{77}$	(c)	Isodiaphers
(iv)	$_{92}U^{235}$, $_{90}Th^{231}$	(d)	Isobars

Math the above correct terms

(1) (i) → a; (ii) → d; (iii) → b; (iv) → c

(2) (i) → a; (ii) → d; (iii) → c; (iv) → b

(3) (i) → a; (ii) → c; (iii) → d; (iv) → b

(4) None of them

7. Average atomic weight of an element M is 51.7. If two isotopes of M, M^{50} and M^{52} are present then calculate the percentage of occurrence of M^{50} in nature.

(1) 85% (2) 75% (3) 15% (4) 90%

8. The Vividh Bharti station of All India Radio broadcast on a frequency of 1368 kHz Calculate the wavelength of the electromagnetic waves emitted by the transmitter.

(1) 219.3 m (2) 430.5 m (3) 565.8 m (4) 300.5 m

NEET-CHEMISTRY **ELP NO.-4** **STRUCTURE OF ATOM**

1. The mass number of an anion, X^{3-}, is 14. If there are ten electrons in the anion, the number of neutrons in the X_2 will be:

(1) 10 (2) 14 (3) 7 (4) 5

2. Wavelengths of different radiations are given below:

λ(A) = 300 nm λ(B) = 300 μm λ(C) = 3 nm λ(D) = 30 A°

Arrange these radiations in the increasing order of their energies.

(1) A > B > C > D (2) A < B < C < D (3) B < A < C = D (4) None of the above

3. Bohr's theory is not applicable to

(1) He (2) Li^{+2} (3) He^{+} (4) H atom

4. Correct order of radius of the I^{st} orbit of H, He^{+}, Li^{2+}, Be^{3+} is:

(1) H > He^{+}> Li^{2+} > Be^{3+} (2) Be^{3+} > Li^{2+}> He^{+} > H

(3) He^{+} > Be^{3+} > Li^{2+} > H (4) He^{+} > H > Li^{2+} > Be^{3+}

5. If velocity of an electron in I^{st} orbit of H atom is V, what will be the velocity of electron in 3^{rd} orbit of Li^{+2}

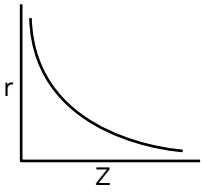
(1) V (2) V/3 (3) 3 V (4) 9 V

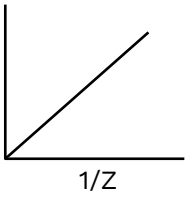
6. If the velocity of the electron in first orbit of H atom is 2.18×10^6 m/s, what is its value in third orbit ?

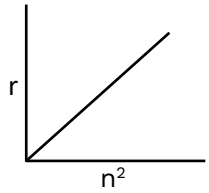
(1) 7.27×10^5 m/s (2) 2.18×10^6 m/s

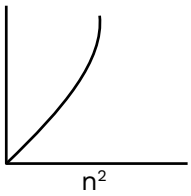
(3) 7.27×10^5 cm/s (4) 2.18×10^6 cm/s

7. Select the incorrect graph for radius of an orbit (r) vs. Z, $\frac{1}{Z}$ and n^2

(1) 

(2) 

(3) 

(4) 

8. According to Bohr's theory, the angular momentum of an electron in 5th orbit is:

(1) 25 h/π (2) 1.0 h/π (3) 10 h/π (4) 2.5 h/π

9. On the basis of Bohr's model, the radius of the 3rd orbit is -

(1) Equal to the radius of first orbit (2) Three times the radius of first orbit

(3) Five times the radius of first orbit (4) Nine time the radius of first orbit

NEET-CHEMISTRY **ELP NO.-5** **STRUCTURE OF ATOM**

1. If first ionization potential of an atom is 16 V, then the first excitation potential will be:
(1) 10.2 V (2) 12 V (3) 14 V (4) 16 V

2. Calculate the frequency of the last line of the Lyman series in hydrogen spectrum.
(1) 5.4×10^{15} Hz (2) 3.3×10^{15} Hz (3) 9.3×10^{15} Hz (4) 7.8×10^{15} Hz

3. Calculate the ratio of maximum λ of Lyman & Balmer series?
(1) $\frac{3}{4}$ (2) $\frac{7}{8}$ (3) $\frac{5}{27}$ (4) $\frac{9}{16}$

4. In a hydrogen spectrum if electron moves from 6^{th} to 2^{nd} orbit by transition in multi steps find out the number of lines in spectrum.
(1) 10 (2) 5 (3) 15 (4) 12

5. A certain electronic transition from an excited state to Ground state of the Hydrogen atom in onssssse or more steps gives rise to 5 lines in the ultra violet region of the spectrum. How many lines does this transition produce in the Infra-red region of the spectrum?
(1) 10 (2) 6 (3) 12 (4) 9

6. In H atom if the electron moves from n^{th} orbit to 1^{st} orbit by transition in multi steps, then the total number of lines observed in the spectrum are 10, then find out the value of n.
(1) 5 (2) 7 (3) 9 (4) 12

7. The line spectra of two elements are not identical because.
(1) The elements don't have the same number of neutrons
(2) They have different mass numbers
(3) Their outermost electrons are at different energy levels.
(4) They have different valences.

8. In which of the following transition will the wavelength be minimum.
(1) n = 6 to n = 4 (2) n = 4 to n = 2 (3) n = 3 to n = 1 (4) n = 2 to n = 1

9. The wavelength of third line of the Balmer series for a H atom is:
(1) $\frac{21}{100R}$ (2) $\frac{100}{21R}$ (3) $\frac{21R}{100}$ (4) $\frac{100R}{21}$

10. When the electron of a hydrogen atom jumps from n = 4 to n = 1 state in multi steps, the number of spectral lines emitted is (without paschen series):
(1) 5 (2) 6 (3) 3 (4) 4

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NEET-CHEMISTRY **ELP NO.-6** **STRUCTURE OF ATOM**

1. Calculate the wavelength of 1st line of Balmer series in Hydrogen spectrum.
(1) 6566 A° (2) 4534 A° (3) 2535 A° (4) 5505 A°

2. At what atomic number would a transition from n = 2 to n = 1 energy level result in emission of photon of $\lambda = 3 \times 10^{-8}$ m.
(1) 1 (2) 2 (3) 3 (4) 4

3. The wave number of electromagnetic radiations emitted during the transition of electron in between two levels of Li^{2+} ion having sum of the principal quantum numbers 4 and difference is 2, will be: (R = Rydberg constant)
(1) 3.5 R (2) 4 R (3) 8 R (4) $\frac{8}{9}$R

4. Five lowest energy levels of H-atom are shown in the figure. The number of absorption lines could be
n=5 ————————
n=4 ————————
n=3 ————————
n=2 ————————
n=1 ————————
(1) 3 (2) 4 (3) 5 (4) 6

5. Total no. of lines in Lyman series of H spectrum will be (when n = no. of orbits)
(1) n (2) n – 1 (3) n – 2 (4) n (n + 1)

6. The spectrum of He^+ is expected to be similar to that of :
(1) Li^{2+} (2) He (3) H (4) Both A and C

7. No. of visible lines when an electron returns from 5th orbit to ground state in H spectrum :
(1) 5 (2) 4 (3) 3 (4) 10

8. The difference between the wave number of 1st line of Balmer series and last line of paschen series for Li^{2+} ion is :
(1) $\frac{R}{36}$ (2) $\frac{5R}{36}$ (3) 4R (4) $\frac{R}{4}$

9. If the shortest wave length of Lyman series of H atom is x, then the wave length of the first line of Balmer series of H atom will be
(1) 9x/5 (2) 36x/5 (3) 5x/9 (4) 5x/36

10. A dye absorbs a photon of wavelength λ and re-emits the same energy into two photons of wavelength λ_1 and λ_2 respectively. The wavelength λ is related with λ_1 and λ_2 as:
(1) $\lambda = \frac{\lambda_1 + \lambda_2}{\lambda_1\lambda_2}$ (2) $\lambda = \frac{\lambda_1\lambda_2}{\lambda_1 + \lambda_2}$ (3) $\lambda = \frac{\lambda_1^2\lambda_2^2}{\lambda_1 + \lambda_2}$ (4) $\lambda = \frac{\lambda_1\lambda_2}{(\lambda_1 + \lambda_2)^2}$

NEET-CHEMISTRY **ELP NO.-7** **STRUCTURE OF ATOM**

1. If travelling at same speeds, which of the following matter waves have the shortest wavelength?

(1) Electron (2) Alpha particle (He^{2+})

(3) Neutron (4) Proton

2. Table-tennis ball has a mass 10 g and a speed of 90m/s. If speed can be measured within an accuracy of 4% . What will be the uncertainty in speed and position respectively ?

(1) 3.6 m/s, 1.46×10^{-33} m (2) 5 m/s, 2.9×10^{-33} m

(3) 6 m/s, 4.66×10^{-33} m (4) 9 m/s, 6.66×10^{-33} m

3. **Assertion (A) :** It is impossible to determine the exact position and exact momentum of an electron simultaneously.

Rason (R) : The path of an electron in an atom is clearly defined.

(1) Both A and R are true and R is the correct explanation of A.

(2) Both A and B are true and R is not the correct explanation of A.

(3) A is true and R is false.

(4) Both A and R are false.

4. The mass of a particle is 1 mg and its velocity is 4.5×10^5 cm per second. What should be the wavelength of this particle if h = 6.625×10^{-27} erg second.

(1) 1.4722×10^{-24} cm (2) 1.4722×10^{-29} cm

(3) 2.246×10^{-11} cm (4) 1.4722×10^{-34} cm

5. Which of the following should be the wavelength of an electron if its mass is 9.1×10^{-31} kg and its velocity is 1/10 of that of light and the value of h is 6.6252×10^{-34} joule second?

(1) 2.426×10^{-7} metre (2) 2.426×10^{-9} metre

(3) 2.426×10^{-11} metre (4) 2.426×10^{-13} metre

6. Select the incorrect relation among the following.

(1) $\Delta x.\ \Delta p \geq \frac{h}{4\pi}$ (2) $\Delta x.\ \Delta p \geq \frac{h}{4\pi m}$ (3) $\Delta x.\ \Delta V \geq \frac{h}{4\pi m}$ (4) $\Delta E.\ \Delta t \geq \frac{h}{4\pi}$

7. If the kinetic energy of an electron is increased 4 times, the wavelength of the de-Broglie wave associated with it would become:-

(1) Four times (2) Two times (3) Half times (4) One fourth times

8. What possibly can be the ratio of the de-Broglie wavelengths for two electrons each having zero initial energy and accelerated through 50 volts and 200 volts?

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

9. In H-atom. If 'x' is the radius of the first Bohr orbit, de-Broglie wavelength of an electron in 3rd orbit is :

(1) $3\pi x$ (2) $6\pi x$ (3) $\frac{9x}{2}$ (4) $\frac{x}{2}$

10. Uncertainty in position is twice the uncertainty in momentum. Uncertainty in velocity is :

(1) $\sqrt{\frac{\hbar}{\pi}}$ (2) $\frac{1}{2m}\sqrt{\frac{\hbar}{\pi}}$ (3) $\frac{1}{2m}\sqrt{\hbar}$ (4) $\frac{\hbar}{4\pi}$

11. Uncertainty in position and momentum are equal. Uncertainty in velocity is

(1) $\sqrt{\frac{h}{\pi}}$ (2) $\sqrt{\frac{h}{2\pi}}$ (3) Both 1 and 2 (4) $\frac{1}{2m}\sqrt{\frac{h}{\pi}}$

12. In an atom an electron is moving with a speed of 600 m/s with in accuracy of 0.005% What will be the uncertainty in position?

($h = 6.6 \times 10^{-34}$ kg $m^2 s^{-1}$, $m_e = 9.1 \times 10^{-31}$ kg)

(1) 1.52×10^{-4}m (2) 5.10×10^{-3}m (3) 1.92×10^{-3}m (4) 3.84×10^{-3}m

NEET-CHEMISTRY **ELP NO.-8** **STRUCTURE OF ATOM**

1. Total number of orbitals associated with third shell will be

(1) 2 (2) 4 (3) 9 (4) 3

2. Orbital angular momentum depends on

(1) l (2) n and l (3) n and m (4) m and s

3. Which of the following sets of quantum numbers are correct?

	n	**l**	**m_1**
(I)	1	1	+2
(II)	2	1	+1
(III)	3	2	−2
(IV)	3	4	−2

(1) I, II, III, IV (2) II, III (3) I, IV (4) I, III, IV

4. Which of the following statements concerning the quantum numbers are correct?

(1) Angular quantum number determines the three dimensional shape of the orbital

(2) Principal quantum number determines the orientation and energy of the orbital.

(3) Magnetic quantum number determines the size of the orbital.

(4) Spin quantum number of an electron determines the energy of the orbital

5. Match the quantum numbers with the information provided by these.

Quantum number	**Information provided**
(i) Principal quantum number	(a) Orientation of the orbital
(ii) Azimuthal quantum number	(b) Energy and size of orbital
(iii) Magnetic quantum number	(c) Spin of electron
(IV) Spin quantum number	(d) Shape of the orbital

(1) i-b, ii-d, iii-a, iv-c (2) i-b, ii-d, iii-c, iv-a

(3) i-d, ii-b, iii-a, iv-c (4) i-a, ii-b, iii-c, iv-d

6. Which of the following orbitals has the lowest energy?

(1)4d (2) 4f (3) 5s (4) 5p

7. Which of the following orbitals has the highest energy?

(1) 4d (2) 5f (3) 6s (4) 6p

8. The representation of an orbital with n = 4 and ℓ = 1 :-

(1) 4d (2) 4s (3) 4f (4) 4p

9. Maximum number of electrons present in N shell is :

(1) 8 (2) 18 (3) 32 (4) 10

10. Match the columns

Orbital	**values of n, *l*, m**
(i) $7p_y$	(a) 3, 0, 0
(ii) 3s	(b) 5, 2, 0
(iii) $5d_{z^2}$	(c) 7, 1, +1
(iv) 4f	(d) 4, 3, –3

(1) i-b, ii-d, iii-a, iv-c (2) i-b, ii-d, iii-c, iv-a

(3) i-d, ii-b, iii-a, iv-c (4) i-c, ii-a, iii-b, iv-d

NEET-CHEMISTRY **ELP NO.-9** **STRUCTURE OF ATOM**

1. The number of radial nodes for 3p orbital is
(1) 3 (2) 4 (3) 2 (4) 1

2. Number of angular nodes for $4d_{xy}$ orbital is
(1) 4 (2) 3 (3) 2 (4) 1

3. Which of the following set of quantum numbers is not possible?
(1) n = 2, ℓ = 0, m = –1, s = $\pm \frac{1}{2}$ (2) n = 3, ℓ = 2, m = 0, s = $\pm \frac{1}{2}$
(3) n = 2, ℓ = 3, m = –2, s = $\pm \frac{1}{2}$ (4) 1 and 3 both

4. Which of the following subshell can accommodate as many as 10 electrons -
(1) 2d (2) 3d (3) 3dxy (4) $3dz^2$

5. How many spherical nodes are present in a 4s orbital in hydrogen atom-
(1) 0 (2) 1 (3) 2 (4) 3

6. The orbital with zero orbital angular momentum is-
(1) s (2) p (3) d (4) f

7. For an electron, with n = 3 has only one radial node. The orbital angular momentum of the electron will be:
(1) 0 (2) $\sqrt{6}\frac{h}{2\pi}$ (3) $\sqrt{2}\frac{h}{2\pi}$ (4) $\sqrt{3}\frac{h}{2\pi}$

8. How many electrons can be accomodated in g sub-shell?
(1) 9 (2) 18 (3) 7 (4) 14

9. Which orbital is represented by the complete wave function ψ_{420} ?
(1) $4d_{z^2}$ (2) $3d_{z^2}$ (3) $4p_z$ (4) 4s

10. For a d-electron the orbital angular momentum is:
(1) $\sqrt{(6)}\hbar$ (2) $\sqrt{(2)}\hbar$ (3) $\hbar$ (4) $2\hbar$

NEET-CHEMISTRY **ELP NO.-10** **STRUCTURE OF ATOM**

1. Which orbital is non-directional

(1) s (2) p (3) d (4) All

2. For which electron finding probability distribution is maximum at an angle of 45° to the axial direction-

(1) $d_{x^2-y^2}$ (2) d_{z^2} (3) d_{xy} (4) P_x

3. In case of $d_{x^2-y^2}$ orbital

(1) Probability of finding the electron along x-axis is zero.

(2) Probability of finding the electron along y-axis is zero.

(3) Probability of finding the electron is maximum along x and y-axis.

(4) Probability of finding the electron is zero in x-y plane

4. Which one of the following orbital has no nodel plane ?

(1) d_{z^2} (2) d_{xy} (3) d_{yz} (4) d_{xz}

5. The zero probability of finding electron in the d_{xy} orbital is :

(1) Along the x-axis

(2) Along the y-axis

(3) At an angle of 45º from the x-and y-axis

(4) Along all 3-axis

6. Which of the following orbitals are degenerate?

(1) $3d_{xy}$ (2) $3d_{z^2}$

(3) $3d_{yz}$ (4) All of them are degenerate orbitals

7. Which series of subshells is arranged in the order of increasing energy for multi-electron atoms ?

(1) 6s, 4f, 5d, 6p (2) 4f, 6s, 5d, 6p

(3) 5d, 4f, 6s, 6p (4) 4f, 5d, 6s, 6p

8. Four electrons in an atom have the sets of quantum numbers as given below. Which electron in at the highest energy level ?

(1) n = 4, ℓ = 0, m_ℓ = 0, m_s = + 1/2

(2) n = 3, ℓ = 0, m_ℓ = 0, m_s = –1/2

(3) n = 3, ℓ = 2, m_ℓ = 0, m_s = +1/2

(4) n = 4, ℓ = 1, m_ℓ = –1, m_s = –1/2

9. In a 3d subshell, all the five orbitals are degenerate. What does it mean?

(1) All the orbitals have the same orientation.

(2) All the orbitals have the same shape.

(3) All the orbital have the same energy

(4) All the orbitals are unoccupied.

10. **Assertion :-** p-orbital has dumb-bell shape.

Reason :- Electrons present in p-orbital can have one of three values for 'm' i.e. 0, +1 –1

(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.

11. **Assertion :-** 2p orbitals do not have spherical nodes.

Reason :- The number of spherical nodes in p-orbitals is given by (n-2).

(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.

12. **Assertion :-** Nodal plane of p_x atomic orbital is yz plane.

Reason :- In p_x atomic orbital, electron density is zero in the yz plane.

(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.

NEET-CHEMISTRY **ELP NO.-11** **STRUCTURE OF ATOM**

1. A neutral atom of an element has 2K, 8L, 11 M and 2N electrons. The number of p-electrons in the atom are:-

(1) 2 (2) 12 (3) 10 (4) 6

2. An atom has 2 electrons in K-shell, 8 electrons in L-shell & 8 electrons in M-shell. The number of p-electrons presents in the element is :-

(1) 10 (2) 7 (3) 12 (4) 4

3. The maximum number of such electrons in an atom with quantum number n = 3, $\ell = 2$ is :-

(1) 2 (2) 6 (3) 10 (4) 14

4. In potassium the probable order of energy level for 19^{th} electron is :-

(1) 3s > 3d (2) 4s < 3d (3) 4s > 4p (4) 4s = 3d

5. Calculate the number of unpaired electrons in Cr

(1) 5 (2) 6 (3) 4 (4) 7

6. The pair of ions having same electronic configuration is

(1) Cr^{3+}, Fe^{3+} (2) Fe^{3+}, Mn^{2+} (3) Fe^{3+}, Co^{3+} (4) Sc^{3+}, Cr^{3+}

7. Out of the following pairs of electrons, identify the pairs of electrons present in degenerate orbitals

(1) (a) n = 3, l = 2, m_l =–2, $m_s = -\frac{1}{2}$ (b) n = 3, l = 2, m_l =–1, $m_s = -\frac{1}{2}$

(2) (a) n = 3, l = 1, m_l =1, $m_s = +\frac{1}{2}$ (b) n = 3, l = 2, m_l =1, $m_s = +\frac{1}{2}$

(3) (a) n = 4, l = 1, m_l =1, $m_s = +\frac{1}{2}$ (b) n = 3, l = 2, m_l =1, $m_s = +\frac{1}{2}$

(4) (a) n = 3, l = 1, m_l =+2, $m_s = -\frac{1}{2}$ (b) n = 3, l = 2, m_l =+2, $m_s = +\frac{1}{2}$

8. Match the following species with their corresponding ground state electronic configuration.

Atom / Ion	**Electronic configuration**
(i) Cu	(a) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10}$
(ii) Cu^{2+}	(b) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^3$
(iii) Zn^{2+}	(c) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^{10} 4s^1$
(iv) Cr^{3+}	(d) $1s^2 2s^2 2p^6 3s^2 3p^6 3d^9$

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

9. Match the following rules with their statements:

Rules	**Statements**
(i) Hund's Rule	(a) No two electrons in an atom can have the same set of four quantum numbers.
(ii) Aufbau principle	(b) Pairing of electrons in the orbitals belonging to the same subshell does not take place until each orbital is singly occupied
(iii) Pauli Exclusion Principle	(c) In an atom, it is impossible to determine the exact position and exact momentum of an electron simultaneously.
(iv) Heisenberg's Uncertainty principle	(d) In the ground state of an atom, subshells are filled in the order of their increasing energies.

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

10. Match species given in Column I with the electronic configuration given in Column II.

Column I	**Column II**
(i) Cr	(a) $[Ar]3d^8 4s^0$
(ii) Fe^{2+}	(b) $[Ar]3d^{10} 4s^1$
(iii) Ni^{2+}	(c) $[Ar]3d^6 4s^0$
(iv) Cu	(d) $[Ar]3d^5 4s^1$

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

11. Which of the following is electronic configuration of Cu^{2+} (Z = 29) ?

(1) $[Ar]4s^1\ 3d^8$
(2) $[Ar]4s^2\ 3d^{10}\ 4p^1$
(3) $[Ar]4s^1\ 3d^{10}$
(4) $[Ar]\ 3d^9$

12. An element has the electronic configuration $1s^2$, $2s^2\ 2p^6$, $3s^2\ 3p^2$. Its valency electrons are

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

NEET-CHEMISTRY **ELP NO.-12** **STRUCTURE OF ATOM**

1. Which of the following ions has the maximum number of unpaired d-electrons?

(1) Zn^{2+} (2) Fe^{2+} (3) Ni^{+2} (4) Cu^{+}

2. The total spin resulting from a f^9 configuration is :

(1) 1 (2) 2 (3) 5/2 (4) 3/2

3. Consider the ground state of Cr atom (Z = 24). The numbers of electrons with the azimuthal quantum numbers, ℓ = 1 and 2 are respectively :

(1) 16 and 5 (2) 12 and 5 (3) 16 and 4 (4) 12 and 4

4. The possible value of ℓ and m for the last electron in the Cl^- ion are:

(1) 1 and 2 (2) 2 and + 1 (3) 3 and – 1 (4) 1 and + 1

5. The correct set of quantum no. for the unpaired electron of potassium.

	n	ℓ	**m**		**n**	ℓ	**m**
(1)	2	1	0	(2)	2	1	1
(3)	3	1	1	(4)	4	0	0

6. In hydrogen atom, which energy level order is not correct?

(1) 1s < 2p (2) 2p = 2s (3) 2p > 2s (4) 2p < 3s

7. **Assertion :-** For hydrogen atom, 2s & 2p have same energy.

Reason :- For an atom of same principal quantum number. s, p, d & f subshells have same energy.

(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.

8. **Assertion :-** No two electrons in an atom can have the same values of four quantum numbers.

Reason :- No two electrons in an atom can be simultaneously in the same shell, same subshell, same orbitals and have same spin.

(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.

9. **Assertion :-** In hydrogen atom, energy of 4s in more than 3d.

Reason :- An orbital with lower value of (n+ ℓ) has smaller energy than the orbital with higher value of (n+ ℓ).

(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.

10. **Assertion :-** The configuration of B atom cannot be $1s^2\ 2s^3$.

Reason :- Hund's rule demands that the configuration should display maximum multiplicity.

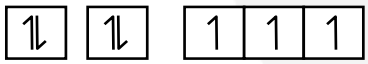
(1) If both Assertion & Reason True & the Reason is a correct explanation of the Assertion.

(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.

11. **Assertion :-** The electronic configuration of nitrogen atom is represented as :



Not as

Reason :- The configuration of ground state of an atom is the one which has the greatest multiplicity.

(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.

12. **Assertion :-** The ground state configuration of Cr is $3d^5\ 4s^1$.

Reason :- A set of exactly half-filled orbitals containing parallel spin arrangement provide extra stability.

(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.

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

1. Thermodynamics is not concerned about .....

(1) Energy changes involved in a chemical reaction.

(2) The extent to which a chemical reaction proceeds.

(3) The rate at which a reaction proceeds.

(4) The feasibility of a chemical reaction.

2. Which of the following statements is correct?

(1) The presence of reacting species in a covered beaker is an example of open system.

(2) There is an exchange of energy as well as matter between the system and the surroundings in a closed system.

(3) The presence of reactants in a closed vessel made up of copper is an example of a closed system.

(4) The presence of reactants in a thermos flask or any other closed insulated vessel is an example of a closed system.

3. The state of a gas can be described by quoting the relationship between.

(1) Pressure, volume, temperature (2) Temperature, amount, pressure

(3) Amount, volume, temperature (4) Pressure, volume, temperature, amount

4. The volume of gas is reduced to half from its original volume. The specific heat will be .....

(1) Reduce to half (2) Be doubled (3) Remain constant (4) Increase four times

5. Thermodynamics mainly deals with.

(1) Interrelation of various forms of energy and their transformation from one form to another.

(2) Energy changes in the processes which depend only on initial and final states of the microscopic systems containing a few molecules.

(3) How and at what rate these energy transformations are carried out.

(4) The system in equilibrium state or moving from one equilibrium state to another equilibrium state.

6. Which one is not a state function -

(1) Internal energy (E) (2) Volume

(3) Heat (q) (4) Enthalpy

7. When no heat energy is allowed to enter or leave the system, it is called -

(1) Isothermal process (2) Reversible process

(3) Adiabatic process (4) Irreversible process

8. Which is the intensive property -

(1) Temperature (2) Boling Point (3) Density (4) All

9. A well stoppered thermos flask contains some ice cubes. This is an example of a -

(1) Closed system (2) Open system

(3) Isolated system (4) Non-thermodynamics system

10. Select the correct order in the following:

(1) 1 erg > 1 joule > 1 cal (2) 1 cal > 1 joule > 1 erg

(3) 1 erg > 1 cal > 1 joule (4) 1 joule > 1 cal > 1 erg

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

1. Find the work when one mol of ideal gas in 10 litre container at 1 atm is allowed to enter a vacuum bulb of capacity 100 litre.
(1) -90 L-atm (2) -100 L-atm (3) -30 L-atm (4) Zero

2. Find the work when 1 mol of gas expands from 1 litre to 5 litre against constant atmospheric pressure.
(1) 5 L-atm (2) -4 L-atm (3) -10 L-atm (4) Zero

3. Which of the following is open system.
(1) Animals and plants (2) A fridge
(3) A solar cooker (4) None of these

4. One mole of gas occupying 3 litre volume is expanded against a constant external pressure of one atom to a wolume of 15 litre. The work in this process is:
(1) -1.215×10^3 J (2) $+12.15\times10^3$ J (3) $+121.5\times10^3$ J (4) $+1.215\times10^3$ J

5. The work during the expansion of a gas from a volume of 4 dm^3 to 6 dm^3 against a constant external pressure of 3 atm is:
(1) -608 J (2) +304 J (3) -304 J (4) -6 J

6. The work during the expansion of a gas from a volume of 14 dm^3 to 16 dm^3 against a constant external pressure of 2 atm is:
(1) -405.2 J (2) +304 J (3) -304 (4) -6 J

7. The pressure-volume work for an ideal gas can be calculated by using the expression $w = -\int_{V_i}^{V_f} p_{ex} dV$.

The work can also be calculated from the pV-plot by using the area under the curve within the specified limits. When an ideal gas is compressed (a) reversibly or (b) irreversible from volume V_i to V_f. Choose the correct option.
(1) w (reversible) = w (irreversible) (2) w (reversible) < w (irreversible)
(3) w (reversible) > w (irreversible) (4) w (reversible) = w (irreversible)+$p_{ex}.\Delta V$

8. One litre-atmosphere is approximately equal to-.
(1) 19.2 J (2) 101 J (3) 8.3 J (4) 831 J

9. Molar volume is:
(1) Extensive property (2) Intensive property
(3) Both (1) and (2) (4) None of these

10. Molar enthalpy is:
(1) Extensive property (2) Intensive property
(3) Both (1) and (2) (4) None of these

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

1. 1 g of water changes from liquid to vapour phase at constant pressure of 1 atmosphere, the volume increases from 1 mL to 1671ml. The heat of vaporization at this pressure is 540 Cal g Find the increase in internal energy of water. (1 L atm = 101 J)
(1) 2999.33 J (2) 2009.33 J (3) 2099.33 J (4) 2000.33 J

2. A gas occupies 2 L at STP. It is provided 300 J heat so that its volume becomes 2.5 L at 1 atm. Calculate change in its internal energy.
(1) 229.35 J (2) 249.35 J (3) 294.35 J (4) 260 J

3. A sample of gas present in a cylinder fitted with a frictionless piston expands against a constant pressure of 1 atm from a volume of 2L to 12L. During the process, it absorbs 600 J of heat from the surroundings. Calculate the change in internal energy of the system.
(1) -413 J (2) -213 J (3) -513 J (4) -600 J

4. Two moles of an ideal gas at 2 atm and 27°C is compressed isothermally to one half of its volume by a constant external pressure of pressure of 4 atm. Calculate q, w & Δ E. (R=0.082 L atm mol^{-1} K^{-1})
(1) -4984 J, +4984 J, 0 (2) +4984 J, -4984 J, 0
(3) -4984 J, +3984 J, 0 (4) -6984 J, +5984 J, 0

5. A system is provided with 100 J of heat. Work done on the system is 20 J. What is the change in internal energy.
(1) 320 J (2) 220 J (3) 100 J (4) 120 J

6. An insulated container is divided into two equal portions. One portion contains an ideal gas at pressure P and temperature T, while the other portion is a perfect Vacuum. If a hole is opened between the two portions, Calculate the-
(i) Change in internal energy of the gas (ii) Change in temperature of the gas
(1) 0, 0 (2) -5 J, 2 K (3) -10 J, 5 K (4) -11 J, 10 K

7. A system absorb 300 cal of heat with the result of that, the volume of the system becomes double of its initial volume and temperature changes from 273K to 546K. The work done by the system on the surroundings is 200.0 Cal Calculate ΔE.
(1) 273 Cal (2) 500 Cal (3) 100 Cal (4) -500 Cal

8. One mol of an ideal gas at 300 K is expended isothermally from an initial volume of 1 litre to 10 litre. The ΔE for the process is: (R=2 Cal K^{-1} mol^{-1})
(1) 163.7 Cal (2) 1381.1 Cal (3) 9 L-atm (4) Zero

9. In an adiabatic process which of the following is true:
(1) q = +w (2) $-\Delta E = -w$ (3) $P\Delta V = 0$ (4) q = ΔE

10. In an isochoric process, the increase in internal energy is:
(1) Equal to the heat absorbed (2) Equal to the heat evolved
(3) Equal to the work done (4) Equal to zero

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

1. The heat of reaction for $C_{10}H_8(s) + 12O_2(g) \rightarrow 10CO_2(g) + 4H_2O(\ell)$ at constant volume is -1228.2 kCal at 25°C. Calculate the heat of reaction at constant pressure and at 25°C.

(1) -1299.293 kCal (2) -1289.298 kCal (3) -1229.392 kCal (4) -1299.322 kCal

2. For the reaction at 25°C

$NH_3(g) \rightarrow \frac{1}{2} N_2(g) + \frac{3}{2} H_2(g)$; $\Delta H° = 11.04$ kCal.

Calculate $\Delta E°$ of the reaction at the given temperature.

(1) 10.44kCal (2) 44.10kCal (3) 1.44kCal (4) 16.44kCal

3. At 27°C the internal energy change of reaction $H_2(g) + Cl_2(g) \rightarrow 2HCl(g)$ is 2Cal. What is the enthalpy change of this reaction.

(1) 8Cal (2) 3Cal (3) 6Cal (4) 2Cal

4. The heat of combustion of gaseous methane (CH_4) at constant volume is measured in bomb calorimeter at 298K is found to be -885.4kJ mol^{-1}. Find the value of enthalpy change at the same temperature.

(1) 980.535 kJ (2) -890.355 kJ (3) 350.855 kJ (4)355.890 kJ

5. The enthalpy change (ΔH) for the reaction: $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$ is -92.38 kJ at 298 K. What is ΔE at 298 K?

(1) 78.225 kJ. (2) 77.525 kJ. (3) 88.455 kJ. (4) -87.425 kJ.

6. When a solid melts, there is:

(1) No increase in enthalpy (2) Increase in enthalpy

(3) Decrease in enthalpy (4) Anything can happen

7. For the reaction $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$ which of the following is valid:

(1) $\Delta H = \Delta E$ (2) $\Delta H < \Delta E$ (3) $\Delta H > \Delta E$ (4) None of these

8. Heat exchanged in a chemical reaction at constant pressure is called.

(1) Internal energy (2) Enthalpy (3) Entropy (4) Free energy

9. Latent heat of vaporization of a liquid at 500 K and 1 atm pressure is 10.0 kCal mol^{-1}. What will be the change in internal energy of 3 mol of liquid at same temperature and pressure.

(1) 13.0 kCal (2) -13.0 kCal (3) 27.0 kCal (4) -27.0 kCal

10. What is the value of Δn_g if we consider the combustion of 1 mol of liquid ethanol if reactants and products are at 298 K:

(1) -1 (2) -2 (3) +1 (4) +2

11. If a reaction involves only solids and liquids, which of the following is true

(1) $\Delta H < \Delta E$ (2) $\Delta H = \Delta E$ (3) $\Delta H > \Delta E$ (4) $\Delta H = \Delta E + RT\Delta n_g$

12. The value of $\Delta H - \Delta E$ for the following reaction at 27°C will be, $2NH_3(g) \rightarrow N_2(g) + 3H_2(g)$:

(1) $8.314 \times 273 \times (-2)$ J (2) $8.314 \times 300 \times (-2)$ J

(3) $8.314 \times 27 (+2)$ J (4) $8.314 \times 300 \times (+2)$ J

13. At constant temperature for the reaction $C_3H_8(g) + 5O_2(g) \rightarrow 3CO_2(g) + 4H_2O(l)$, $\Delta E - \Delta H$ is:

(1) +RT (2) -3RT (3) +3RT (4) -RT

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

1. 5 moles of oxygen are heated at constant volume from 10°C to 20°C. What will be the change in the internal energy of gas? The molar heat capacity of oxygen at constant pressure,

$$C_P = 7.03 \frac{Cal}{molK} \text{ and } R = 2\ Cal\, mol^{-1}\ K^{-1}$$

(1) 521.55 Cal (2) 251.5 Cal (3) 351.5 Cal (4) 215.05 Cal

2. At 27°C, one mole of an ideal gas compressed isothermally and reversibly from a pressure of 2 atm to 10 atm. Calculate ΔE and q in calorie.

(1) 0, 956.78 Cal (2) 0, 596.87 Cal (3) 0, 695.78 Cal (4) 0, 965.87 Cal

3. A gas expands from $3dm^3$ to 5 dm^3 against a constant pressure of 3 atm. the work done during expansion is used to heat 10 mol of water of temperature 290 K. Calculate final temperature of water (if specific heat of water is 4.184 $Jg^{-1}K^{-1}$).

(1) 720.81 K (2) 920.18 K (3) 290.81 K (4) 209.18 K

4. A sample of 3 mol of an ideal gas at 200K and 2 atm is compressed reversibly and adiabatically until the temperature reaches 250K, given that molar heat capacity is 27.5 JK^{-1} mol^{-1} at constant volume, calculate work.

(1) 2514 J (2) 4125 J (3) 2541 J (4) 5412 J

5. 10 moles of an ideal gas at 27°C and 10 atm. pressure occupying a volume of 24.6 L undergoes the following changes.

(i) Isothermal & reversible expansion to 246 L
(ii) Isothermal and irreversible expansion to 246 L
(iii) Isochoric heating to 177°C.
Calculate the work in each transformation in kJ.

(1) −57.41 kJ, −22.43 kJ, 0 (2) −22.43 kJ, −57.41 kJ, 0
(3) −70.41 kJ, −35.43 kJ, 0 (4) −100 kJ, −200 kJ, 0

6. Find the work, when 2 mol of a gas expands isothermally from $5dm^3$ to $40dm^3$ against a constant external pressure of 2 atm at 298K. Also calculate w_{rev} for the change.

(1) –7.09 kJ, –10.3 kJ (2) –10.3 kJ, –7.09 kJ

(3) –20 kJ, –10.3 kJ (4) –10.3 kJ, –20.3 kJ

7. Calculate w for the isothermal reversible expansion of 1mol of an ideal gas from an initial pressure of 1.0 bar to a final pressure of 0.1 bar at a constant temperature of 273 K:

(1) -5227.2 J (2) +5227.2J (3) -2257 J (4) +2257 J

8. When 229 J of energy is supplied as heat at constant pressure to 3 mol Ar(g), the temperature of the sample is increased by 2.55K. Calculate the molar heat capacity at constant volume:

(1) 30 kJ K^{-1} mol^{-1} (2) 30 J K^{-1} mol^{-1}

(3) 21.7 J K^{-1} mol^{-1} (4) 21.7 kJ K^{-1} mol^{-1}

9. The enthalpy change for transition of liquid water to steam is 40.8 kJ mol^{-1} at 373K. Calculate ΔS for the process.

(1) 106.38 JK^{-1} mol^{-1} (2) 183.19 JK^{-1} mol^{-1}

(3) 109.38 JK^{-1} mol^{-1} (4) 138.09 JK^{-1} mol^{-1}

10. Calculate the change in entropy for the fusion of 1 mol of ice. The melting point of ice is 273K and molar enthalpy of fusion of ice = 6 kJ mol^{-1}.

(1) 21.97 JK^{-1} mol^{-1} (2) 97.12 JK^{-1} mol^{-1}

(3) 79.12 JK^{-1} mol^{-1} (4) 27.19 JK^{-1} mol^{-1}

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

1. The enthalpy of vapourisation of liquid diethyl ether $(C_2H_5)_2O$, is 26.0 kJ mol^{-1} at its biling point (35.0°C). Calculate ΔS for conversion of:
(i) Liquid to vapour and (ii) Vapour to liquid at 35°C
(1) 84.41 JK^{-1} mol^{-1}, −84.41 JK^{-1} mol^{-1} (2) 48.14 JK^{-1} mol^{-1}, −48.14 JK^{-1} mol^{-1}
(3) 91.48 JK^{-1} mol^{-1}, −91.48 JK^{-1} mol^{-1} (4) 76.78 JK^{-1} mol^{-1}, −76.78 JK^{-1} mol^{-1}

2. Which of the following processes are accompanied by increase of entropy:
(i) Dissolution of iodine in a solvent $\{I_2(s) \rightarrow I_2(aq.)\}$
(ii) HCl is added to $AgNO_3$ and a precipitate of AgCl is obtained.
(iii) A partition is removed to allow tow gases to mix.
(1) (i) & (ii) (2) (i) & (iii) (3) (ii) & (iii) (4) (i), (ii) and (iii)

3. In any natural process, occurring in the universe.
(1) Entropy is conserved (2) Entropy increases
(3) Entropy decreases (4) Entropy remains unchanged

4. The most random state of H_2O system is:.
(1) Ice (2) $H_2O(l)$ at 80°C; 1 atm
(3) Steam (4) $H_2O(l)$ at 25°C; 1 atm

5. Change in entropy is negative for:
(1) $Br_2(l) \rightarrow Br_2(g)$ (2) $C(s)+H_2O(g) \rightarrow CO(g)+H_2(g)$
(3) $M_2(g,10atm \rightarrow M_2(g, 1atm)$ (4) Fe (at 400K) → Fe (at 300K)

6. Total entropy change in spontaneous adiabatic process is:
(1) Zero (2) < 0 (3) > 0 (4) None of these

7. 5 mole of an ideal gas expand reversibly from a volume of 8 dm^3 to 80 dm^3 at a temperature of 27°C. The change in entropy is:
(1) 41.57 JK^{-1} (2) -95.73 JK^{-1} (3) 95.73 JK^{-1} (4) -41.57 JK^{-1}

8. The latent heat of vapourisation of water at 100°C is 540 Cal g^{-1}. Calculate the entropy increase when one mole of water at 100°C is evaporated.
(1) 26 Cal K^{-1} mol^{-1} (2) 1.45 Cal K^{-1} mol^{-1} (3) 367 Cal K^{-1} mol^{-1} (4) 1.82 Cal K^{-1} mol^{-1}

9. Calculate enthalpy of vapourization per mole of ethanol. Given ΔS = 109.8 JK^{-1} $mole^{-1}$ and B.P. of ethanol is 78.5°C:
(1) Zero (2) 38.594 kJ mol^{-1} (3) 3.85 kJ mol^{-1} (4) None of these

10. For which reaction from the following, ΔS will be positive ?
(1) $Ca(s) + 1/2\ O_2(g) \rightarrow CaO(s)$ (2) $CaCO_3(s) \rightarrow CaO(s)+CO_2(g)$
(3) $C(s) + 1/2O_2(g) \rightarrow CO(g)$ (4) $2SO_2(g) + O_2(g) \rightarrow 2SO_3(g)$

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

1. In an adiabatic process, no transfer of heat takes place between system and surroundings. Choose the correct option for the free expansion of an ideal gas under adiabatic condition from the following.

(1) $q = 0, \Delta T \neq 0, w = 0$
(2) $q \neq 0, \Delta T = 0, w = 0$
(3) $q = 0, \Delta T = 0, w = 0$
(4) $q = 0, \Delta T < 0, w \neq 0$

2. In an exothermic reaction, heat is evolved, and system loses heat to the surrounding. For such system.

(1) q_p will be negative
(2) $\Delta_r H$ will be negative
(3) q_p will be positive
(4) $\Delta_r H$ will be positive

3. For an ideal gas, the work of reversible expansion under isothermal condition can be calculated by using the expression $w=-nRT\ \ln\frac{V_f}{V_i}$

A sample containing 1.0 mol of an ideal gas is expanded isothermally and reversibly to ten times of its original volume, in two separate experiments. The expansion is carried out at 300 K and at 600 K respectively. Choose the correct option.

(1) Work done at 600 K is 20 times the work done at 300 K.
(2) Work done at 300 K is twice the work done at 600 K.
(3) Work done at 600 K is twice the work done at 300 K.
(4) $\Delta U = 0$ in both cases.

4. Match the following:

(i)	Adiabatic process	(a)	Heat
(ii)	Isolated system	(b)	At constant volume
(iii)	Isothermal change	(c)	First law of thermodynamics
(iv)	Path function	(d)	No exchange of energy and matter
(v)	State function	(e)	No transfer of heat
(vi)	$\Delta U = q$	(f)	Constant temperature
(vii)	Law of conservation of energy	(g)	Internal energy
(viii)	Reversible process	(h)	$P_{ext}=0$
(ix)	Free expansion	(i)	At constant pressure
(x)	$\Delta H = q$	(j)	Infinitely slow process which proceeds through a series of equilibrium states.
(xi)	Intensive property	(k)	Entropy
(xii)	Extensive property	(l)	Pressure
		(m)	Specific heat capacity

5. The entropy change can be calculated by using the expression $\Delta S = \frac{q_{rev}}{T}$.

When water freezes in a glass beaker, choose the correct statement amongst the following:
(1) ΔS (system) decreases but ΔS (surroundings) remains the same.
(2) ΔS (system) increases but ΔS (surroundings) decreases.
(3) ΔS (system) decreases but ΔS (surroundings) increases.
(4) ΔS (system) decreases but ΔS (surroundings) also decreases.

6. The spontaneity means, having the potential to proceed without the assistance of external agency. The processes which occur spontaneously are
(1) Flow of heat from colder to warmer body.
(2) Gas in a container contracting into one corner.
(3) Gas expanding to fill the available volume
(4) Burning carbon in oxygen to give carbon dioxide.

7. Match the following processes with entropy change:

	Reaction	**Total entropy change**
(i)	A liquid vapourises at temperature more than its boiling point	(a) $\Delta S_T = 0$
(ii)	Reaction is non-spontaneous at all temperatures and ΔH is positive	(b) ΔS_T = positive
(iii)	Reversible expansion of an ideal gas	(c) ΔS_T = negative

8. **Assertion (A) :** Spontaneous process is an irreversible process and may be reversed by some external agency.

Reason (R) : Decrease in enthalpy is a contributory factor for spontaneity.

(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 (A) :** A liquid crystallises into a solid and is accompanied by decrease in entropy.

Reason (R) : In crystals, molecules organize in an ordered manner.

(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 following:

	Δ (Parameters)				**Description**
	$\Delta_r H^\ominus$	**$\Delta_r S^\ominus$**	**$\Delta_r G^\ominus$**		
(i)	+	–	+	(a)	Non-spontaneous at high temperature.
(ii)	–	–	+	(b)	Spontaneous at all temperatures
(iii)	–	+	–	(c)	Non-spontaneous at all temperatures

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

1. For a certain reaction the change in enthalpy and change in entropy are 40.63 kJ mol^{-1} and 100 JK^{-1}. What is the value of ΔG at 27°C and indicate whether the reaction is possible or not?

(1) Possible (2) Not possible (3) Can't predict (4) None

2. For a reaction at 25°C enthalpy change (ΔH) and entropy change (ΔS) are -11.7×10^3 J mol^{-1} and –105 J mol^{-1} K^{-1} respectively. Find out whether this reaction is spontaneous or not.

(1) Spontaneous (2) Non spontaneous

(3) Reaction at equilibrium (4) None

3. Calculate the equilibrium constant for the reaction given below at 400K.

If $\Delta H° = 77.2 kJmol^{-1}$ and $\Delta S° = 122\ JK^{-1}\ mol^{-1}$

$PCl_{5(g)} \rightarrow PCl_{3(g)} + Cl_{2(g)}$

(1) 2×10^{-4} (2) 4×10^{-2} (3) 20×10^{-3} (4) 40×10^{-3}

4. For the reaction, $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$; ΔH = –95.4 kJ and ΔS = –198.3 Jk^{-1}. Calculate the temperature at which the reaction will proceed in forward direction.

(1) Above 481 K (2) Below 481 K (3) Can't predict (4) None

5. Enthalpy and entropy change of a reaction are 40.63 kJ mol^{-1} and 108.8 J K^{-1} respectively. Analyse the feasibility of the reaction at 27°C.

(1) Feasible (2) Not feasible (3) At equilibrium (4) None

6. For a certain reaction the change in enthalpy and change in entropy are 40.63 kJ mol^{-1} and 100 JK^{-1}. Show that the reaction at 27°C is possible or not.

(1) Possible (2) Not possible (3) Can't predict (4) None

7. Zinc reacts with dilute hydrochloric acid to given hydrogen at 17°C. The enthalpy of the reaction is -12.55 kJ mol^{-1} and entropy change is 5JK^{-1} mol^{-1} for the reaction. Calculate the free energy change and predict whether the reaction is spontaneous or not.

(1) +14 kJ/mol, Non Spontaneous (2) +14 kJ/mol, Spontaneous

(3) -14 kJ/mol, Spontaneous (4) None

8. For a reaction both DH and DS are positive under what condition will the reaction occur spontaneously.

(1) $T\Delta S = \Delta H$ (2) $T\Delta S < \Delta H$ (3) $T\Delta S > \Delta H$ (4) None

9. Which of the following are state function?

(i) q (ii) Entropy (iii) Gibb's energy (iv) H (v) w

(1) i, ii, iii (2) iii, iv, v (3) iv, v (4) ii, iii, iv

10. If $\Delta G° > 0$ for a reaction then:

(1) Kp > 1 (2) Kp < 1 (3) Kp = 1 (4) None

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

1. For an endothermic reaction to be spontaneous:-
(1) ΔG must be + ve
(2) ΔS must be > 0
(3) ΔS must be –Ve
(4) $T\Delta S$ must be equal to ΔG

2. The value of ΔG for the process $H_2O(s) \rightarrow H_2O(l)$ at 1 atm and 260 K is:-
(1) < 0 (2) = 0 (3) > 0 (4) Unpredictable

3. In a certain chemical reaction ΔH = 150 kJ and ΔS = 10 JK^{-1} at 300 K. The value of ΔG would be:-
(1) –2850 J (2) Zero (3) +2850 J (4) 147 kJ

4. The standard Gibb's energy change for a gaseous reaction at 27°C is X kCal. If equilibrium constant for reaction is 100 and R is 2 Cal K^{-1} mol^{-1}. The X is :-
(1) –2.7636 (2) +2.7636 (3) + 807 (4) –807

5. The favorable conditions for a spontaneous reaction are :-
(1) $T\Delta S > \Delta H$, ΔH = +ve, ΔS = +ve
(2) $T\Delta S > \Delta H$, ΔH = +ve, ΔS = –ve
(3) $T\Delta S = \Delta H$, ΔH = –ve, ΔS = –ve
(4) $T\Delta S = \Delta H$, ΔH = +ve, ΔS = +ve

6. If $\Delta H < 0$ and $\Delta S < 0$, the reaction proceeds spontaneously when :-
(1) $\Delta H < 0$ (2) $\Delta H > T\Delta S$ (3) $\Delta H = T\Delta S$ (4) None

7. which of the following is true for the reaction $H_2O(l) \rightleftharpoons H_2O(g)$ at 100°C and 1 atmosphere
(1) $\Delta S = 0$ (2) $\Delta H = 0$ (3) $\Delta H = \Delta E$ (4) $\Delta H = T\Delta S$

8. The process of evaporation of a liquid is accompanied by :
(1) Increase in enthalpy
(2) Decrease in free energy
(3) Increase in entropy
(4) All

9. Which of the following is not correct?
(1) ΔG is zero for a reversible reaction
(2) ΔG is positive for a spontaneous reaction
(3) ΔG is negative for a spontaneous reaction
(4) ΔG is positive for a non-spontaneous reaction

10. Match the following :

(i) Entropy of vapourisation	(a) decreases
(ii) ΔS_T for spontaneous process	(b) is always positive
(iii) Crystalline solid state	(c) lowest entropy
(iv) ΔU in adiabatic expansion of ideal gas	(d) $\frac{\Delta H_{vap}}{T_b}$

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

1. An endothermic reaction is one in which:

(1) Heat is converted into electricity (2) Heat is absorbed

(3) Heat is evolved (4) Heat is converted into mechanical work

2. If heat of reaction A + 5B → 2C + 3D, is –50 Kj. What is the heat of the reaction 2A+10B → 4C+6D.

(1) –50 kJ (2) –25 kJ (3) –100 kJ (4) +100 kJ

3. The process $CH_3COOH \rightarrow CH_3COO^- + H^+$, Should be:

(1) Exothermic

(2) Endothermic

(3) Neither exothermic nor endothermic

(4) Exothermic or endothermic depending upon temperature

4. For the given:

$CO_2(g) + H_2(g) \rightarrow CO(g) + H_2O(g)$; $\Delta H = 40$ kJ

The ΔH is specifically called

(1) Heat of formation of CO (2) Heat of combustion

(3) Heat of reaction (4) Heat of hydrogenation of C = O bond

5. Since enthalpy of elements in their natural state is taken as zero. The value of ΔH_f of compounds:

(1) is always negative (2) is always positive

(3) may be positive or negative (4) is zero

6. The enthalpy of formation of ammonia at 298K is given as ΔH_f° = –46.11 kJ per mol of $NH_3(g)$. To which of the following equation does this value apply?

(1) $\frac{1}{2}N_2(g) + \frac{3}{2}H_2(g) \rightarrow NH_3(g)$ (2) $N(g) + 3H(g) \rightarrow NH_3(g)$

(3) $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$ (4) $\frac{1}{2}N_2(g) + \frac{3}{2}H_2(g) \rightarrow NH_3(\ell)$

7. Which of the following equation represents the standard heat of formation:

(1) C(diamond) + $2H_2(g) \rightarrow CH_4(g)$ (2) C(graphite) + $2H_2(g) \rightarrow CH_4(g)$

(3) C(diamond) + $4H(g) \rightarrow CH_4(g)$ (4) C(graphite) + $4H_2(g) \rightarrow CH_4(g)$

8. Which of the following reaction defines ΔH_f°

(1) $C_{(diamond)} + O_2(g) \rightarrow CO_2(g)$ (2) $\frac{1}{2}H_2(g) + \frac{1}{2}F_2(g) \rightarrow HF(g)$

(3) $N_2(g) + 3H_2(g) \rightarrow 2NH_3(g)$ (4) $CO(g) + \frac{1}{2}O_2(g) \rightarrow CO_2(g)$

9. How much heat will be required at constant pressure to form 1.28 kg of CaC_2 from CaO(s) & C(s)?

Given : $\Delta_f H°(CaO, s) = -152$ kCal mol^{-1}

$\Delta_f H°(CaC_2, s) = -14$ kCal mol^{-1}

$\Delta_f H°(CO, g) = -26$ kCal mol^{-1}

(1) + 112 kCal (2) 224 kCal (3) 3840 kCal (4) 2240 kCal

10. The $\Delta_f H°(N_2O_5, g)$ in kJ mol^{-1} on the bases of the following data is:

$2NO(g) + O_2(g) \rightarrow 2NO_2(g)$ $\Delta_f H° = -114$ kJ mol^{-1}

$4NO_2(g) + O_2(g) \rightarrow 2N_2O_5(g)$ $\Delta_f H° = -102.6$ kJ mol^{-1}

$\Delta_f H°$ (NO,g) = 90.2 Kj mol^{-1}

(1) 15.1 (2) 30.2 (3) –36.2 (4) None of these

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

1. Calculate $\Delta H°$ for $2Al_{(s)} + Fe_2O_3 \rightarrow 2Fe_{(S)} + Al_2O_3$ given that standard enthalpy of Fe_2O_3 and Al_2O_3 are –196.5 and –399.1 kCal.
(1) –202.6 kCal (2) 180.94 kCal (3) -220.56 kCal (4) -250.54 kCal

2. The heat of formation of the compound in the following reaction is:
$H_{2(g)} + Cl_{2(g)} \rightarrow 2HCl_{(g)} + 44$ Kcal
(1) –44 kCal mol^{-1} (2) –22 kCal mol^{-1} (3) +11 kCal mol^{-1} (4) –88 kCal mol^{-1}

3. 1 mole of methanol, when burnt in oxygen, gives out –723 kJ mol^{-1} heat. If 1 mole of oxygen is used what will be the amount of heat evolved?
(1) 723 kJ (2) 964 kJ (3) 482 kJ (4) 241 KJ

4. Combustion of methane:
(1) Is an exothermic reaction (2) Is an endothermic reaction
(3) Requires a catalyst (4) Gives H_2

5. The heat evolved in the combustion of glucose is given by the equation
$C_6H_{12}O_6(s) + 6O_2(g) \rightarrow 6CO_2(g) + 6H_2O(g)$, $\Delta H = -680$ kCal
The wt. of $CO_2(g)$ Produced when 170 kCal of heat is evolved in the combustion of glucose is
(1) 264 g (2) 66 g (3) 11 g (4) 44 g

6. Find out the calorific value of glucose
$C_6H_{12}O_6 + 6O_2 \rightarrow 6CO_2 + 6H_2O$; $\Delta H = -2900$ kJ mol^{-1}
(1) 16.11 KJg^{-1} (2) 28.32 KJg^{-1} (3) 25.52 KJg^{-1} (4) 30.54 KJg^{-1}

7. Enthalpy of combustion of a substance is always :
(1) > 0 (2) ≥ 0 (3) ≤ 0 (4) < 0

8. The heat change for a reaction: $CO(g) + \frac{1}{2} O_2 \rightarrow CO_2(g)$ refers to
(1) Enthalpy of formation of carbon dioxide
(2) Enthalpy of combustion of carbon dioxide
(3) Enthalpy of vaporisation
(4) Enthalpy of combustion of carbon monoxide

9. Heat of neutralisation of an acid by a base is maximum when:
(1) Both the acid and base are weak (2) Both the acid and base are strong
(3) The acid is strong and the base is weak (4) The acid is weak and the base is strong

10. The enthalpy change for the process $c_{(s)} \rightarrow c_{(g)}$ corresponds to the enthalpy of
(1) Fusion (2) Vaporization (3) Combustion (4) Sublimation

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

1. If $H^+ + OH^- \rightarrow H_2O + 13.7$ kCal, then heat of complete neutralisation of 1 gm mol of H_2SO_4 with base in excess will be :

(1) –13.7 kCal (2) –27.4 kCal (3) –6.85 kCal (4) –3.425 kCal

2. 200 cm^3 of 0.1 M H_2SO_4 is mixed with 150 cm^3 of 0.2 M KOH. Find the value of evolved heat.

(1) 2.3 KJ (2) 1.7 KJ (3) 4.5 KJ (4) 3.5 KJ

3. Enthalpy of neutralisation of acetic acid with KOH will be numerically :

(1) = 57.2 kJ (2) > 57.2 kJ (3) < 57.2 kJ (4) Unpredictable

4. The vaporisation process is always :

(1) Exothermic (2) Endothermic

(3) Can be exothermic or endothermic (4) None of these

5. One mole of H_2SO_4 is completely neutralised with 2 mole of NaOH in dilute solutions. the amount of heat evolved during the process is:

(1) 57.2 kJ (2) $\frac{57.2kJ}{2}$ (3) 13.7 kCal (4) 114.4 kJ

6. which of the following data represents the value of heat of neutralisation of strong acid against strong base?

(1) –13.7 kCal (2) –57.2 kJ (3) -5.72×10^4 J (4) All the above

7. Fusion of ice is :

(1) Exothermic change

(2) Endothermic change

(3) A process that does not involve any heat change

(4) Unpredictable

8. During complete combustion of one mole of butane, 2658 kJ of heat is released. The thermochemical reaction for above change is

(1) $2C_4H_{10}(g) + 13O_2(g) \rightarrow 8CO_2(g) + 10H_2O(l)$ $\Delta_cH = -2658.0$ kJ mol^{-1}

(2) $C_4H_{10}(g) + \frac{13}{2} O_2(g) \rightarrow 4CO_2(g) + 5H_2O(g)$ $\Delta_cH = -1329.0$ kJ mol^{-1}

(3) $C_4H_{10}(g) + \frac{13}{2} O_2(g) \rightarrow 4CO_2(g) + 5H_2O(l)$ $\Delta_cH = -2658.0$ kJ mol^{-1}

(4) $C_4H_{10}(g) + \frac{13}{2} O_2(g) \rightarrow 4CO_2(g) + 5H_2O(l)$ $\Delta_cH = +2658.0$ kJ mol^{-1}

9. Δ_fU of formation of CH_4 (g) At certain temperature is -393 kJ mol^{-1}. The value of Δ_fH^- is

(1) Zero

(2) $< \Delta_fU$

(3) $> \Delta_fU$

(4) Equal to Δ_fU

10. The enthalpies of elements in their standard states are taken as zero. The enthalpy of formation of a compound

(1) is always negative

(2) is always positive

(3) may be positive or negative

(4) is never negative

11. **Assertion (A):** Combustion of all organic compounds is an exothermic reaction.

Reason (R): The enthalpies of all elements in their standard state are zero.

(1) Both A and R are true and R is the correct explanation of A.

(2) Both A and R are true but R is not the correct explanation of A.

(3) A is true but R is false.

(4) A is false but R is true.

NEET-CHEMISTRY **ELP NO.- 13** **THERMODYNAMICS**

1. Given the bond energy of N · N. H–H and N–H bond are 945, 436 and 391 kJ mol^{-1} respectively, the enthalpy of the reaction $N_2(g) + 3H_2(g) \longrightarrow 2NH_3(g)$ is:

(1) –93 kJ (2) 102 kJ (3) 90 kJ (4) 105 kJ

2. The enthalpy changes at 298 K in successive breaking of O–H bonds of H–O–H are

$H_2O(g) \longrightarrow H(g) + OH(g)$, $\Delta H = 498$ kJ mol^{-1}

$OH(g) \longrightarrow H(g) + O(g)$, $\Delta H = 428$ kJ mol^{-1}

The bond enthalpy of the O–H bond is

(1) 498 kJ mol^{-1} (2) 463 kJ mol^{-1} (3) 428 kJ mol^{-1} (4) 70 kJ mol^{-1}

3. The required heat for dissociation of 1 mol H_2O into its atoms (H and oxygen) is ΔH_{Dis}. Then calculate the bond energy of O–H bond.

$H_2O(g) \longrightarrow O(g) + 2H(g)$; $\Delta H_{Dissociation}$

(1) $\frac{\Delta H_{Dis}}{2}$ (2) $\frac{\Delta H_{Dis}}{4}$ (3) $2\Delta H_{Dis}$ (4) $2-\Delta H_{Dis}$

4. Calculate the bond energy of C–H bond in methane.

(1) $\frac{\Delta H_{Dis}}{2}$ (2) $\frac{\Delta H_{Dis}}{4}$ (3) $2\Delta H_{Dis}$ (4) $2-\Delta H_{Dis}$

5. The energy change of reaction $C_2H_6(g) \longrightarrow 2C(g) + 6H(g)$ is X kJ. The bond energy of C–H bond is

(1) $\frac{X}{6}$ kJ mol^{-1} (2) $\frac{X}{3}$ kJ mol^{-1}

(3) X kJ/mol^{-1} (4) Unpredictable from data

6. $CuSO_4(\ell) + 5H_2O(s) \longrightarrow CuSO_4.\ 5H_2O(s);\ \ \Delta H = -x\ kJ$

The value of ΔH represents:

(1) Enthalpy of solution of copper (II) sulphate

(2) Enthalpy of hydration of copper (II) sulphate

(3) Enthalpy of hydrolysis of copper (II) sulphate

(4) Lattice energy of copper (II) sulphate

7. The bond energy of hydrogen is 103 kCal mol^{-1}. This means that:

(1) 103 kCal are required to break 6.023×10^{23} gaseous H_2 molecules into gaseous atoms

(2) 103 kCal are required to break the bond in one gram of hydrogen

(3) 103 kCal are required to break one bond to form two atoms of hydrogen

(4) 103 kCal are required to break one mole of gaseous hydrogen molecules into ions.

8. Single step reaction A $\longrightarrow$ B; ΔH = ?

Multi step reaction to produce B from A is given

$A \xrightarrow{\Delta H_1} C \xrightarrow{\Delta H_2} D \xrightarrow{\Delta H_3} E \xrightarrow{\Delta H_4} B$

(1) $\Delta H_1+\Delta H_2+\Delta H_3+\Delta H_4$

(2) $\Delta H_1+\Delta H_2-\Delta H_3+\Delta H_4$

(3) $\Delta H_1-\Delta H_2-\Delta H_3-\Delta H_4$

(4) $\Delta H_1-\Delta H_2+\Delta H_3-\Delta H_4$

9. Calculate the heat of formation of Benzene. The reaction is given below:

$6C(s) + 3H_2(g) \rightarrow C_6H_6(l)$ and -3268, -393.5 and -285.8 kJ mol^{-1} are the heats of combustion of benzene, heat of formation of CO_2 and heat of formation of benzene of $H_2O(\ell)$ respectively?

(1) 35 kJ mol^{-1}

(2) 49.6 kJ mol^{-1}

(3) -35.8 kJ mol^{-1}

(4) -49 kJ mol^{-1}

10. The heats of formation of $CO_2(g)$ and $H_2O(l)$ are -97 and -68 kCal mol^{-1}. The heat of combustion of benzene is -783 kCal mol^{-1}. What will be the heat of formation of benzene ?

(1) 2 kCal mol^{-1}

(2) 3 kCal mol^{-1}

(3) -3 kCal mol^{-1}

(4) -2 kCal mol^{-1}

NEET-CHEMISTRY **ELP NO.- 14** **THERMODYNAMICS**

1. Calculate the enthalpy of combustion of ethylene (gas) to form CO_2 (gas) and H_2O (gas) at 298 K and 1 atmospheric pressure. The enthalpies of formation of $CO_2(g)$, $H_2O(g)$ and $C_2H_4(g)$ are -393.7, -241.8, + 52.3 kJ per mol respectively.

(1) -13.28 kJ mol^{-1} (2) -13233 kJ mol^{-1} (3) 1540 kJ mol^{-1} (4) 1323.8 kJ mol^{-1}

2. The heat of solution of anhydrous $CuSO_4(g)$ is -15.9 kCal mol^{-1} and that of $CuSO_4.5H_2O(g)$ is 2.8 kCal mol-1. Calcualte the heat of hydration of $CuSO_4(g)$.

(1) -18.7 kCal mol^{-1} (2) 19.2 kCal mol^{-1} (3) 20.4 kCal mol^{-1} (4) 18.7 kCal mol^{-1}

3. A hypothetical reaction, $X \rightarrow 2Y$ proceeds by the following sequence of steps

(i) $\frac{1}{2}X \rightarrow z$; $\Delta H = q_1$

(ii) $Z \rightarrow 2W$; $\Delta H = q_2$

(iii) $W \rightarrow \frac{1}{2}Y$; $\Delta H = q_3$

The value of ΔH of reaction is:

(1) $q_1 + q_2 + q_3$ (2) $2(q_1 + 2q_2 + 3q_3)$

(3) $2(q_1 + q_2 + 2q_3)$ (4) $2(q_1 + q_2 + q_3)$

4. Consider two paths of a certain reaction.

(i) $A + B \xrightarrow{\Delta H_1} AB$: $AB \xrightarrow{\Delta H_2} P + Q$

(ii) $A + B \xrightarrow{\Delta H_3} AB$: $C \xrightarrow{\Delta H_4} P + Q$ then,

(1) $(\Delta H_1 + \Delta H_2) > (\Delta H_3 + \Delta H_4)$ (2) $(\Delta H_1 + \Delta H_2) = (\Delta H_3 + \Delta H_4)$

(3) $(\Delta H_2 + \Delta H_3) > (\Delta H_1 + \Delta H_4)$ (4) $(\Delta H_1 + \Delta H_2) < (\Delta H_3 + \Delta H_4)$

5. (i) $S(s) + 3/2\ O_2(g) \rightarrow SO_3(g) + 2x$ kCal.

(ii) $SO_2(g) + 1/2\ O_2(g) \rightarrow SO_3(g) + y$ kCal

Calculate the heat of formation of SO_2 :

(1) (2x+y) (2) -(2x-y) (3) x+y (4) 2x/y

6. Calculate the enthalpy change accompanying the conversion of 10g of graphite into diamond if the heats of combustion of C (graphite) and C(diamond) are –94.05 and –94.50 kcal respectively.

(1) 0.45 Kcal (2) 0.54 Kal (3) 0.75 Kcal (4) 0.375 Kcal

7. At 18°C, the heat of solution of anhydrous $CuSO_4$ in a large volume of water is –15.90 kcal per mole while that of $CuSO_4.5H_2O$ is 2.75 kcal per mole. What is the heat of hydration of $CuSO_4$?

(1) –13.15Kcal (2) +13.15 Kcal (3) +18.65 Kcal (4) –18.65 Kcal

8. The heat of formation of ethylene is 12.5 kcal. Calculate C = C bond energy in ethylene from the following data. Heat of atomisation of C = 170.9 kcal /mole, Heat of atomisation of H_2 = 104.2 kcal/mole, bond energy of C—H = 99.3 kcal/mole.

(1) –140.5 kJ/mol (2) +140.5 kJ/mol

(3) –241 kJ/mol (4) +241 kJ/mol

9. On the basis of thermochemical equations (a), (b) and (c), find out which of the algebraic relationships given in options (i) to (iv) is correct.

(a) C (graphite) + O_2 (g) $\rightarrow$ CO_2 (g) ; $\Delta_r H$ = x kJ mol^{-1}

(b) C (graphite) + $\frac{1}{2}$ O_2 (g) $\rightarrow$ CO (g) ; $\Delta_r H$ = y kJ mol^{-1}

(c) CO (g) + $\frac{1}{2}$ O_2 (g) $\rightarrow$ CO_2 (g) ; $\Delta_r H$ = z KJ mol^{-1}

(1) z = x + y (2) x = Y – z (3) x = y + z (4) y = 2z – x

10. Consider the reactions given below. On the basis of these reactions find out which of the algebraic relations given in options (i) to (iv) is correct?

(a) C (g) + 4 H (g) $\rightarrow$ CH_4 (g) ; $\Delta_r H$ = x kJ mol^{-1}

(b) C (graphite) + $2H_2$ (g) $\rightarrow$ CH_4 (g) ; $\Delta_r H$ = y kJ mol^{-1}

(1) x = y (2) x = 2y (3) x > y (4) x < y

11. Enthalpy of sublimation of a substance is equal to

(1) Enthalpy of fusion + enthalpy of vaporisation

(2) Enthalpy of fusion

(3) Enthalpy of vaporisation

(4) Twice the enthalpy of vaporisation

NEET-CHEMISTRY **ELP NO.-1** **CHEMICAL EQUILIBRIUM**

1. In any chemical reaction, equilibrium is supposed to be established when:

(1) Mutual opposite reaction undergo.

(2) Concentration of reactants and resulting products are equal

(3) Velocity of reactants and resulting products are equal.

(4) The temperature of mutual opposite reactions becomes equal.

2. 8.5 g ammonia is present in a vessel of 0.5 litre capacity then find out the active mass of ammonia?

(1) 0.5 mol L^{-1} (2) 1 mol L^{-1} (3) 2 mol L^{-1} (4) 0.25 mol L^{-1}

3. Which of the following statement is correct regarding with chemical equilibrium:-

(1) Chemical equilibrium can be approached from both sides whether the reaction starts from forward direction or backward direction with the reactant or with the product.

(2) Equilibrium is not static

(3) Concentration of reactants and products becomes constant at equilibrium

(4) All of these

4. Find out the correct statement:-

(1) Equilibrium condition is a state of reversible reaction

(2) Chemical equilibrium are important in numerous biological process like transport and delivery of O_2

(3) Reversible reactions can be homogeneous and heterogeneous both

(4) All of these

5. Which of the following reaction is endothermic reaction:-

(1) Vaporization of liquid to its vapour.

(2) Combustion reactions

(3) Neutralization reactions

(4) Condensation of vapour to its liquid state

6. Active mass of 2 mol of $CaCO_3$ kept in 4 litre vessel at NTP is:-

(1) 1 (2) 2 (3) $\frac{1}{2}$ (4) Not defined

7. 2 gm of hydrogen gas and 8 gm of oxygen gas is present in a container. Total pressure in the container is P atm then partial pressure (atm) of oxygen gas is,

(1) $\frac{4}{5}P$ (2) $\frac{1}{5}P$ (3) $\frac{5}{4}P$ (4) $\frac{1}{4}P$

8. Which of the following is a characteristic of a reversible reaction

(1) Number of moles of reactants and products are equal

(2) It can be influenced by a catalyst

(3) It can never proceed to completion

(4) None of the above

9. Which of the following reactions is reversible

(1) $H_2 + I_2 \rightleftharpoons 2HI$ (2) $H_2SO_4 + Ba(OH)_2 \longrightarrow BaSO_4 + 2H_2O$

(3) $NaCl + AgNO_3 \longrightarrow NaNO_3 + AgCl$ (4) $Fe + S \longrightarrow FeS$

10. Amongst the following chemical reactions the irreversible reaction is

(1) $H_2 + I_2 \rightleftharpoons 2HI$ (2) $AgNO_3 + NaCl \longrightarrow AgCl + NaNO_3$

(3) $CaCO_3 \rightleftharpoons CaO + CO_2$ (4) $O_2 + 2SO_2 \rightleftharpoons 2SO_3$

NEET-CHEMISTRY **ELP NO.-2** **CHEMICAL EQUILIBRIUM**

1. The equilibrium constant for the given reaction is correctly given by expression: $2HI \rightleftharpoons H_2 + I_2$

(1) $K_C = \frac{[H_2][I_2]}{[HI]}$ (2) $K_C = \frac{[H_2][I_2]}{[2HI]}$

(3) $K_C = \frac{[H_2][I_2]}{[HI]^2}$ (4) $K_C = \frac{[HI]^2}{[H_2][I_2]}$

2. Unit of equilibrium constant for the reversible reaction is : $2SO_2 + O_2 \rightleftharpoons 2SO_3$

(1) Mol^{-1} litre (2) Mol^{-2} litre

(3) Mol $litre^{-1}$ (4) None of these

3. In chemical reaction A $\rightleftharpoons$ B, the system will be known in equilibrium when

(1) A completely changes to *B*

(2) 50% of *A* changes to *B*

(3) The rate of change of *A* to *B* and *B* to *A* on both the sides are same

(4) Only 10% of *A* changes to *B*

4. The number of gram molecules of a substance present in unit volume is termed as

(1) Activity (2) Normality

(3) Molality (4) Active mass

5. According to law of mass action rate of a chemical reaction is proportional to

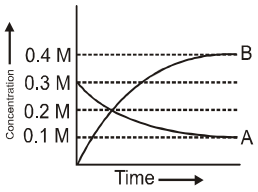
(1) Molality of reactants (2) Molar concentration of reactants

(3) Molality of products (4) Molar concentration of products

6. Equilibrium constant is :-

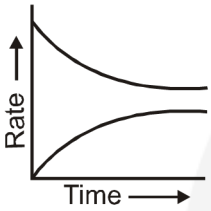
(1) $\frac{k_b}{k_f}$ (2) $\frac{k_f}{k_b}$ (3) $k_f \times k_b$ (4) $\frac{1}{k_f k_b}$

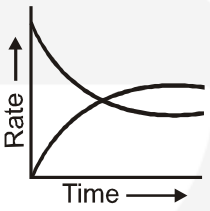
7. The figure shows the change in concentration of species A and B as a function of time. The equilibrium constant K_C for the reaction $A(g) \rightleftharpoons 2B(g)$ is:

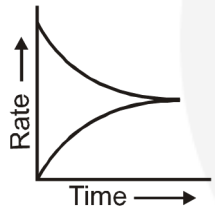


(1) $K_c = 1.6$ (2) $K_C = 4$ (3) $K_C = 1$ (4) $K_C = 16$

8. Which graph will show equilibrium condition?

(1) 

(2) 

(3) 

(4) None of these

9. For the reaction $SO_2(g) + \frac{1}{2} O_2(g) \rightleftharpoons SO_3(g)$, if $K_p = K_C (RT)^x$ where the symbols have usual meaning then the value of x is: (assuming ideality)?

(1) 1/2 (2) 1 (3) –1 (4) – ½

10. For the equilibrium $SO_2Cl_2(g) \rightleftharpoons SO_2 + Cl_2(g)$, what is the temperature at which $\frac{K_P(atm)}{K_C(M)} = 3$

(1) 0.027 K (2) 0.36 K (3) 36.54 K (4) 273 K

1. At 527°C, the reaction $NH_3(g) \rightleftharpoons \frac{1}{2}N_2(g) + \frac{3}{2}H_2(g)$ has $K_C = 4$ then what is the value of K_P for the same reaction :-

(1) $16 \times (800R)^2$ (2) $\left(\frac{800R}{4}\right)^{-2}$ (3) $\left(\frac{1}{4 \times 800R}\right)^2$ (4) $4(800R)$

2. In which of the following reaction product is more stable:-

(1) $N_2 + 3H_2 \rightleftharpoons 2NH_3$; $K_1 = 2.3 \times 10^{-2}$

(2) $N_2 + O_2 \rightleftharpoons 2NO$; $K_2 = 2 \times 10^{-5}$

(3) $H_2 + I_2 \rightleftharpoons 2HI$; $K_3 = 294$

(4) $XeO + \frac{1}{2}O_2 + F_2 \rightleftharpoons XeO_2F_2$; $K_4 = 1.4 \times 10^{-3}$

3. The partial pressure of $CH_3OH(g)$, $CO(g)$ and $H_2(g)$ in equilibrium mixture for the reaction, $CO(g) + 2H_2(g) \rightleftharpoons CH_3OH(g)$ are 2.0, 1.0 and 0.1 atm respectively at 427°C. The value of K_p for the decomposition of CH_3OH to CO and H_2 is :

(1) 10^2 atm (2) 2×10^2 atm^{-1} (3) 50 atm^2 (4) 5×10^{-3} atm^2

4. The following equilibrium constants were determined at 1120 K :

$2CO(g) \rightleftharpoons C(s) + CO_2(g)$; $K_{p_1} = 10^{-14}$ atm^{-1}

$CO(g) + Cl_2(g) \rightleftharpoons COCl_2(g)$; $K_{p_2} = 6 \times 10^{-3}$ atm^{-1}

What is the equilibrium constant K_P for the following reaction at 1120 K :

$C(s) + CO_2(g) + 2Cl_2(g) \rightleftharpoons 2COCl_2(g)$

(1) 36×10^8 atm^{-1} (2) 6×10^{11} atm^{-1} (3) 9×10^{10} atm^{-1} (4) None of these

5. The equilibrium constant for the reaction $N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$ is 4×10^{-4} at 200 K. In presence of a catalyst, equilibrium is attained ten times faster. Therefore, the equilibrium constant in presence of the catalyst at 200 K is:

(1) 40×10^{-4} (2) 4×10^{-4}

(3) 4×10^{-3} (4) Difficult to compute without more data

6. The equilibrium constant (K_C) for the reaction $N_2(g)+O_2(g) \rightleftharpoons 2NO(g)$ at temperature T is 4×10^{-4}. The value of Kc for the reaction, $NO(g) \rightleftharpoons ½\ N_2(g) + ½O_2(g)$ at the same temperature is :

(1) 4×10^{-4} (2) 50.0 (3) 0.02 (4) 2.5×10^{2}

7. For the following three reactions a, b and c, equilibrium constants are given

(a) $CO(g) + H_2O(g) \rightleftharpoons CO_2(g) + H_2(g)$; K_1

(b) $CH_4(g) + H_2O(g) \rightleftharpoons CO(g) + 3H_2(g)$; K_2

(c) $CH_4(g) + 2H_2O(g) \rightleftharpoons CO_2(g) + 4H_2(g)$; K_3

Which of the following relations is correct

(1) $K_2\ K_3 = K_1$ (2) $K_3 = K_1K_2$ (3) $K_3\ K_2^3 = K_1^2$ (4) $K_1\ \sqrt{K_2} = K_3$

8. The equilibrium constant for the reaction

$SO_3(g) \rightleftharpoons SO_2(g) + \frac{1}{2}O_2(g)$ is $K_C = 7$. The value of K_C for the reaction

$2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$ will be:

(1) 49 (2) 1/49 (3) 7 (4) 1/7

9. For the reaction

$2\ NO_2(g) \rightleftharpoons 2\ NO_{(g)} + O_2(g)$,

($K_C = 1.8 \times 10^{-6}$ at 184°C)

(R = 0.0831 kJ/(mol.K))

When K_P and K_C are compared at 184°C it is found that

(1) K_P is less than K_C

(2) K_P is greater than K_C

(3) Whether K_P is greater than, less than or equal to K_C depends upon the total gas pressure

(4) $K_P = K_C$

10. **Assertion :-** In the presence of catalyst, the value of equilibrium constant K increases.

Reason :- Catalysts increases the rate of forward and backward reaction to same extent.

(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 both the reason is true.

NEET-CHEMISTRY **ELP NO.-4** **CHEMICAL EQUILIBRIUM**

1. The equilibrium constant (K_C) for the reaction $2HCl\ (g) \rightleftharpoons H_2(g) + Cl_2(g)$ is 4×10^{-34} at 25°C, What is the equilibrium constant for the reaction :-

$$\frac{1}{2}H_2(g)+\frac{1}{2}Cl_2(g) \rightleftharpoons HCl(g)$$

(1) 2×10^{-17} (2) 2.5×10^{33} (3) 5×10^{16} (4) None of these

2. Consider the following gaseous equilibrium given below

I. $N_2 + 3H_2 \rightleftharpoons 2NH_3$; eq. constant = K_1

II. $N_2 + O_2 \rightleftharpoons 2NO$; eq. constant = K_2

III. $H_2 + \frac{1}{2} O_2 \rightleftharpoons H_2O$; eq. constant = K_3

The equilibrium constant for the reaction $2NH_3 + \frac{5}{2}O_2 \rightleftharpoons 2NO + 3H_2O$ in terms of K_1, K_2 and K_3 will be :-

(1) $K_1\ K_2\ K_3$ (2) $\frac{K_1K_2}{K_3}$ (3) $\frac{K_1K_3^2}{K_2}$ (4) $\frac{K_2K_3^3}{K_1}$

3. Using molar concentration, what is the unit of K_C for the reaction $CH_3OH(g) \rightleftharpoons CO(g) + 2H_2(g)$:-

(1) M^{-2} (2) M^2 (3) M^{-1} (4) M

4. If temperature is increased then equilibrium constant will be :-

(1) Increased

(2) Decreased

(3) Remains constant

(4) May increased or decreased depends on exothermic or endothermic nature

5. What will be the equilibrium constant at 127°C. If equilibrium constant at 27°C is 4 for reaction $N_2 + 3H_2 \rightleftharpoons 2NH_3$; $\Delta H = -46.06$ kJ :-

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

6. In which of the following equilibrium equation, $K_P > K_C$

(1) $2SO_3(g) \rightleftharpoons 2SO_2(g) + O_2(g)$ (2) $PCl_3(g) + Cl_2(g) \rightleftharpoons PCl_5(g)$

(3) $H_2(g) + I_2(g) \rightleftharpoons 2HI(g)$ (4) $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$

7. If $CoO(s) + H_2(g) \rightleftharpoons Co(s) + H_2O(g)$, $K_1 = 60$; $CoO(s) + CO(g) \rightleftharpoons Co(s) + CO_2(g)$, $K_2 = 180$ Then the equilibrium constant of the reaction $CO_2(g) + H_2(g) \rightleftharpoons CO(g) + H_2O(g)$ will be-

(1) 0.44 (2) 0.11 (3) 0.22 (4) 0.33

8. $XeF_6 + H_2O \rightleftharpoons XeOF_4 + 2HF$; eq. constant = K_1

$XeO_4 + XeF_6 \rightleftharpoons XeOF_4 + XeO_3F_2$; eq. constant = K_2

Then equilibrium constant for the reaction $XeO_4 + 2HF \rightleftharpoons XeO_3F_2 + H_2O$ Will be-

(1) $\frac{K_1}{K_2}$ (2) $K_1 + K_2$ (3) $\frac{K_2}{K_1}$ (4) $\frac{K_1}{(K_2)^2}$

9. If for $H_2(g) + S(g) \rightleftharpoons H_2S(g)$ and $H_2(g) + Br_2(g) \rightleftharpoons 2HBr(g)$

The equilibrium constants are K_1 and K_2 respectively, the reaction $Br_2(g) + H_2S(g) \rightleftharpoons 2HBr(g) + S(g)$ would have equilibrium constant

(1) $K_1 \times K_2$ (2) K_1/K_2 (3) K_2/K_1 (4) K_2^2 / K_1

10. For reaction $2NOCl(g) \rightleftharpoons 2NO(g) + Cl_2(g)$, K_C at 427°C is 3×10^{-6} L mol^{-1}. The value of K_P is nearly

(1) 7.50×10^{-5} (2) 2.50×10^{-5} (3) 2.50×10^{-4} (4) 1.72×10^{-4}

NEET-CHEMISTRY **ELP NO.-5** **CHEMICAL EQUILIBRIUM**

1. Initially 1 mole of PCl_5 is present. 40% of it is not dissociated at 300°C. The reaction is carried out in a flask of 1 litre capacity. The value of K_C would be :-

(1) 3.2 (2) 1.6 (3) $(3.2)^{-1}$ (4) 0.9

2. In the beginning of the reaction, $A \rightleftharpoons B + C$, 2 Moles of A are taken, out of which 0.5 moles gets dissociated. What is the amount of dissociation of A ?

(1) 0.5 (2) 1 (3) 0.25 (4) 4.2

3. $A + B \rightleftharpoons C + D$ If initially A and B both are taken in equal amount but at equilibrium concentration D will be twice of that of A then what will be the equilibrium constant of reaction :-

(1) $\frac{4}{9}$ (2) $\frac{9}{4}$ (3) $\frac{1}{9}$ (4) 4

4. At a certain temperature, only 50% HI is dissociated at equilibrium in the reaction $2HI(g) \rightleftharpoons H_2(g) + I_2(g)$. The equilibrium constant for the reaction is :-

(1) 0.25 (2) 1.0 (3) 3.0 (4) 0.5

5. The equilibrium constant K_P for the reaction $H_2(g) + CO_2(g) \rightleftharpoons H_2O(g) + CO(g)$ is 4.0 at 1660°C. Initially 0.80 mole H_2 and 0.80 mole CO_2 are injected into a 5.0 litre flask. What is the equilibrium concentration of $CO_2(g)$:-

(1) 0.533 M (2) 0.0534 M (3) 5.34 M (4) None of these

6. 4.5 moles each of hydrogen and iodine heated in a sealed ten litre vessel. At equilibrium, 3 moles of HI were found. The equilibrium constant for $H_2+I_2 \rightleftharpoons 2HI$ is

(1) 1 (2) 10 (3) 5 (4) 0.33

7. When 3 mole of *A* and 1 mole of *B* are mixed in 1 *litre* vessel the following reaction takes place $A(g) + B(g) \rightleftharpoons 2C(g)$. At equilibrium 1.5 moles of *C* are formed. The equilibrium constant for the reaction is

(1) 0.12 (2) 0.25 (3) 0.50 (4) 4.0

8. In the reaction, $A(g) + B(g) \rightleftharpoons 2C(g)$ at equilibrium, the concentration of *A* and *B* is 0.2 M each and that of *C* was found to be 0.6 M. The equilibrium constant of the reaction is

(1) 2.4 (2) 18 (3) 4.8 (4) 9

9. 15 moles of H_2 and 5.2 moles of I_2 are mixed and allowed to attain equilibrium at 500°C. At equilibrium, moles of HI is found to be 10 moles. The equilibrium constant for the formation of HI is:

(1) 50 (2) 15 (3) 100 (4) 25

10. Two moles of NH_3 when put into a vessel of one litre partially dissociate into N_2 and H_2. If at equilibrium one mole of NH_3 is present, the equilibrium constant is

(1) 3/4 mol^2 $litre^{-2}$ (2) 27/64 mol^2 $litre^{-2}$

(3) 27/32 mol^2 $litre^{-2}$ (4) 27/16 mol^2 $litre^{-2}$

11. 2 mol of N_2 is mixed with 6 mol of H_2 in a closed vessel of one litre capacity. If 50% of N_2 is converted into NH_3 at equilibrium, the value of K_C for the reaction $N_2 + 3H_2 \rightleftharpoons 2NH_3$ is

(1) 4/27 (2) 27/4 (3) 1/27 (4) 24

12. For a reaction $H_2 + I_2 \rightleftharpoons 2HI$ at 721K, the value of equilibrium constant is 50. If 0.5 mols each of H_2 and I_2 is added to the system the value of equilibrium constant will be

(1) 40 (2) 60 (3) 50 (4) 30

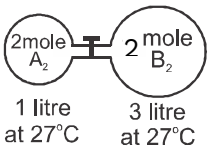
1. $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ for the reaction initially the mole ratio was 1 : 3 of N_2 : H_2. At equilibrium 50% of each has reacted. If the equilibrium pressure is p, the partial pressure of NH_3 at equilibrium is :-

(1) $\frac{p}{3}$ (2) $\frac{p}{4}$ (3) $\frac{p}{6}$ (4) $\frac{p}{8}$

2. For the reaction $H_2(g) + CO_2(g) \rightleftharpoons CO(g) + H_2O(g)$, if the initial concentration of $[H_2] = [CO_2]$ and x moles/litre of hydrogen is consumed at equilibrium, the correct expression of K_P is :-

(1) $\frac{x^2}{(1-x)^2}$ (2) $\frac{(1+x)^2}{(1-x)^2}$ (3) $\frac{x^2}{(2+x)^2}$ (4) $\frac{x^2}{1-x^2}$

3.



The gas A_2 in the left flask allowed to react with gas B_2 present in right flask as $A_2(g) + B_2 \rightleftharpoons 2AB(g); K_c = 4$ at 27°C. What is the concentration of AB when equilibrium is established?

(1) 1.33 M (2) 2.66 M (3) 0.50 M (4) 0.33 M

4. 2 mole of PCl_5 were heated in a closed vessel of 2 litre capacity. At equilibrium, 40% of PCl_5 is dissociated into PCl_3 and Cl_2. The value of equilibrium constant is:

(1) 0.266 (2) 0.53 (3) 2.66 (4) 5.3

5. The equilibrium constant is 36 for the reaction, $N_2 + O_2 \rightleftharpoons 2NO$ If the initial concentration of each nitrogen and oxygen is 0.10 mol/L Then the concentration of nitric oxide at equilibrium is:

(1) 0.15 mol/L (2) 2 mol/L (3) 0.075 mol/L (4) 0.2 mol/L

6. If 50% of CO_2 converts to CO at the following equilibrium:

$C(s) + CO_2(g) \rightleftharpoons 2CO(g)$

And the equilibrium pressure is 12 atm calculate K_p,

(1) 4 atm (2) 8 atm (3) 16 atm (4) 12 atm

7. For the dissociation reaction. N_2O_4 (g) $\rightleftharpoons$ 2 NO_2(g), the degree of dissociation (α) in terms of K_p and total equilibrium pressure P is:

(1) $\alpha = \sqrt{\frac{4P+K_P}{K_P}}$ (2) $\alpha = \sqrt{\frac{K_P}{4P+K_P}}$

(3) $\alpha = \sqrt{\frac{K_P}{4P}}$ (4) None of these

8. AB_3(g) is dissociates as

$AB_3(g) \rightleftharpoons AB_2(g) + \frac{1}{2}B_2(g)$.

When the initial pressure of AB_2 is 800 torr and the total pressure developed at equilibrium is 900 torr. What fraction of AB_3(g) is dissociated?

(1) 10% (2) 20% (3) 25% (4) 30%

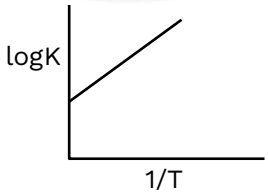
9. A vessel at 1000 K contains CO_2 with a pressure of 0.5 atm. Some of the CO_2 is converted into CO on the addition of graphite. If the total pressure at equilibrium is 0.8 atm, the value of K_P is:

(1) 1.8 atm (2) 3 atm (3) 0.3 atm (4) 0.18 atm

10. The equilibrium constants K_{P_1} and K_{P_2} for the reactions X $\rightleftharpoons$ 2Y and Z $\rightleftharpoons$ P + Q, respectively are in the ratio of 1 : 9. If the degree of dissociation of X and Z be equal then the ratio of total pressures at these equilibria is –

(1) 1 : 1 (2) 1 : 3 (3) 1 : 9 (4) 1 : 36

11. The graph relates log $K_{eq.}$ vs. 1/T for a reaction, the reaction must be:



(1) Exothermic (2) Endothermic

(3) ΔH is negligible (4) May be endothermic or exothermic

12. One mole of N_2(g) is mixed with 2 moles of H_2(g) in a 4 litre vessel. If 50% of N_2 (g) is converted to NH_3(g) by the following reaction: $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$

What will be the value of K_c for the following equilibrium

$NH_3(g) \rightleftharpoons \frac{1}{2}N_2(g) + \frac{3}{2}H_2(g)$

(1) 256 (2) 16 (3) 1/16 (4) None of these

1. The degree of dissociation of $PCl_5(\alpha)$ obeying the equilibrium; $PCl_5 \rightleftharpoons PCl_3 + Cl_2$ is related to the pressure at equilibrium by:

(1) $\alpha \propto P$ (2) $\alpha \propto \frac{1}{\sqrt{P}}$ (3) $\alpha \propto \frac{1}{P^2}$ (4) $\alpha \propto \frac{1}{P^4}$

2. Two sample of HI each of 5 mole were taken separately into vessels of volume 5 and 10 litres respectively at 27°C. The extent of dissociation of HI will be:-

(1) More in 5 litre vessel (2) More in 10 litre vessel

(3) Equal in both vessel (4) None of these

3. What will be the amount of dissociation, if the volume is increased 16 times of initial volume in the reaction $PCl_5 \rightleftharpoons PCl_3 + Cl_2$?

(1) 4 times (2) $\frac{1}{4}$ times (3) 2 times (4) $\frac{1}{5}$ times

4. Which of the following equilibrium remains unaffected by a change in pressure (or volume)?

(1) $2NOCl(g) \rightleftharpoons 2NO(g) + Cl_2(g)$ (2) $H_2(g) + CO_2(g) \rightleftharpoons H_2O(g) + CO(g)$

(3) $3PbS(s) + 3O_2(g) \rightleftharpoons 2Pb(s) + 2SO_2(g)$ (4) $PCl_5(g) \rightleftharpoons PCl_3(g) + Cl_2(g)$

5. For the equilibrium $C(s) + CO_2(g) \rightleftharpoons 2CO(g)$ $K_P = 63$ atm at 1000 K. If at equilibrium $P_{CO} = 10P_{CO_2}$ then total pressure at equilibrium is:-

(1) 6.30 atm (2) 0.693 atm (3) 6.93 atm (4) 69.3 atm

6. What will be the direction of reaction if concentration of H_2, I_2 and HI are 2 mol L^{-1}, 2 mol L^{-1} and 8 mol L^{-1} respectively K_C for reaction $H_2 + I_2 \rightleftharpoons 2HI$ is 4.

(1) Forward direction (2) Backward direction

(3) Equilibrium direction (4) Reaction will be completed

7. For the equilibrium, $PCl_5 \rightleftharpoons PCl_3 + Cl_2$,

$K_c = \alpha^2/(1 - \alpha)V$, temperature remaining constant:

(1) K_c will increase with the increase in volume

(2) K_c will increase with the decrease in volume

(3) K_c will not change with the change in volume

(4) K_c may increase or decrease with the change in volume depending upon its numerical value.

8. For the reaction $A(g) + 3B(g) \rightleftharpoons 2C(g)$ at 27°C, 2 moles of A, 4 moles of B and 6 moles of C are present in 2 liters vessel. If K_c for the reaction is 1.2, the reaction will proceed in:

(1) Forward direction

(2) Backward direction

(3) Neither direction

(4) None of these

9. If the pressure in a reaction vessel for the following is increased by decreasing the volume, what will happen to the concentrations of CO and CO_2?

$H_2O\ (g) + CO\ (g) \rightleftharpoons H_2(g) + CO_2\ (g) + Heat$

(1) Both the [CO] and [CO_2] will decrease

(2) Neither the [CO] and [CO_2] will change

(3) The [CO] will decrease and the [CO_2] will increase

(4) Both the [CO] and [CO_2] will increase

10. Consider the following reversible reaction at equilibrium,

$2H_2O(g) \rightleftharpoons 2H_2(g) + O_2(g);\ \Delta H = 241.7\ kJ$

Which one of the following changes in conditions will lead to maximum decomposition of $H_2O(g)$?

(1) Increasing both temperature and pressure

(2) Decreasing temperature and increasing pressure

(3) Increasing temperature and decreasing pressure

(4) Increasing temperature at constant pressure

1. For the dissociation of $MgCO_3$ as $MgCO_3(s) \rightleftharpoons MgO(s) + CO_2(g)$ identify the correct option regarding extent of dissociation of $MgCO_3$

(1) As temperature is increased, extent of dissociation decreases.

(2) Extent of dissociation at equilibrium will increase if equilibrium is attained at the same temperature in a container of lesser volume.

(3) Extent of dissociation of $MgCO_3$ will increase if taken in a larger container.

(4) Extent of dissociation will remain unchanged on changing volume of the container.

2. For the reaction at equilibrium :

$2A(g) + B(g) \rightleftharpoons C(g)$ $\Delta H = -90$ kJ

Which of the following option will increase the concentration of $B_{(g)}$ at equilibrium?

(1) Decrease of temperature (2) Increasing volume of container

(3) Adding catalyst (4) Increasing pressure

3. For the reaction : $A(g) + 2B(g) \rightleftharpoons 4C(g)$; ΔH = –ve.

The favourable condition for the greater yield of C(g) is

(1) Increase in pressure of system.

(2) Increase in temperature

(3) Addition of inert gas at constant volume

(4) Addition of inert gas at constant pressure

4. Which of the following is not favourable for SO_3 formation

$2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$; $\Delta H = -45.0$ kcal

(1) High pressure (2) High temperature

(3) Decreasing SO_3 concentration (4) Increasing reactant concentration

5. Which of the following conditions should be more favorable for increasing the rate of forward reaction in the equilibrium $H_2(g) \rightleftharpoons H(g) + H(g)$ (ΔH = +ve) ?

(1) 2000°C temperature and 760 mm of Hg pressure.

(2) 3500°C temperature and 100 cm of Hg pressure.

(3) 3500°C temperature and 1 mm of Hg pressure.

(4) All are wrong.

6. The reaction $CaCO_3(S) \rightleftharpoons CaO(s) + CO_2(g)$ goes to completion in lime kiln because:

(1) Of the low temperature
(2) CaO is more stable than $CaCO_3$
(3) CaO is not dissociated
(4) CO_2 escapes continuously

7. Which of the following is not true for the equilibrium reaction; $N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$; $\Delta H = 180$ kJ mol^{-1}.

(1) The formation of NO is increased at higher temperature.
(2) The volume change at constant pressure does not affect the equilibrium.
(3) The pressure change at constant volume does not affect the equilibrium.
(4) The formation of NO is decreased at higher temperature.

8. Consider the following equilibrium system; $SO_2(g) + \frac{1}{2}O_2(g) \rightleftharpoons SO_3(g)$; set up in a cylinder fitted with a piston. Some inert gas is added and the piston is moved outwards to keep the total gaseous pressure constant. Predict which of the following is true ?

(1) Addition of inert gas does not affect the equilibrium.
(2) Less $SO_3(g)$ is produced.
(3) More $SO_3(g)$ is produced.
(4) The system moves to new equilibrium position which cannot be predicted theoretically.

9. For the reaction,
$N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$; $\Delta H = -93.6$ kJ mol^{-1} the number of moles of H_2 at equilibrium will increase if

(1) Volume is increased
(2) Temperature is decreased
(3) Argon gas is added at constant volume
(4) NH_3 is removed

10. In a vessel containing N_2, H_2 and NH_3 at equilibrium, some helium gas is introduced so that total pressure increase while temperature and volume remain constant. According to Le Chatelier's principle, the dissociation of NH_3 :

(1) Increases
(2) Decreases
(3) Remains unaltered
(4) Changes unpredictably

NEET-CHEMISTRY **ELP NO.-9** **CHEMICAL EQUILIBRIUM**

1. On applying pressure to the equilibrium ice ⇌ water, which phenomenon will happen:

(1) More ice will be formed (2) More water will be formed

(3) Equilibrium will not be disturbed (4) Water will evaporate

2. Consider the following equilibrium system; $2SO_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$; some inert gas is added to the above system at constant volume, Predict which of the following is true?

(1) More of SO_3 is produced.

(2) Less SO_2 is produced.

(3) Addition of inert gas does not affect equilibrium.

(4) System moves to new equilibrium position which cannot be predicted theoretically.

3. When a volatile liquid is introduced into an evacuated closed vessel at a particular temperature, both evaporation and condensation take place simultaneously. The system reaches equilibrium state when-

(1) The liquid is completely transformed into the corresponding vapour

(2) Equal amounts of liquid and vapour are present in the system

(3) The rate of evaporation becomes equal to the rate of condensation

(4) Liquid cannot be converted into vapour and vice versa.

4. Which of the following equilibrium is dynamic?

(1) Solid ⇌ Liquid (2) Liquid ⇌ Vapour

(3) Solid ⇌ Vapour (4) All of these

5. Which of the following is not true for solid-liquid equilibrium?

(1) It can be established at any given temperature

(2) The mass of solid does not change with time.

(3) The mass of liquid does not change with time.

(4) There is no exchange of heat between the system and its surrounding.

6. Which of the following is correct regarding the gas-solution equilibrium?

(1) The solubility of gas increases with the increase of pressure and decreases with the increase of temperature.

(2) The solubility of gas increases with the increase of pressure as well as temperature.

(3) The solubility of gas decreases with the increase of pressure and increases with the increase of temperature.

(4) The solubility of gas decreases with the increase of pressure as well as temperature.

7. The vapour density of undecomposed N_2O_4 is 46. When heated, vapour density decreases to 24.5 due to its dissociation to NO_2. The percentage dissociation of N_2O_4 at the final temperature is –

(1) 87 (2) 60 (3) 40 (4) 70

8. A(g) is 90% converted in to B according to the reaction $A(g) \rightleftharpoons 3B(g)$ value of $\left(\frac{D}{d}\right)$ at this point is:

(1) 1.0 (2) 2.0 (3) 2.5 (4) 2.8

9. For the reaction $N_2O_4(g) \rightleftharpoons 2NO_2(g)$, if percentage dissociation of N_2O_4 are 20%, 45%, 65% & 80%, then the sequence of observed vapour densities will be :

(1) $d_{20} > d_{45} > d_{65} > d_{80}$ (2) $d_{80} > d_{65} > d_{45} > d_{20}$

(3) $d_{20} = d_{45} = d_{65} = d_{80}$ (4) $(d_{20} = d_{45}) > (d_{65} = d_{80})$

10. If PCl_5 is 80% dissociated at 250°C then vapour density of reaction mixture when PCl_5 is heated to 250°C

(1) 57.9 (2) 104.25

(3) 101.2 (4) 52.7

NEET-CHEMISTRY **ELP NO.-1** **IONIC EQUILIBRIUM**

1. Select the weak acid among the following.
(1) HNO_3 (2) HBr (3) HCl (4) HF

2. Which of following can be termed strong electrolyte.
(1) CH_3COOH (2) HCN (3) NH_3 (4) NaCl

3. Select the correct statement among the following.
(1) Arrhenius concept can explain Acid base reaction in non aqueous solvent
(2) Bronsted base act as source of $OH^{\ominus}$ ion
(3) Arrhenius concept could not explain the basic nature of NH_3
(4) Lewis concept is based on electrons.

4. If 5.2 moles of NaCl is Added to water.
(1) NaCl will undergo partial dissociation.
(2) 2.6 mole of Na^+ present in solution
(3) 5.2 mole of Cl^- ion present in solution
(4) 10 mole total of all ions are at equilibrium

5. In interaction b/w NH_3 and BF_3
(1) BF_3 act as donor of lone pair
(2) BF_3 act as lewis acid
(3) Coordinate bond is directed from BF_3 to NH_3
(4) NH_3 is acceptor of lone pair

6. When NH_3 is added to water
(1) NH_3 will act as Acid
(2) H_2O will act as Acid
(3) $NH_2^{\ominus}$ will be conjugate acid of NH_3
(4) OH^- will be conjugate acid of H_2O

7. If 7.3 g of HCl is added to form 500ml solution. Find molarity of HCl in the solution.
(1) 0.2 (2) 0.4 (3) 0.6 (4) 0.8

8. H_2SO_4 being a strong electrolyte undergoes complete dissociation. Find molarity of $H^{\oplus}$ in the solution formed by adding 19.6g H_2SO_4 in 2l solution.

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

9. What is correct among following concentration in solution if 0.6g of acetic acid is added to prepare 100 ml solution.

(1) $[H^+] = 0.1M$ (2) $[CH_3COO^{\ominus}]$

(3) $[H^+] < 0.1$ M (4) $[H^+] > 0.1$ M

10. Basicity of HCl, H_2SO_4, H_3PO_4, H_3PO_3 will be respectively.

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

1. Find normality of 4M H_2SO_4.
(1) 8 (2) 2 (3) 3 (4) 4

2. If aqueous solution of an unknown acid has $[H^+] = 3 \times 10^{-3}$ M. Find pH of this solution.
(1) 3.52 (2) 2.52 (3) 3 (4) 4.14

3. A solution having pH = 5. The $[H_3O^+]$ = ?
(1) 5 (2) $10^{-5/2}$ (3) 10^{-5} (4) 10^5

4. Find pH of aqueous solution having $[H^+] = 2.5 \times 10^{-9}$.
(1) 7.603 (2) 8.603 (3) 9.603 (4) 9

5. If the value of Ionic product of water is 10^{-16} at given temperature. Find pH of neutral water at this temperature.
(1) 6 (2) 7 (3) 8 (4) 9

6. What is molarity of water at 25°C and 50°C (Assuming effect of temperature on volume to be negligible).
(1) 55.55 and 27.775 (2) 27.775 and 27.775
(3) 55.55 and 2.775 (4) 55.55 and 55.55

7. Considering $K_w = 10^{-16}$ find sum of molar concentration of H^+ and $OH^{\ominus}$ at given temperature in pure water.
(1) 10^{-16} (2) 10^{-14} (3) 2×10^{-7} (4) 2×10^{-8}

8. At 310K pH of pure H_2O will be.
(1) < 7 (2) > 7 (3) = 7 (4) =0

9. Select the correct relation among the following (T=25°C).
(1) pH + pOH = 7 (2) $\frac{pH + pOH}{2} = 7$ (3) pOH = 14 + pH (4) pH = 14 + pOH

10. Select the Incorrect statement among the following.
(1) Addition of HCl to water will cause decrease in pH
(2) Decreasing temperature results in decrease in pH of pure water
(3) If $[OH^{\ominus}]$ in Aq solution Increases it causes decrease in $[H^+]$
(4) Due to its charge density $H^{\oplus}$ ion exist as H_3O^+ ion in water

NEET-CHEMISTRY **ELP NO.-3** **IONIC EQUILIBRIUM**

1. In two separate cases if 1g of KOH is added to water and in other 2g of HCl is added to water on such additions.
(1) α of H_2O increase and remain same respectively
(2) α of H_2O remains same
(3) α of H_2O increase in both cases
(4) α of H_2O decreases in both cases

2. 1 mole of HCN and 1 mole of HI are separately added to water to prepare Aq. solutions of same volume. These solutions are marked 1 and 2. Select the correct statement.
(1) $[OH^-]_2 > [OH^-]_1$ (2) $[OH^-]_1 > [OH^-]_2$ (3) $pH_1 < pH_2$ (4) $pOH_1 > pOH_2$

3. Which of the following factors should increase the value of degree of dissociation of HCN.
(1) Dissolving HCN in Benzene in place of water
(2) Adding more water to HCN solution
(3) Adding more HCN to the solution
(4) Decreasing the temperature

4. 0.8 grams of NaOH is added to form 500ml solution, pOH and pH of this solution. (log 4 = 0.6)
(1) 1.4, 12.6 (2) 2.6, 11.4 (3) 11.4, 2.6 (4) 1.7, 12.3

5. At 25°C a substance when dissolved in water results in $[OH^{\ominus}] = 10^{-5}$ find pH and Nature of this solution.
(1) 8, basic (2) 9, basic (3) 9, acidic (4) 5, acidic

6. pH value of Aq solution containing 0.98g of H_2SO_4 dissolved in 10 litres of water is-
(1) 1.7 (2) 2.7 (3) 3.7 (4) 4.7

7. If 3×10^{-2} moles of HCl are added to form 15 liters of solution. Find pH of this solution.
(1) 1.7 (2) 1.3 (3) 2.7 (4) 1.84

8. The value of Ionic product of water increases with-
(1) Decrease in temperature (2) Adding acid in water
(3) Adding base in water (4) Increasing temperature

9. Unit of Ionic product of water is-
(1) M^{-2} (2) M^2 (3) M^{-1} (4) M^{-3}

10. At 95°C the value of pK_w is 15. Which of the following pH values of aqueous solution at same temperature will be basic?
(1) 7.5 (2) 7.63 (3) 7.21 (4) 7

1. Ostwald dilution law is not applicable on strong electrolytes because-
(1) Strong electrolytes are completely ionised
(2) Strong electrolytes are volatile
(3) Strong electrolytes do not conduct electricity
(4) Strong electrolytes are never covalent.

2. In which of the following reactions NH_3 act as acid-
(1) $NH_3 + HCl \rightarrow NH_4Cl$
(2) $NH_3 + H^{\oplus} \rightarrow NH_4^{\oplus}$
(3) $NH_3 + Na \rightarrow NaNH_2 + \frac{1}{2}H_2$
(4) NH_3 cannot act as acid

3. The conjugate base of bicarbonate ion is-
(1) H_2CO_3 (2) CO_2 (3) HCO_3^- (4) CO_3^{2-}

4. Which of the following is the strong base-
(1) F^- (2) NO_3^- (3) HSO_4^- (4) ClO_4^-

5. What will be pOH in Aq. solution with $[OH^{\ominus}] = 9 \times 10^{-6}$.
(1) 14 – 6 (2) 6 – log 9 (3) 6 – 9 (4) 14 – (6 + log 9)

6. Find $[OH^{\ominus}]$ in 10^{-2} M H_2SO_4 Aq. solution.
(1) 10^{-10} M (2) 10^{-9} M (3) 5×10^{-13} M (4) 5×10^{-12} M

7. At 90°C if $K_w = 10^{-12}$, 2×10^{-6} if the correct value for which one of the following-
(1) $[H^+]$ (2) $[H^+]^2 - [OH^-]$ (3) $[OH^-]^2$ (4) $[H^+] + [OH^-]$

8. The value of K_w for 0.001 M NaOH Aq. solution-
(1) 10^{-15} (2) 10^{-13} (3) 2×10^{-7} (4) 1×10^{-14}

9. 0.001 M KOH solution has pH.
(1) 10^{-3} (2) 3 (3) 11 (4) 11.3

10. The pH of 2×10^{-7} M H_2SO_4 solution is-
(1) 6.6 (2) 6.98 (3) 6.05 (4) 7.21

NEET-CHEMISTRY **ELP NO.-5** **IONIC EQUILIBRIUM**

1. If $[H^+] = \frac{5}{3} \times 10^{-4}$ then find pH?

(1) 3.778 (2) 8.972 (3) 6.778 (4) 7.789

2. **Assertion :** H_2SO_4 is a strong acid.
Reason : H_2SO_4 undergoes almost completely ionized in aqueous solution.
(1) Both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.
(2) Both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.
(3) Assertion is True but the Reason is False.
(4) Both Assertion & Reason are false.

3. pH of 10^{-6} M NaOH solution is:

(1) 8 (2) 7 (3) 6 (4) 5

4. Find out the value of α of 10^{-2} M HCN solution if $[H^+] = 10^{-3}$.

(1) 20% (2) 30% (3) 10% (4) 15%

5. For 10 M CH_3COOH solution if $K_a=10^{-5}$ then find out α :

(1) 10^3 (2) 10^{-5} (3) 10^{-6} (4) 10^{-3}

6. For 10^{-3}M H_2CO_3 if α = 10% then find out the value of pH?

(1) 4.9 (2) 3.7 (3) 9.3 (4) 7.3

7. **Assertion :** NaCl + HCl does not experience common ion effect.
Reason : Both NaCl and HCl are strong electrolytes.
(1) Both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.
(2) Both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.
(3) Assertion is True but the Reason is False.
(4) Both Assertion & Reason are false.

8. Absolute dissociation constant of water at 25°C is

(1) $10^{-14} \times (55.5)^{-1}$ (2) $10^{-7} \times (18)^{-1}$ (3) $10^{-14} \times (18)^{-1}$ (4) $10^{-7} \times (55.4)^{-1}$

9. What should be the number of H^+ ions in 1 mL of distilled water?

(1) 6.022×10^{15} (2) 6.022×10^{13} (3) 6.022×10^{-15} (4) 6.022×10^{14}

10. The pH of a 0.005M H_2SO_4 solution is:

(1) 3.3 (2) 5.0 (3) 2.0 (4) 4.0

NEET-CHEMISTRY **ELP NO.-6** **IONIC EQUILIBRIUM**

1. If pure water has pK_w = 13.36 at 50°C, the pH of pure water will be–
(1) 6.68 (2) 7.0 (3) 7.13 (4) 6.0

2. How many H^+ ions are present in 1 ml of a solution whose pH is 13?
(1) 10^{-16} (2) 6.022×10^{13} (3) 6.022×10^{7} (4) 6.022×10^{23}

3. The pH of solutions A, B, C and D are 9.5, 2.5, 3.5 and 5.5 respectively. The most acidic solution is.
(1) D (2) C (3) A (4) B

4. Calculate the concentration of the formate ion present in 0.100 M formic acid (HCOOH) solution at equilibrium ($K_a = 1.7 \times 10^{-4}$).
(1) 4.1×10^{-3} M (2) 3.1×10^{-3} M (3) 2.1×10^{-3} M (4) 5.1×10^{-3} M

5. Which of the following is the weakest acid?
(1) Phenol ($K_a = 1.3 \times 10^{-10}$) (2) Hydrocyanic acid ($K_a = 4.9 \times 10^{-10}$)
(3) Acetic acid ($K_a = 1.8 \times 10^{-5}$) (4) Benzoic acid ($K_a = 6.5 \times 10^{-5}$)

6. The pH of 0.1 M monobasic acid is 4.50. The acidity constant (K_a) of the monobasic acid is.
(1) 1.0×10^{-7} (2) 1.0×10^{-5} (3) 1.0×10^{-4} (4) 1.0×10^{-8}

7. Which of the following is the strongest base?
(1) $C_6H_5NH_2$ (pK_b = 9.42) (2) $C_6H_5NHCH_3$ (pK_b = 9.15)
(3) $C_6H_5N(CH_3)_2$ (pK_b = 8.94) (4) $C_6H_5NHC_2H_5$ (pK_b = 8.89)

8. Value of dissociation constant of acetic acid is 10^{-6}, where as dissociation constant of formic acid is 10^{-5}. Which of the following will be the value of pKa (acetic acid) - pKa (formic acid).
(1) 10 (2) +1 (3) 10^{-1} (4) –1

9. A solution has pOH equal to 13 at 298 K. The solution will be
(1) Highly acidic (2) Highly basic (3) Moderately basic (4) Unpredictable

10. What would be $[H^+]$ of 0.006 M benzoic acid ($K_a = 6 \times 10^{-5}$).
(1) 0.6×10^{-4} (2) 6×10^{-4} (3) 6×10^{-3} (4) 3.6×10^{-4}

NEET-CHEMISTRY **ELP NO.-7** **IONIC EQUILIBRIUM**

1. 100 ml of 0.01 M NaOH is Added to 200 ml of 0.03 M KOH solution. Find pH of the resultant solution.
(1) 1.63 (2) 2.29 (3) 3.82 (4) 0.72

2. Find pH of solution which is 6×10^{-2} M H_2SO_4 and 3×10^{-2} M CH_3COOH given K_a (CH_3COOH) = 3×10^{-6}.
(1) 2.22 (2) 1.22 (3) 3.22 (4) 4.22

3. What is the pH of 1 M CH_3COONa solution? Ka of acetic acid = 1.8×10^{-5}, $K_w = 10^{-14}$ mol^2L^{-2}.
(1) 2.4 (2) 3.6 (3) 4.8 (4) 9.4

4. Calculate the degree of hydrolysis of a mixture containing 0.1N NH_4OH and 0.1N HCN If $K_a = 10^{-5}$ and $K_b = 10^{-5}$
(1) 5% (2) 10% (3) 2% (4) 1%

5. **Assertion :** An aqueous solution of NH_4NO_3 is acidic in nature
Reason : NH_4NO_3 in an aqueous solution undergoes anionic hydrolysis.
(1) Both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.
(2) Both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.
(3) Assertion is True but the Reason is False.
(4) Both Assertion & Reason are False.

6. Aqueous solution of sodium acetate (CH_3COONa) is_____in nature
(1) Acidic (2) Basic (3) Neutral (4) None

7. Which of the following cations is not hydrolyzed in aqueous solution?
(i) Mg^{2+} (ii) Ca^{2+} (iii) Na^+ (iv) K^+
(1) (i), (ii) (2) (iii), (iv) (3) (i), (ii), (iii), (iv) (4) (i), (ii), (iii)

8. Which of the anions is not hydrolyzed in aqueous solution?
(i) Cl^- (ii) NO_3^- (iii) Br^- (iv) ClO_4^-
(1) (i), (ii) (2) (iii), (iv) (3) (i), (ii), (iii), (iv) (4) (i), (ii), (iii)

9. Which of the following salts does not undergo hydrolysis?
(1) KCN (2) KCl (3) NH_4NO_3 (4) $FeCl_3.6H_2O$

10. Which of the following salts undergoes anionic hydrolysis?
(1) $AlCl_3$ (2) $CuSO_4$ (3) Na_2CO_3 (4) NH_4Cl

NEET-CHEMISTRY **ELP NO.-8** **IONIC EQUILIBRIUM**

1. If solubility product of the base $M(OH)_3$ is 2.7×10^{-11}, the concentration of OH^{-1} will be.
(1) 3×10^{-3} (2) 3×10^{-4} (3) 10^{-3} (4) 10^{-11}

2. **Assertion :** For a sparingly soluble salt , K_{sp} is related to maximum dissolved value of solute in a solution
Reason : K_{sp} Corresponds to the ionic product of the salt in a saturated solution.
(1) Both Assertion & Reason are True & the Reason is a correct explanation of the Assertion.
(2) Both Assertion & Reason are True but Reason is not a correct explanation of the Assertion.
(3) Assertion is True but the Reason is False.
(4) Both Assertion & Reason are false.

3. The solubility of $BaSO_4$ in water is 1.07×10^{-5} mol dm^{-3} Estimate its solubility product.
(1) 1.145×10^{-10} (2) 3.46×10^{-12}
(3) 5.5×10^{-15} (4) 6.6×10^{-15}

4. The solubility product of AgBr is 5.2×10^{-13}. Calculate its solubility in mol dm^{-3}.
(Molar mass of AgBr. = 187.8 g mol^{-1})
(1) 1.145×10^{-10} mol mol^{-3} (2) 7.2×10^{-7} mol mol^{-3}
(3) 5.5×10^{-15} mol mol^{-3} (4) 6.6×10^{-15} mol mol^{-3}

5. Find out the solubility of AgCl in the presence of C molar NaCl solution?
(1) $\frac{Ksp}{2C}$ (2) $\frac{Ksp}{C^2}$ (3) $\frac{Ksp}{C}$ (4) $\frac{Ksp}{4C}$

6. Find out the solubility of $CaCl_2$ solution in the presence of C molar NaCl solution?
(1) $\frac{Ksp}{2C}$ (2) $\frac{Ksp}{C^2}$ (3) $\frac{Ksp}{C}$ (4) $\frac{Ksp}{4C}$

7. Find out the solubility of NaCl in the presence of C molar $CaCl_2$ solution?
(1) $\frac{Ksp}{2C}$ (2) $\frac{Ksp}{C^2}$ (3) $\frac{Ksp}{C}$ (4) $\frac{Ksp}{4C}$

8. Solubility products of $M(OH)_3$ and $M(OH)_2$ are 10^{-23} and 10^{-14} respectively. What will be precipitated first on adding NH_4OH, if M^{+2} and M^{+3} both the ions are in solution?
(1) M^{+2} (2) M^{+3}
(3) Both M^{+2} and M^{+3} together (4) Precipitation will not take place.

9. Solubility of $CaCl_2$ is 4×10^{-8}, then find out its K_{sp} and its new solubility in the presence of 10^{-2} M $Ca(OH)_2$ respectively.
(1) 256×10^{-24} ; 2×10^{-4} mol L^{-1} (2) 256×10^{-24} ; 12×10^{-4} mol L^{-1}
(3) 256×10^{-24} ; 9×10^{-13} mol L^{-1} (4) 256×10^{-24} ; 8×10^{-11} mol L^{-1}

NEET-CHEMISTRY **ELP NO.-9** **IONIC EQUILIBRIUM**

1. For two acids A and B, $pKa_1 = 1.2$, $pKa_2 = 2.8$ respectively in value, then which is true :-
(1) A & B both are equally acidic (2) A is stronger than B
(3) B is stronger than A (4) None of these

2. pH values of two acids A and B are 4 and 5. The strengths of these two acids are related as :-
(1) The strengths of the two acids cannot be compared.
(2) Acid B is 10 times stronger than acid A.
(3) Strength of acid A : Strength of acid B = 4 : 5
(4) Acid A is 10 times stronger than acid B.

3. The unit of solubility product of silver chromate (Ag_2CrO_4) will be -
(1) mol^2L^{-2} (2) mol^3L^{-3} (3) $mol\ L^{-1}$ (4) $mol^{-1}L$

4. At a certain temperature, the solubility of the salt A_xB_y is S mole per liter. The general expression for its solubility product will be -
(1) $K_{sp} = x^y y^x S^{x+y}$ (2) $K_{sp} = (xy)^{x+y} S^{x+y}$ (3) $K_{sp} = x^x y^y S^{x+y}$ (4) $K_{sp} = x^y y^x S^{xy}$

5. The molar solubility of silver sulphate is 1.5×10^{-2} mol L^{-1}. The solubility product of the salt will be-
(1) 2.25×10^{-4} (2) 1.35×10^{-5} (3) 1.7×10^{-6} (4) 3.0×10^{-3}

6. The precipitate of CaF_2 ($K_{sp} = 1.7 \times 10^{-10}$) is obtained when equal volumes of the following are mixed:
(1) 10^{-3} M Ca^{2+} + 10^{-5} MF^- (2) 10^{-5} M Ca^{2+} + 10^{-3} MF^-
(3) 10^{-2} M Ca^{2+} + 10^{-3} MF^- (4) 10^{-4} M Ca^{2+} + 10^{-4} MF^-

7. If S_0, S_1, S_2 and S_3 are the solubilities of AgCl in water, 0.01 M $CaCl_2$, 0.001 M NaCl and 0.5 M $AgNO_3$ solutions, respectively, then which of the following is true?
(1) $S_0 > S_2 > S_1 > S_3$ (2) $S_0 = S_2 = S_1 > S_3$ (3) $S_3 > S_1 > S_2 > S_0$ (4) $S_0 > S_2 > S_3 > S_1$

8. Given K_{sp} (AgI) = 5.8×10^{-17}. Then solubility of AgI in 0.1M KI solution is -
(1) 0.1 M (2) 5.8×10^{-16} M (3) 5.8×10^{-17} M (4) 5.8×10^{-18} M

9. A buffer solution is one which has -
(1) reserved acid (2) reserved base (3) constant pH (4) pH equal to 7

10. Which of the following solutions cannot act as a buffer system?
(1) KH_2PO_4/H_3PO_4 (2) $NaClO_4/HClO_4$ (3) $C_5H_5N/C_5H_5NH^+Cl^-$ (4) $Na_2CO_3/NaHCO_3$

NEET-CHEMISTRY **ELP NO.-10** **IONIC EQUILIBRIUM**

1. Which of the following solvents will undergo self-ionization?
(1) H_2O (2) NH_3 (3) HF (4) All of these

2. When 2 moles of HCl is added to 1 L. of an acidic buffer solution, its pH changes from 3.9 to 3.4. Find its buffer capacity.
(1) 4 (2) 2 (3) 6 (4) 9

3. A buffer solution can not be prepared by mixing equimolar amount of -
(1) $B(OH)_3$ and $Na_2B_4O_7.10H_2O$ (2) NH_3 and NH_4Cl
(3) HCl and NaCl (4) CH_3COOH and CH_3COONa

4. Which of the following salt solution will act as a buffer?
(1) CH_3COONH_4 (aq.) (2) NH_4Cl (aq.) (3) CH_3COONa (aq.) (4) NaCl (aq.)

5. Which of the following combinations will make a buffer solution?
(i) CH_3 $COONH_4$ (2 mol) (ii) CH_3COOH (2 mol) + NaOH (1 mol)
(iii) CH_3 COOH (1 mol) + CH_3COONa (1 mol)
(1) (iii) (2) (i), (ii) (3) (ii), (iii) (4) (i), (ii), (iii)

6. The pH of blood circulating in a human body is maintained around 7.4 by the action of the buffer system-
(1) CH_3COOH/CH_3COONa (2) NH_4Cl/NH_3
(3) $H_2PO_4^{2-}$ (4) H_2CO_3/ HCO_3^-

7. Gaseous hydrogen chloride is a very poor conductor of electricity but a solution of hydrogen chloride in water is a good conductor. The is due to the fact that :-
(1) Water is a good conductor of electricity
(2) Hydrogen chloride ionises in water
(3) A gas cannot conduct electricity but a liquid can
(4) HCl does not obey Ohm's law where as the solution does

8. Which is acid in the following pairs according to Arrhenius concept?

(A) HCl(g) and HCl(aq.) (B) CH_3COOH((l) and CH_3COOH(aq.)

(1) HCl (aq.) & CH_3COOH(l) (2) HCl(g) & CH_3COOH(g)

(3) HCl (aq.) & CH_3COOH (aq.) (4) HCl (g) & CH_3COOH(aq.)

9. In the process : $NH_3 + NH_3 \rightleftharpoons NH_2^- + NH_4^+$, The nature of ammonia is :-

(1) Acidic (2) Basic (3) Amphoteric (4) None

10. Which of the following behave both as Bronsted acid as well as Bronsted bases?

H_2O, HCO_3^-, H_2SO_4, H_3PO_4, HS^-, NH_3

(1) H_2O, HCO_3^-, H_2SO_4, H_3PO_4 (2) H_2O, HCO_3^-, HS^-, NH_3

(3) H_2O, H_2SO_4, H_3PO_4, NH_3 (4) H_2O, H_3PO_4, HS^-, NH_3

11. For cationic hydrolysis, pH is given by–

(1) $pH = \frac{1}{2}pK_w + \frac{1}{2}pK_a + \frac{1}{2}\log C$ (2) $pH = \frac{1}{2}pK_w - \frac{1}{2}pK_b - \frac{1}{2}\log C$

(3) $pH = \frac{1}{2}pK_w + \frac{1}{2}pK_a - \frac{1}{2}pK_b$ (4) $pH = \frac{1}{2}pK_w + \frac{1}{2}pK_b + \frac{1}{2}\log C$

12. Which of the following salts is neutral in water?

(1) KCl (2) NH_4NO_3 (3) NH_4CN (4) NH_4OH

13. Find pH of 10^{-3} M $Ba(OH)_2$ solution.

(1) 11.3 (2) 12.7 (3) 11.7 (4) 6.83

14. 10^{-6} M HCl is diluted to 100 times pH of solution after dilution-

(1) 6 (2) 8 (3) 6.95 (4) 9.5

15. If nitrous acid is added to water and ethanol given that dielectric constant of ethanol < water. What will be relation between Ionisation constant of HNO_2 in two solvents-

(1) $K_a(H_2O) > K_a\ (C_2H_5OH)$ (2) $K_a(H_2O) = K_a(C_2H_5OH)$

(3) $K_a(H_2O) < K_a(C_2H_5OH)$ (4) None of the above

16. If degree of dissociations of HF are α_1, α_2 and α_3 when dissolved in water, 0.1 M NaOH Aq solution and 0.1 M HCl solution respectively. Correct order of degree of dissociation is-

(1) $\alpha_1 > \alpha_2 > \alpha_3$ (2) $\alpha_1 < \alpha_2 < \alpha_3$ (3) $\alpha_3 < \alpha_1 < \alpha_2$ (4) $\alpha_1 < \alpha_3 < \alpha_2$

NEET-CHEMISTRY **ELP NO.–1** **REDOX REACTIONS**

1. The oxidation number of an element in a compound is evaluated on the basis of certain rules. Which of the following rules is not correct in this respect?

(1) The oxidation number of hydrogen is always +1.

(2) The algebraic sum of all the oxidation numbers in a compound is zero.

(3) An element in the free or the uncombined state bears oxidation number zero.

(4) In all its compounds, the oxidation number of fluorine is – 1.

2. In which of the following compounds, an element exhibits two different oxidation states.

(1) NH_2OH (2) NH_4NO_3 (3) N_2H_4 (4) NO_3^-

3. Which of the following arrangements represent increasing oxidation number of the central atom?

(1) CrO_2^-, ClO_3^-, CrO_4^{2-}, MnO_4^- (2) ClO_3^-, CrO_4^{2-}, MnO_4^- CrO_2^-,

(3) CrO_2^-,ClO_3^-,MnO_4^-,CrO_4^{2-} (4) CrO_4^{2-},MnO_4^-,CrO_2^-,ClO_3^-

4. The largest oxidation number exhibited by an element depends on its outer electronic configuration. With which of the following outer electronic configurations the element will exhibit largest oxidation number?

(1) $3d^14s^2$ (2) $3d^34s^2$ (3) $3d^54s^1$ (4) $3d^54s^2$

5. Match Column I with Column II for the oxidation states of the central atoms.

Column I	**Column II**
(1) $Cr_2O_7^{2-}$	(a) + 3
(2) MnO_4^-	(b) + 4
(3) VO_3^-	(c) + 5
(4) FeF_6^{3-}	(d) + 6
	(e) + 7

6. Reduction involves

(1) Loss of electrons

(2) Gain of electrons

(3) Increase in the valency of positive part

(4) Decrease in the valency of negative part

7. Oxidation involves

(1) Loss of electrons

(2) Gain of electrons

(3) Increase in the valency of negative part

(4) Decrease in the valency of positive part

8. The oxidation number of chlorine in HOCl

(1) – 1 (2) 0 (3) + 1 (4) + 2

9. Oxidation number of N in HNO_3 is

(1) – 3.5 (2) + 3.5 (3) – 3 (4) +5

10. Match the items in Column I with relevant items in Column II.

	Column I	**Column II**
(1)	Ions having positive charge	(a) +7
(2)	The sum of oxidation number of all atoms in a neutral molecule	(b) –1
		(c) +1
(3)	Oxidation number of hydrogen ion (H^+)	(d) 0
(4)	Oxidation number of fluorine in NaF	(e) Cation
(5)	Ions having negative charge	(f) Anion

NEET-CHEMISTRY **ELP NO.–2** **REDOX REACTIONS**

1. Oxidation number of P in KH_2PO_2 is

(1) + 1 (2) + 3 (3) + 5 (4) – 4

2. The oxidation number of sulphur in H_2SO_4 and iron in $K_4[Fe(CN)_6]$ is respectively

(1) + 6 and + 2 (2) + 2 and + 2 (3) + 8 and + 2 (4) + 6 and + 4

3. The oxidation number of oxygen in HOF is

(1) - 2 (2) + 2 (3) + 4 (4) 0

4. Oxidation number of P in $Mg_2P_2O_7$ is

(1) + 3 (2) + 2 (3) + 5 (4) – 3

5. The oxidation number of sulphur in S_8 , S_2F_2, H_2S respectively, are

(1) 0, + 1 and - 2 (2) + 2, + 1 and - 2

(3) 0, + 1 and + 2 (4) - 2, + 1 and - 2

6. The charge on cobalt in $\left[Co(CN)_6\right]^{3-}$ is

(1) - 6 (2) - 3 (3) + 3 (4) + 6

7. Oxidation state of C in $C_6H_{12}O_6$ is

(1) + 6 (2) - 6 (3) 0 (4) + 4

8. The oxidation number of carbon in CH_2O is

(1) – 2 (2) + 2 (3) 0 (4) + 4

9. Maximum oxidation state of Cr is

(1) + 3 (2) + 4 (3) + 6 (4) + 7

10. The oxidation number of N in NH_4Cl is

(1) + 5 (2) + 3 (3) – 5 (4) - 3

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NEET-CHEMISTRY **ELP NO.–3** **REDOX REACTIONS**

1. Which of the following is not an example of redox reaction?

(1) $CuO + H_2 \longrightarrow Cu + H_2O$ (2) $Fe_2O_3 + 3CO \longrightarrow 2Fe + 3CO_2$

(3) $2K + F_2 \longrightarrow 2KF$ (4) $BaCl_2 + H_2SO_4 \longrightarrow BaSO_4 + 2HCl$

2. Identify disproportionation reaction

(1) $CH_4 + 2O_2 \rightarrow CO_2 + 2H_2O$ (2) $CH_4 + 4Cl_2 \rightarrow CCl_4 + 4HCl$

(3) $2F_2 + 2OH^- \rightarrow 2F^- + OF_2 + H_2O$ (4) $2NO_2 + 2OH^- \rightarrow NO_2^- + NO_3^- + H_2O$

3. Which of the following elements does not show disproportionation tendency?

(1) Cl (2) Br (3) F (4) I

4. Oxidation number of Fe in $K_3[Fe(CN)_6]$ is

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

5. The oxidation number of nitrogen in NH_2OH is :

(1) + 1 (2) – 1 (3) – 3 (4) – 2

6. Select the compound in which chlorine is assigned the oxidation number + 5

(1) $HClO_4$ (2) $HClO_2$ (3) $HClO_3$ (4) HCl

7. Which of the following shows maximum oxidation state of Mn.

(1) K_2MnO_4 (2) $KMnO_4$ (3) MnO_2 (4) Mn_2O_2

8. Oxidation number of osmium (Os) in OsO_4 is

(1) + 4 (2) + 6 (3) + 7 (4) + 8

9. Oxidation state of oxygen in ozone (O_3) is

(1) + 3 (2) - 3 (3) - 2 (4) 0

10. Oxidation state of Fe in Fe_3O_4 is

(1) $\frac{3}{2}$ (2) $\frac{4}{5}$ (3) $\frac{5}{4}$ (4) $\frac{8}{3}$

1. Which of the following statement(s) is/are not true about the following decomposition reaction.

$2KClO_3 \rightarrow 2KCl + 3O_2$

(1) Potassium is undergoing oxidation

(2) Chlorine is undergoing reduction

(3) Oxygen is oxidized

(4) None of the species are undergoing oxidation or reduction

2. Identify the correct statement (s) in relation to the following reaction:

$Zn + 2HCl \rightarrow ZnCl_2 + H_2$

(1) Zinc is acting as an oxidant (2) Chlorine is acting as a reductant

(3) Hydrogen ion is acting as an oxidant (4) Zinc is acting as a reductant

3. The exhibition of various oxidation states by an element is also related to the outer orbital electronic configuration of its atom. Atom(s) having which of the following outermost electronic configurations will exhibit more than one oxidation state in its compounds..

(1) $3s^1$ (2) $4s^2$ (3) $3d^24s^2$ (4) $3s^23p^3$

4. Identify the correct statements with reference to the given reaction

$P_4 + 3OH^- + 3H_2O \rightarrow PH_3 + 3H_2PO_2^-$

(1) Phosphorus is undergoing reduction only.

(2) Phosphorus is undergoing oxidation only.

(3) Phosphorus is undergoing oxidation as well as reduction

(4) Hydrogen is undergoing neither oxidation nor reduction.

5. **Assertion (A) :** Among halogens fluorine is the best oxidant.

Reason (R) : Fluorine is the most electronegative atom.

(1) Both A and R are true and R is the correct explanation of A.

(2) Both A and R are true but R is not the correct explanation of A.

(3) A is true but R is false.

(4) Both A and R are false.

6. **Assertion (A) :** The decomposition of hydrogen peroxide to form water and oxygen is an example of disproportionation reaction.

Reason (R) : The oxygen of peroxide is in –1 oxidation state and it is converted to zero oxidation state in O_2 and –2 oxidation state in H_2O.

(1) Both A and R are true and R is the correct explanation of A.

(2) Both A and R are true but R is not the correct explanation of A.

(3) A is true but R is false.

(4) Both A and R are false.

7. The process in which oxidation number increases is known as

(1) Oxidation

(2) Reduction

(3) Auto-oxidation

(4) None of the above

8. $Zn^{2+}(aq) + 2e^- \rightarrow Zn(s)$. This is

(1) Oxidation

(2) Reduction

(3) Redox reaction

(4) None of these

9. $2\overset{+}{C}u \rightarrow Cu + CuI_2$, the reaction is

(1) Redox

(2) Neutralisation

(3) Oxidation

(4) Reduction

10. In $C + H_2O \rightarrow CO + H_2$, H_2O acts as :

(1) Oxidising agent

(2) Reducing agent

(3) Both

(4) None

1. When P reacts with caustic soda, the products are PH_3 and NaH_2PO_2. This reaction is an example of

(1) Oxidation (2) Reduction

(3) Oxidation and reduction (Redox) (4) Neutralization

2. In the reaction $3Cl_2 + 6OH^- \rightarrow 5Cl^- + ClO_3^- + 3H_2O$ chlorine is :

(1) Oxidised (2) Reduced

(3) Oxidised as well as reduced (4) Neither oxidised nor reduced

3. H_2O_2 is used as

(1) An oxidant only (2) A reductant only

(3) An acid only (4) Both an oxidant and a reductant

4. In the compounds $KMnO_4$ and $K_2Cr_2O_7$, the highest oxidation state is of the element :

(1) Potassium (2) Manganese (3) Chromium (4) Oxygen

5. Which of the following change represents a disproportionation reaction (s)

(1) $Cl_2 + 2OH^- \rightarrow ClO^- + Cl^- + H_2O$

(2) $Cu_2O + 2H^+ \rightarrow Cu + Cu^{2+} + H_2O$

(3) $2HCuCl_2 \xrightarrow[\text{water}]{\text{dilution with}} Cu + Cu^{2+} + 4Cl^- + 2H^+$

(4) All of the above

6. Which one of the following compounds can act as an oxidising as well as reducing agent -

(1) $KMnO_4$ (2) H_2O_2 (3) BaO (4) $K_2Cr_2O_7$

7. Which of the following are oxidation-reduction reaction ?

(1) $CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(l)$ (2) $Zn(s) + 2HCl(aq) \rightarrow ZnCl_2(aq) + H_2(g)$

(3) $O_3(g) + NO(g) \rightarrow O_2(g) + NO_2(g)$ (4) All of these

8. Which of the following reactions involves oxidation-reduction both

(1) $NaBr + HCl \rightarrow NaCl + HBr$ (2) $HBr + AgNO_3 \rightarrow AgBr + HNO_3$

(3) $H_2 + Br_2 \rightarrow 2HBr$ (4) $2NaOH + H_2SO_4 \rightarrow Na_2SO_4 + 2H_2O$

9. Which one of the following compounds can act as an oxidising as well as reducing agent -

(1) HNO_2 (2) H_2O_2 (3) $HClO_2$ (4) All of the above

10. The conversion of sugar $C_{12}H_{22}O_{11} \rightarrow CO_2$ is

(1) Oxidation (2) Reduction

(3) Neither oxidation nor reduction (4) Both oxidation and reduction

NEET-CHEMISTRY **ELP NO.–6** **REDOX REACTIONS**

1. **Assertion (A):** In the reaction between potassium permanganate and potassium iodide, permanganate ions act as oxidising agent.
Reason (R) : Oxidation state of manganese changes from +2 to +7 during the reaction.
(1) Both A and R are true and R is the correct explanation of A.
(2) Both A and R are true but R is not the correct explanation of A.
(3) A is true but R is false.
(4) Both A and R are false.

2. In the following reaction $Cr_2O_7^{-2} + 14H^+ + 6I^- \rightarrow 2Cr^{3+} + 3H_2O + 3I_2$ .Which element is reduced
(1) Cr (2) H (3) O (4) I

3. When N_2 is converted into NH_3, the equivalent weight of nitrogen will be :
(1) 1.67 (2) 2.67 (3) 3.67 (4) 4.67

4. If molecular weight of $KMnO_4$ is 'M', then its equivalent weight in acidic medium would be :
(1) M (2) M/2 (3) M/5 (4) M/4

5. In the conversion $NH_2OH \rightarrow N_2O$, the equivalent weight of NH_2OH will be : (M = molecular weight of NH_2OH)
(1) M/4 (2) M/2 (3) M/5 (4) M/1

6. The equivalent weight of $MnSO_4$ is half its molecular weight when it is converted into
(1) Mn_2O_3 (2) MnO_4^- (3) MnO_2 (4) MnO_4^{2-}

7. The equivalent weight of H_3PO_2, when it disproportionate into PH_3 and H_3PO_3 is :
(1) 82 (2) 49.5 (3) 14 (4) 20.5

8. $Cr_2O_7^{-2} + I^- + H^+ \rightarrow Cr^{+3} + I_2 + H_2O$
The equivalent weight of reductant in the above equation is - (At. wt. of Cr = 52, I = 127)
(1) 26 (2) 127 (3) 63.5 (4) 10.4

9. Find the equivalent weight of $Na_2S_2O_3$ in the reaction
$2Na_2S_2O_3 + I_2 \rightarrow Na_2S_4O_6 + 2NaI$
(M = molecular weight of $Na_2S_2O_3$)
(1) M (2) $\frac{M}{2}$ (3) $\frac{M}{4}$ (4) $\frac{M}{8}$

10. In the following reaction, SO_2 acts as a reducing agent :
$SO_2 + Cl_2 + 2H_2O \rightarrow H_2SO_4 + 2HCl$
Find the equivalent weight of SO_2.
(1) $\frac{M}{2}$ (2) M (3) $\frac{M}{4}$ (4) $\frac{M}{8}$

1. In the ionic equation : $K^+BrO_3^- + 6H^+ + 6e^- \rightarrow K^+Br^- + 3H_2O$,

find the equivalent weight of $KBrO_3$, where molecular weight of $KBrO_3$ is M.

(1) M (2) $\frac{M}{2}$ (3) $\frac{M}{6}$ (4) $\frac{M}{4}$

2. In the reaction : $(COOH)_2 \rightarrow CO_2$,

find the equivalent weight of oxalic acid. (M = molecular weight of oxalic acid)

(1) M (2) $\frac{M}{3}$ (3) $\frac{M}{2}$ (4) $\frac{M}{7}$

3. The number of electrons to balance the following equation $NO_3^- + 4H^+ + xe^- \rightarrow 2H_2O + NO$ is

(1) 5 (2) 4 (3) 3 (4) 2

4. In a balanced equation : $H_2SO_4 + x\,HI \rightarrow H_2S + y\,I_2 + z\,H_2O$, the values of x, y, z are

(1) x = 3, y = 5, z = 2 (2) x = 4, y = 8, z = 5

(3) x = 8, y = 4, z = 4 (4) x = 5, y = 3, z = 4

5. For the redox reaction, $MnO_4^- + C_2O_4^{2-} + H^+ \rightarrow Mn^{2+} + CO_2 + H_2O$

the correct coefficients of the reactants for the balanced reaction are

	MnO_4^-	$C_2O_4^-$	H^+
(1)	2	5	16
(2)	16	5	2
(3)	5	16	2
(4)	2	16	5

6. $2MnO_4^- + 5H_2O_2 + 6H^+ \rightarrow 2Z + 5O_2 + 8H_2O$. In this reaction 'Z' is

(1) Mn^{+2} (2) Mn^{+4} (3) MnO_2 (4) Mn

7. In the following equation $ClO_3^- + 6H^+ + X \rightarrow Cl^- + 3H_2O$, then X is

(1) Zero (2) $6e^-$ (3) $4e^-$ (4) $5e^-$

8. In the reaction $xHI + yHNO_3 \rightarrow NO + I_2 + H_2O$, where x and y are :

(1) x = 3, y = 2 (2) x= 2, y = 3 (3) x = 6, y = 2 (4) x = 6, y = 1

9. In the following reaction : $3Br_2 + 6CO_3^{2-} + 3H_2O \rightarrow 5Br^- + BrO_3^- + 6HCO_3^-$?

(1) Bromine is oxidised and carbonate is reduced

(2) Bromine is reduced and water is oxidised

(3) Bromine is neither reduced nor oxidised

(4) Bromine is reduced as well as oxidised also

10. In a reaction between zinc and iodine, in which zinc iodide is formed, what is being oxidised

(1) Zinc ions (2) Iodide ions (3) Zinc atom (4) Iodine

11. In the reaction, $8Al + 3Fe_3O_4 \rightarrow 4Al_2O_3 + 9Fe$, the number of electrons transferred from reductant to oxidant is:

(1) 8 (2) 4 (3) 16 (4) 24

12. The value of x in the partial redox equation $MnO_4^- + 8H^+ + xe^- \rightarrow Mn^{2+} + 4H_2O$ is:

(1) 5 (2) 3 (3) 1 (4) 0

13. What is the value of W, X, Y and Z respectively in the following reaction ?

$H_2O + W\ MnO_4^- + X\ IO_3^- \rightarrow Y\ MnO_2 + Z\ IO_4^- + 2OH^-$

(ℓ) (aq) (s) (aq)

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

14. In the chemical reaction, $K_2Cr_2O_7 + X\ H_2SO_4 + Y\ SO_2 \rightarrow K_2SO_4 + Cr_2(SO_4)_3 + Z\ H_2O$

X, Y and Z are :

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

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

CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES

1. Tendency to loose electron is maximum for

(1) F (2) Na (3) B (4) N

2. Tendency to gain electron is maximum for

(1) Li (2) Na (3) Ca (4) F

3. Newland's octave law is not valid after discovery of

(1) Ne (2) F (3) N (4) Li

4. Newlands octave law is not valid for

(1) Na (2) Mg (3) Ca (4) Fe

5. Which of the following set of element represent dobereiner triad?

(1) P, As, Sb (2) Fe, Co, Ni (3) Cu, Ag, Au (4) C, N, O

6. Which of the following set of elements obey newland's octave rule

(1) Na, K, Rb (2) F, Cl, Br (3) Be, Mg, Ca (4) B, Al, Ga

7. Elements which occupied position in the lother meyer's curve on the peaks were:

(1) Alkali metals

(2) Highly electropositive elements

(3) Elements having large atomic volume

(4) All

8. Which of the following set can be taken as example of dobereiner's law of triad

(1) Na, K, Rb (2) Mg, Ca, Sr (3) F, Cl, Br (4) Cl, Br, I

9. According to lother meyer's curve all the physical properties of elements are periodic function of their–

(1) Atomic weight (2) Atomic no.

(3) Electronic configuration (4) All of these

10. Which pair of elements behave as Metalloid?

(1) Ge, As (2) Pt, I (3) Rb, Cs (4) Al, Zn

11. How many periods and groups are there in the long form periodic table:

(1) 7 & 16 (2) 7 & 9 (3) 7 & 18 (4) 9 & 7

12. Lanthanoids & actinoids belongs to:

(1) IIIA (2) IIIB (3) IVA (4) IVB

13. According to mendeleev's periodic table all the physical & chemical properties of the elements are the periodic function of their:

(1) Atomic weight (2) Atomic no. (3) Both (4) None

14. In mendeleev's periodic table which of the following is not an anomolous pair:

(1) Ar & K (2) Te & I (3) Th & Pa (4) K & Ca

15. EKa aluminium in mendeleev's periodic table is now known as:

(1) Aluminium (2) Silicon (3) Boron (4) Gallium

16. Total no. of elements known at the time when Mendeleev's proposed periodic table:

(1) 57 (2) 69 (3) 63 (4) 71

17. The places that were left empty by Mendeleev's were for:

(1) Al & Si (2) Ga & Ge (3) As & Sb (4) Mo & w

18. Which of the following is pair of liquid element at room temperature?

(1) Ga & Ge (2) Ge & Hg (3) Cs & Br (4) Br & Hg

NEET-CHEMISTRY **ELP NO.-2** **PERIODIC TABLE**

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 3^{rd} 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

11. 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

12. 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

13. An element has electronic configuration $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^4$. Predict their period, group and block:

(1) Period = 3^{rd}, block = p, group = 16 (2) Period = 5^{th}, block = s, group = 1

(3) Period = 3^{rd}, block = p, group = 10 (4) Period = 4^{th}, block = d, group = 12

14. 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) 3^{rd} period and 3^{rd} group (2) 4^{th} period and 4^{th} group

(3) 3^{rd} period and 2^{nd} group (4) 4^{th} period and 3^{rd} group

15. Which of the following show diagonal relationship?

(1) B & Si (2) B & Al (3) B & Ga (4) B & C

16. 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

17. First member of rare earth element is –

(1) Ce (2) Ac (3) U (4) La

18. 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

NEET-CHEMISTRY **ELP NO.-3** **PERIODIC TABLE**

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) IIIB to VB (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 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 contains 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 17^{th} 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. 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

16. 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

17. 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

18. 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

19. An element with atomic number 117 is known as

(1) Nihonium (2) Flerovium (3) Tennessine (4) Roentgenium

20. 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.

21. An element whose IUPAC name is Ununtrium (Uut) belong to:-

(1) s-Block (2) p-Block (3) d-Block (4) f-Block

NEET-CHEMISTRY **ELP NO.-4** **PERIODIC TABLE**

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. 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

3. In which of the following compounds manganese shows maximum radius:-
(1) MnO_2 (2) $KMnO_4$ (3) MnO (4) $K_3[Mn(CN)_6]$

4. 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

5. 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) $S^{2-}<P^{3-}<Cl^-$

6. 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

7. 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) $1s^2,2s^2,2p^6,3s^2,3p^5$

8. 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

9. 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^-

10. 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

11. 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) $Na^+< F^-< Mg^{2+}$

12. Highest size will be of:-
(1) Br^- (2) I (3) I^- (4) I^+

13. 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

14. The correct order of atomic/ionic size:-

(1) N > Li < B (2) Cl < Mg < Ca (3) $Ca^{+2} < S^{-2} < Cl^{-}$ (4) $Na^{+} < Mg^{+2} < Cl^{-}$

15. Which of the following species does'not show shielding effect ?

(1) H (2) He (3) Li (4) Be

16. On moving down the group in Alkali metals value of σ :-

(1) Increases (2) Decreases

(3) Remains same (4) First increases than be comes constent

17. 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

18. 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) $I^{\oplus} > I^{\ominus} > I$

19. 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

20. 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

21. 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) 220
(ii) Na^{+}	(b) 196
(iii) Br^{-}	(c) 76
(iv) I^{-}	(d) 102

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

22. Which of the following orders of radii are correct:-

(a) Li < Be < Na (b) Ni < Cu < Zn (c) Ti > V > Cr (d) Ti > Zr > Hf

Correct answer is :-

(1) All (2) a, b (3) b, c (4) b, d

NEET-CHEMISTRY **ELP NO.-5** **PERIODIC TABLE**

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 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.

3. $A \rightarrow A^+ + e$, 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) $E_1 \neq E_2$

4. Which of the following element has maximum, first ionisation potential?
(1) V (2) Ti (3) Cr (4) Mn

5. 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) $1s^2\ 2s^2\ 2p^4$

6. 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

7. 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

8. Which of the following has least ionization potential?
(1) Li (2) Cs (3) Cl (4) I

9. Among the following which has the highest first ionization energy?

(1) K (2) Na (3) B (4) Kr

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. 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

12. 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

13. 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

14. 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

15. 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

16. Which has the highest second ionisation potential?

(1) Nitrogen (2) Carbon (3) Oxygen (4) Fluorine

17. 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) $1s^2, 2s^2p^6, 3s^1$

18. Which one of the following elements has the highest ionisation energy?

(1) Na (2) Mg (3) C (4) F

19. The ionization energy will be maximum for the process.

(1) $Ba \rightarrow Ba^{++}$ (2) $Be \rightarrow Be^{++}$ (3) $Cs \rightarrow Cs^{+}$ (4) $Li \rightarrow Li^{+}$

20. Which of the following isoelectronic ion has the lowest ionisation energy?

(1) Na^{+} (2) F^{-} (3) Mg^{2+} (4) O^{2-}

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NEET-CHEMISTRY **ELP NO.-6** **PERIODIC TABLE**

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) $2s^2, 2p^\circ$ (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. $O_{(g)} + 2e^- \rightarrow O^{2-}_{(g)}$ 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

8. 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) $O^- + e^- \rightarrow O^{-2}$

9. The element having very high ionization enthalpy but zero electron gain enthalpy is: -

(1) H (2) F (3) He (4) Be

10. 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

11. 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

12. Of the following elements, which have the highest electron affinity?

(1) As (2) O (3) S (4) Se

13. 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

14. 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^-

15. 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

16. Highest electron affinity is shown by

(1) F^- (2) Cl^- (3) Li^+ (4) Na^+

17. 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

18. 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) $1s^2 2s^2 2p^5$

19. 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

20. Electron addition would be easier in: -

(1) O (2) O^+ (3) O^- (4) O^{+2}

NEET-CHEMISTRY **ELP NO.-7** **PERIODIC TABLE**

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

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 4^{th} 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. Last group of d-block is known as-

(1) II B (2) VII B (3) VIII (4) X

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. 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

4. Valency of the atom with respect to oxygen is maximum in

(1) Na_2O (2) MgO (3) Al_2O_3 (4) Cl_2O_7

5. Nucleus of an element has nine protons. its valence would be

(1) 1 (2) 3 (3) 2 (4) 5

6. Variable valence is a property of

(1) Alkali metals (2) Transition metals

(3) Alkaline earth metals (4) Inert gases

7. The molecule that deviates from octet rule is

(1) NaCl (2) $BeCl_2$ (3) MgO (4) NH_3

8. 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

9. The maximum valence of sulphur is

(1) 4 (2) 6 (3) 8 (4) 7

Review Your Self

10. 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) $1s^2 2p^2 2p^6 3p^0 3d^5$

11. 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 .....

12. Outer configuration of X is $3d^5$, $4s^1$. It belongs to group number-

(1) 16 (2) 15 (3) 5 (4) 6

13. 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

14. 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

NEET-CHEMISTRY **ELP NO.-3** **CHEMICAL BONDING**

1. 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) $2p_y + 2p_z \rightarrow \pi$

2. Which of the following does not form diatomic molecule?

(1) Iodine (2) Oxygen (3) Phosphorous (4) Nitrogen

3. 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

4. CO_2 is a gas, while SiO_2 is a solid but both are:

(1) Covalent containing π–bond (2) Molecules having Pπ – dπ bonding

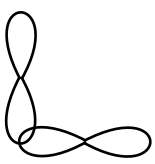
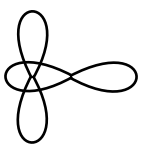
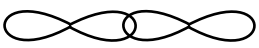
(3) Acidic (4) Discrete molecules

5. 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

6. Which of the following p-orbitals overlapping would result in the strongest bond:

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

7. Which overlapping is involved in HCl molecule:

(1) s - s Overlap (2) p - p Overlap (3) s - d Overlap (4) s - p Overlap

8. 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)

Review Your Self

9. Ionisation potential does not depend upon-

(1) Atomic size (2) Type of electron (3) Nuclear charge (4) Type of bonding in crystal lattice

10. 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

11. 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.

12. Ionisation potential is lowest for-

(1) Halogens (2) Inert gas

(3) Alkaline earth metals (4) Alkali metals

13. The element which have lowest ionization potential-

(1) Cs (2) Li (3) Na (4) K

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. How many bonded electron pairs are present in IF_7 molecule
(1) 6 (2) 7 (3) 5 (4) None

7. The odd electron molecules among the following is/are :
(1) NO_2 (2) NO (3) ClO_2 (4) All of these

8. Which of the following does not exist –
(1) $[BF_6]^{3-}$ (2) NCl_5 (3) $[CF_6]^{2-}$ (4) All

9. In ICl_3 iodine atom present in –
(1) GS (2) ES_1 (3) ES_2 (4) ES_3

Review Your Self

10. Which of the following element has the highest value of electron affinity -
(1) Carbon (2) Oxygen (3) Fluorine (4) Neon

11. The process requiring the absorption of energy is -
(1) $F \rightarrow F^-$ (2) $Cl \rightarrow Cl^-$ (3) $O \rightarrow O^{2-}$ (4) $H \rightarrow H^-$

12. 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

13. Which of the following elements has the maximum electron affinity ?
(1) F (2) Cl (3) Br (4) I

NEET-CHEMISTRY **ELP NO.-5** **CHEMICAL BONDING**

1. The hybridization state of the central atom in AlI_3 is-
(1) sp^3d (2) sp^3 (3) sp^2 (4) sp

2. By hybridization, we mean the mixing of-
(1) Electrons (2) Atomic orbitals
(3) Atoms (4) Protons

3. 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

4. Beryllium atom in beryllium fluoride is
(1) sp^3 hybridized (2) sp^2 hybridized
(3) *sp* hybridized (4) Unhybridized

5. Shape of BF_3 molecule is
(1) Linear (2) Planar (3) Tetrahedral (4) Square pyramidal

6. Which of the following molecule having sp^2 hybridization
(1) BeF_2 (2) BF_3 (3) C_2H_2 (4) NH_3

7. Which molecule is planar
(1) NH_3 (2) CH_4 (3) $AlCl_3$ (4) $SiCl_4$

8. 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

9. 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

10. 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

11. Hybridisation state of 'S' atom in SF_6 molecule is:-

(1) sp^3 (2) sp^3d (3) sp^3d^2 (4) sp^3d^3

12. 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) $d_{x^2-y^2}, s, p_x, p_y$

Review Your Self

13. 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

14. 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

15. (I) Be and Mg are alkaline earth metal

(II) K^+ have larger radii than Ca^{2+}

(III) All d-block elements are transition elements

(IV) $H^{\ominus}$ ion have larger size than Li^+

Incorrect statements is/are

(1) (I), (III) & (IV) (2) (II) & (III) (3) (I) & (IV) (4) (I) & (III)

16. 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

17. Element of highest second ionization energy is

(1) Na (2) Al (3) Mg (4) Si

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) :

Column I	**Column II**
(P) BH_4^-	(I) 2 bond pair and 3 lone pair on centralatom
(Q) ICl_2^+	(II) 4 bond pair and no lone pair on central atom
(R) ICl_2^-	(III) 3 bond pair and 1 lone pair on central atom
(S) ICl_4^-	(IV) 2 bond pair and 2 lone pair on central atom
	(V) 4 bond pair and 2 lone pair on central atom

(1) P = II ; Q = IV; R = III ; S = I (2) P = II ; Q = IV ; R = I ; S = V

(3) P = II ; Q = I ; R = V ; S = IV (4) P = II ; Q =I ; R = III ; S = IV

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

Review Your Self

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. If each orbital contains 3 electrons then total number of elements present in 5^{th} period

(1) 18 (2) 27 (3) 32 (4) 36

14. The electronic configuration having maximum difference in first and second ionization energies is

(1) $1s^2 2s^2 2p^6 3s^2$ (2) $1s^2 2s^2 2p^6 3s^2 3p^1$ (3) $1s^2 2s^2 2p^6 3s^2 3p^2$ (4) $1s^2 2s^2 2p^6 3s^1$

NEET-CHEMISTRY **ELP NO.-7** **CHEMICAL BONDING**

1. The hybridisation of in C_2 & C_3 in $\overset{4}{H}\overset{3}{C}\equiv\overset{2}{C}-\overset{1}{C}H=CH_2$ 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) $\bar{C}H_3$ (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 is V-shapped

(1) CH_4 (2) H_2O (3) SO_3 (4) All

6. 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

7. XeF_2 molecule is –

(1) Linear (2) Triangular planer (3) Pyramidal (4) Square planer

8. 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

9. 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

10. Which among the following have regular geometry

(1) CCl_4 (2) NF_3 (3) PF_3 (4) SCl_4

11. Which of the following species is planar

(1) CO_3^{2-} (2) NH_3 (3) PCl_3 (4) $SOCl_2$

Review Your Self

12. Element having highest 1^{st} ionization energy in the following is

(1) Na (2) Mg (3) Al (4) He

13. 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

14. Which of the following is a representative element?

(1) Zn (2) Sr (3) Au (4) Fe

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. 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) $NO_2^- > NO_2 > NO_2^+$

6. 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

7. In which molecule all possible bond angles are identical ?

(1) SF_4 (2) SO_2Cl_2 (3) ClF_3 (4) SiF_4

8. Minimum bond angle is associated with ?

(1) H_2S (2) H_2O (3) NH_3 (4) CH_4

9. What is the hybridisation of the central atom of SiO_2

(1) sp (2) sp^2 (3) sp^3 (4) sp^3d

10. Which of the following molecule is not planar?

(1) ClF_3 (2) XeF_5^+ (3) XeF_4 (4) BF_3

Review Your Self

11. 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

12. Which of the following configuration is associated with biggest jump between 2^{nd} and 3^{rd} 1E?

(1) $1s^2 2s^2 2p^2$ (2) $1s^2 2s^2 2p^6 3s^1$ (3) $1s^2 2s^2 2p^6 3s^2$ (4) $1s^2 2s^2 2p^1$

13. The electronegativity of Be is almost same as

(1) Al (2) Mg (3) Na (4) Li

14. Among group 16 elements, electron gain enthalpy of which is least negative?

(1) O (2) S (3) Se (4) Te

15. 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

16. 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] $5d^1$ $6s^2$

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

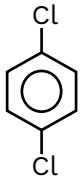
7. Which of the following would have a permanent dipole moment ?

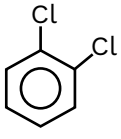
(1) SiF_4 (2) SF_4 (3) PCl_5 (4) BCl_3

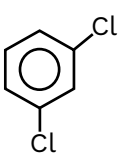
8. The most polar bond is

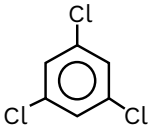
(1) C – F (2) F – O (3) C – Br (4) C – N

9. Which has maximum dipole moment ?

(1) 

(2) 

(3) 

(4) 

Review Your Self

10. Select the element of positive electron gain enthalpy

(1) Li (2) Na (3) P (4) He

11. Which element has lowest electron affinity?

(1) O (2) S (3) Se (4) Te

12. 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) $[Rn]5f^{1}6d^{10}7s^{2}7p^{6}$

13. 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

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 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

3. The number of coordinate bonds presents in SO_3 molecule are

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

4. In PO_4^{3-} ion, the average charge on the oxygen atoms is

(1) +1 (2) –1 (3) –0.75 (4) +0.75

5. Bond order of S – O bond in SO_4^{2-} is

(1) 2 (2) 1.5 (3) 3 (4) $\frac{4}{3}$

6. Which of the following contain both ionic and covalent bonds?

(1) H_2O (2) NaOH (3) C_6H_5Cl (4) CO_2

7. Nitrogen-Oxygen bond order in NO_2^- is

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

8. Electrovalency of Al in Al_2O_3 compound is

(1) 2 (2) 3 (3) 4 (4) 5

Review Your Self

9. 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

10. Which of the following element has the lowest first ionisation potential?

(1) Na (2) F (3) Cs (4) I

11. 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

12. 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

13. 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

Educator Led Practice

NEET-CHEMISTRY **ELP NO.-11** **CHEMICAL BONDING**

1. Correct order of energy is –
(1) BMO > AO > ABMO (2) AO > BMO> ABMO
(3) BMO > ABMO > AO (4) ABMO > AO > BMO

2. 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

3. 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

4. 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

5. 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

6. 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

7. MOT can explain
(1) Fractional bond order (2) Paramagnetic behaviour of dioxygen
(3) Diamagnetic behaviour of dinitrogen (4) All of these

8. Which of the following has nodal plane?
(1) σ2s (2) σ^*2s (3) Both (4) None

9. In a homonuclear diatomic molecule higher the bond order larger will be

(1) Bond length (2) Bond strength

(3) Paramagnetic nature (4) Ionic character

10. Which of the following should be most stable

(1) H_2 (2) H_2^+ (3) H_2^- (4) All are equally stable

11. Which of the following does not exist

(1) H_2 (2) Li_2 (3) He_2 (4) He_2^+

12. Which of the following has maximum bond strength ?

(1) H_2 (2) H_2^- (3) H_2^+ (4) He_2

Review Your Self

13. The correct order of ionic radii is

(1) $Fe > Fe^{++} > Fe^{+++}$ (2) $O^{--} > O^- > O^+$ (3) $I^- > I > I^+$ (4) All of these

14. Electronic configuration of anion in sodium hydride will be

(1) $1s^2$ (2) $1s^1$ (3) $1s^0$ (4) $1s^1\ 2s^1$

15. CO and NO are

(1) Neutral oxides (2) Acidic oxides

(3) Basic oxides (4) Neutral and basic respectively

16. Which of the following is correct order of ionization potential is

(1) K > Ca (2) Ca > Ba (3) Na > Na^+ (4) Cl^- > Cl

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

Review Your Self

10. 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

11. Element having highest 1^{st} ionization energy in the following is

(1) Na (2) Mg (3) Al (4) He

12. Which of the following is most acidic in nature?

(1) SO_3 (2) CO (3) Al_2O_3 (4) P_2O_5

13. Positive electron gain enthalpy is shown by

(1) Ne (2) O^- (3) F (4) Both (1) & (2)

14. 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

15. 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

NEET-CHEMISTRY **ELP NO.-13** **CHEMICAL BONDING**

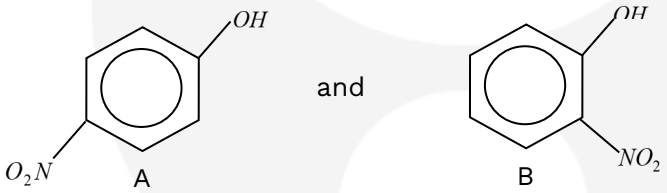
1. Among $HF, CH_4, CH_3OH,$ and N_2H_4 intermolecular hydrogen bonding is expected

(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. 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

6. 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) $CH_4 > GeH_4 > SiH_4$

7. Which does not show hydrogen bonding

(1) C_2H_5OH (2) Liquid NH_3 (3) H_2O (4) Liquid HBr

8. 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

9. 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

10. Which one shows maximum hydrogen bonding

(1) H_2O (2) H_2Se (3) H_2Te (4) HF

Review Your Self

11. The symbol of element with atomic number 105 is

(1) Uup (2) Unp (3) Uuu (4) Unn

12. 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) $K^+ > Ca^{2+} > S^{2-} > Cl^-$

13. Which of the following has positive electron gain enthalpy?

(1) Cl (2) S (3) He (4) C

14. An element with E.C. $[Xe]\ 4f^{14}5d^7\ 6s^2$ belongs to

(1) 7^{th} period (2) 9^{th} group (3) 7^{th} group (4) 5^{th} period

15. 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

16. 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

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 (III) M-nitrophenol (IV) 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?

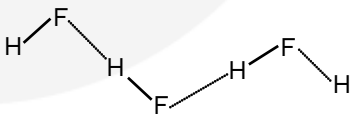
HF, CH_3OH, N_2O_4, CH_4

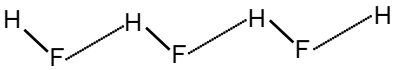
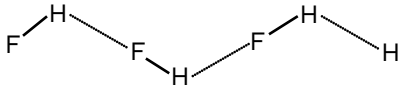
(1) HF, N_2O_4 (2) HF, CH_4, CH_3OH (3) HF, CH_3OH (4) CH_3OH, CH_4

4. Which of the following exhibits H-bonding?

(1) CH_4 (2) H_2Se (3) N_2H_4 (4) H_2S

5. The H-bond in solid HF can be best represent as

(1) H–F.....H–F.....H–F (2) 

(3)  (4) 

6. 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

7. 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

8. Which is weakest among the following types of bonds?

(1) Debye force (2) Dipole-dipole bond

(3) Metallic bond (4) Hydrogen bond

Review Your Self

9. Which of the following elements show properties that are characteristic of both metals and non-metals?

(1) Mg (2) S (3) C (4) Si

10. Beryllium shows diagonal relationship with

(1) Mg (2) Al (3) Li (4) Si

11. The element having lowest first ionization potential among Sr, As, S and F is

(1) Sr (2) As (3) S (4) F

12. 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

13. Most electronegative among halogens is

(1) F (2) Cl (3) Br (4) I

14. 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

15. Select the element of positive electron gain enthalpy

(1) Li (2) Na (3) P (4) He

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 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

6. Which of the following will have high lattice energy?

(1) LiCl (2) KCl (3) NaCl (4) CsCl

7. 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

8. With which of the following electronic configuration an atom has the lowest ionization enthalpy?

(1) $1s^2 2s^2 2p^3$ (2) $1s^2 2s^2 s2p^6 3s^1$ (3) $1s^2 2s^2 2p^6$ (4) $1s^2 2s^2 2p^5$

9. Ce (z = 58) is a member of

(1) s-block elements (2) p-block elements

(3) d-block elements (4) f-block elements

10. The element having least difference in the values of first and second ionization potential is

(1) Na (2) K (3) Li (4) Mg

11. Which of the following has lowest ionisation energy?

(1) P^{3-} (2) Cl^- (3) S^{2-} (4) K^+

12. Maximum number of elements which can be placed in 7^{th} period

(1) 18 (2) 32 (3) 50 (4) 86

13. 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

14. 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

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 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

4. 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

5. 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

6. 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) $MgCl_2$, $BeCl_2$

Review Your Self

7. The Group number for the Inner transition element is:

(1) 3 (2) 6 (3) 4 (4) 8

8. 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) $[He]\ 2s^2\ 2p^6\ 3s^1$

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 least soluble in water?
(1) AgF (2) AgCl (3) AgBr (4) AgI

5. The hydration energy of Mg^{2+} ions is higher than that of:
(1) Al^{3+} (2) Be^{2+} (3) Na^{+} (4) None of these

6. 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

7. 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

8. What is the Atomic number of element. Which belongs to fifth period and Group-16?
(1) 50 (2) 34 (3) 52 (4) 53

9. 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

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) $\overset{\Theta}{C}Cl_3$

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}

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

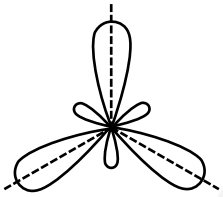
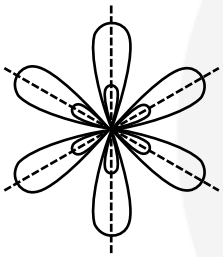
9. Compound having sp^3d hybridization is

(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}

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

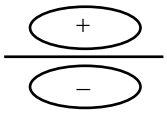
16. The total number of diprotic acids among the following is :-

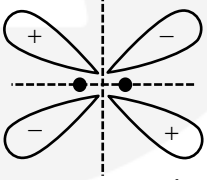
H_3PO_4, H_2SO_4, H_3PO_3, H_2CO_3, $H_2S_2O_7$, H_3BO_3, H_3PO_2, H_2CrO_4, H_2SO_3,

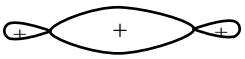
(1) 6 (2) 5 (3) 4 (4) 3

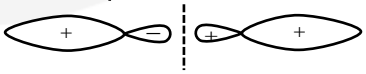
Review Your Self

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. = 5^{th}

(2) [Xe] $4f^7\ 5d^1\ 6s^2$, group = IIIB, period = 6^{th}

(3) [Rn] $6d^2\ 7s^2$, group = IVB, period = 7^{th}

(4) Z = 56, group = IIA, period = 6^{th}

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 element is used inmeasurement of very high temperature ?

(1) Carbon (2) Aluminium (3) Galium (4) Mercury

4. B_2H_6 contain:

(1) 2C, 2e bond (2) 3C, 2e bond (3) Both (4)None

5. Which is acidic oxide ?

(1) B_2O_3 (2) Al_2O_3 (3) Ga_2O_3 (4) In_2O_3

6. Whose fibers are used to make bullet Proof vest

(1) Boron (2) Aluminium (3) Chromium (4) Carbon

7. 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

8. Diamond is an example of

(1) molecular solid (2) ionic solid (3) covalent solid (4) metallic solid

9. 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

10. Which is electrical conductor

(1) diamond (2) graphite (3) both (4) none

11. Which is amphoteric

(1) SnO_2 (2) PbO_2 (3) both (4) none

12. Carbon is sp^2 hybridised in

(1) diamond and graphite (2) graphite and fullerenes

(3) diamond and fullerenes (4) only diamond

13. Hybridisation of silicon in SiO_2 is:

(1) sp (2) sp^2 (3) sp^3 (4) sp^3d

14. Which can show +5 oxidation state

(1) N (2) P (3) As (4) All

15. Reason for anamalous behaviour of nitrogen in its group may be due to

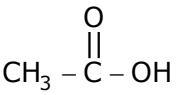
(1) small size (2) high EN

(3) Non availabality of vacant d orbitals (4) All

16. Select incorrect statement regarding P_4 molecule

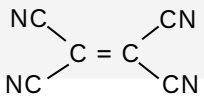
(1) Each P atom is joined with three P-atoms (2) It has angle strain

(3) Phosphours is sp hybridized (4) It contains 4 rings, each of 3 membered

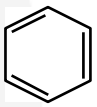
1. How many σ bonds are present in 

(1) 6 (2) 7 (3) 8 (4) 9

2. How many π electrons are present in given compound.

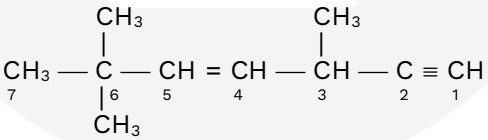


(1) 2 (2) 9 (3) 18 (4) 1

3. How many σ & π bonds are present in given compound respectively: - 

(1) 6, 3 (2) 6, 6 (3) 12, 3 (4) 3, 4

4. The state of hybridization of C_2, C_3, C_5 and C_6 of the given compound is in the following sequence: -



(1) sp, sp^3, sp^2 and sp^3 (2) sp, sp^2, sp^2 and sp^3

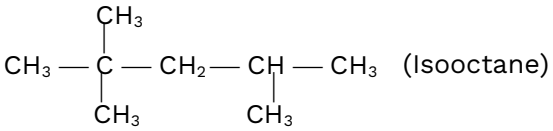
(3) sp, sp^2, sp^3 and sp^2 (4) sp^3, sp^2, sp^2 and sp

5. In which of the following, all carbon atoms are collinear: -

(1) $CH_3–CH=CH_2$ (2) $CH_3–C\equiv C–CH_3$

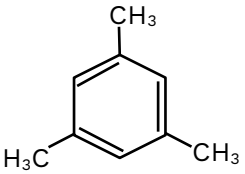
(3) $CH\equiv C–CH=CH_2$ (4) $CH_3–CH_2–CH_3$

6. How many 1°C, 2°C, 3°C, & 4°C present in given compound respectively: -



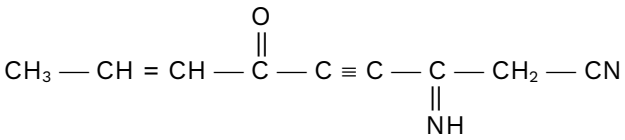
(Isooctane)

(1) 5, 1, 1, 1 (2) 5, 2, 1, 0 (3) 2, 3, 2, 1 (4) 5, 1, 2, 0

7. Number of 1°H, 2°H, & 3°H present in  (mesitylene) respectively are:

(1) 9, 0, 0 (2) 9, 6, 3 (3) 9, 3, 0 (4) 9, 6, 0

8. Which of the following statement is/are true about given compound.



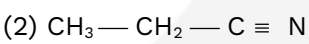
(a) Double bond = 3 (b) Olefinic bond = 1

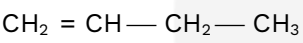
(c) Triple bond = 1 (d) Acetylenic bond = 1

(1) a, b, c, d (2) a, b, d (3) b, c, d (4) a, c, d

9. Which of the following is/are unsaturated compound: -

(1) 

(2) 

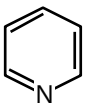
(3) 

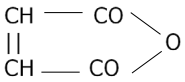
(4) All

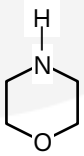
10. Which of the following is Homocyclic organic compound: -

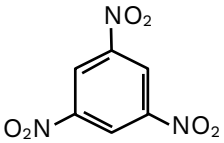
(1) Pyrrole (2) Benzene (3) Furan (4) Pyridine

11. Maximum number of hetero atoms are present is: -

(1) 

(2) 

(3) 

(4) 

12. Which one is not correct for a homologous series: -

(1) All members have a same general formula

(2) All members have same chemical properties

(3) All members have same physical properties

(4) All members have same functional group

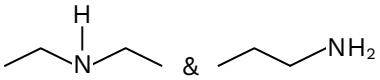
13. Number of C – atoms in 3rd member of ester homologous series are: -

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

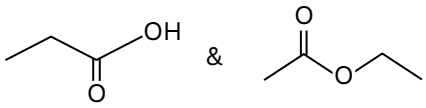
14. Molecular formula of 2nd member of alkenyne homologous series is: -

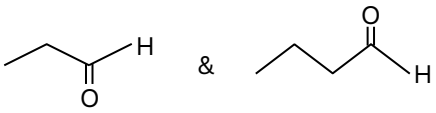
(1) C_4H_4 (2) C_5H_8 (3) C_5H_6 (4) C_4H_6

15. Which of the following pair is homologue of each other.

(1)  &

(2) $CH_3–CH_2–O–CH_2–CH_3$ & $CH_3–O–CH_2–CH_2–CH_3$

(3)  &

(4) 

16. Which of the following statement is correct?

(1) 1°, 2° & 3° alcohol are considered as same functional group.

(2) 1°, 2° & 3° amine have different chemical properties.

(3) Alcohol and phenol are different functional group.

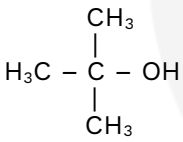
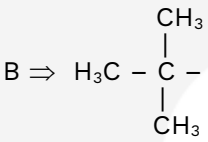
(4) All of the above.

17. The general formula for carboxylic acid is: -

(1) $C_nH_{2n+2}O$ (2) $C_nH_{2n}O$ (3) $C_nH_{2n}O_2$ (4) $C_nH_{2n+2}O_2$

18. The molecular formula C_4H_8O can represent.

(1) Aldehyde (2) Ketone (3) Acid (4) Both of 1 & 2

19. A $\Rightarrow$  B $\Rightarrow$  A & B are respectively: -

(1) Tertiary alcohol, tertiary amine

(2) Tertiary alcohol, primary amine

(3) Primary alcohol, tertiary amine

(4) Primary alcohol, primary amine

20. The geometry of the compound is: -

$CH_2=CH–CH=CH_2$

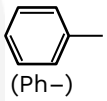
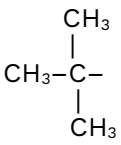
(1) Tetrahedral (2) Linear (3) Planar (4) Pyramidal

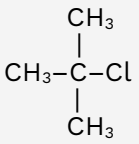
NEET-CHEMISTRY **ELP NO.-2** **CLASSIFICATION & NOMENCLATURE**

1. Which of the following is tertiary radical: -

(1) $CH_3-\underset{\displaystyle CH_3}{\overset{|}{CH}}-$ (2) $CH_2=CH-$ (3) C_6H_5- (4) $(CH_3)_3C-$

2. Which of the following is secondary radical

(1) $CH_3-\underset{\displaystyle CH_3}{\overset{|}{CH}}-CH_2-$ (2)  (Ph–) (3) CH_3-CH_2- (4) 

3. Common name of  is:-

(1) Neobutyl chloride (2) Neopentyl chloride
(3) Tert. Butyl chloride (4) Isobutyl chloride

4. The structure of allyl vinyl ether is:

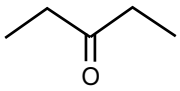
(1) $CH_2=CH-CH_2-O-CH_2-CH=CH_2$ (2) $CH_2=CH-O-CH_2-CH=CH_2$

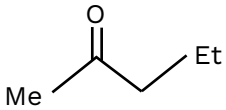
(3) $CH_2=CH-O-CH=CH_2$ (4) $CH_3-CH=CH-O-CH=CH_2$

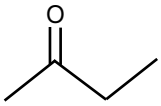
5. Neopentyl radical is: -

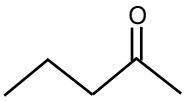
(1) Tertiary (2) Primary (3) Secondary (4) Quaternary

6. Identify the structure of Ethyl methyl ketone.

(1) 

(2) 

(3) 

(4) 

7. Common name of $CH_2=CH-CN$

(1) Vinyl Cyanide (2) Acrylonitrile (3) Ethyl cyanide (4) Both (1) & (2)

8. Structure of Isopropyl formate is: -

(1) $CH_3-\underset{\underset{CH_3}{|}}{CH}-\underset{\underset{O}{||}}{C}-O-CH_3$

(2) $H-\underset{\underset{O}{||}}{C}-O-\underset{\underset{CH_3}{|}}{CH}-CH_3$

(3) $CH_3-\underset{\underset{CH_3}{|}}{CH}-\underset{\underset{O}{||}}{C}-O-H$

(4) $CH_3-\underset{\underset{O}{||}}{C}-O-\underset{\underset{CH_3}{|}}{CH}-CH_3$

9. Common name of $CH_3-\overset{\overset{O}{||}}{C}-O-\overset{\overset{O}{||}}{C}-CH_3$ is: -

(1) Ethanoic anhydride (2) Butyric anhydride

(3) Acetic anhydride (4) Formic anhydride

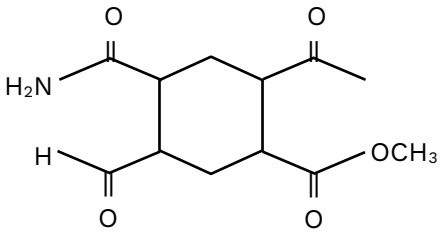
10. Derived name of Neopentyl alcohol is: -

(1) tert-Butyl carbinol (2) n-Butyl carbinol

(3) Isopropyl carbinol (4) Ethyl methyl carbinol

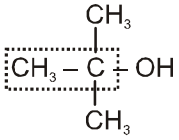
NEET-CHEMISTRY **ELP NO.-3** **CLASSIFICATION & NOMENCLATURE**

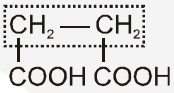
1. Which of the following functional group is not present in given compound:-

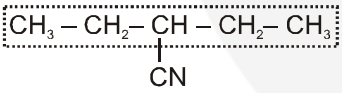


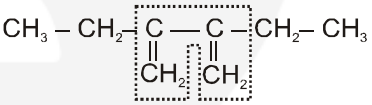
(1) Ester (2) Amide (3) Amine (4) Aldehyde

2. Which of the following selected principal carbon chain (PCC) is correct: -

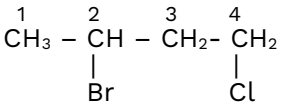
(1) 

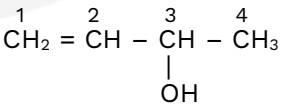
(2) 

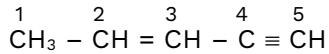
(3) 

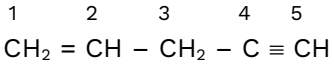
(4) 

3. Which of the following has correct numbering according to IUPAC:-

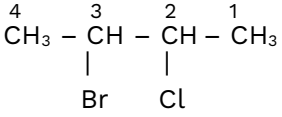
(1) 

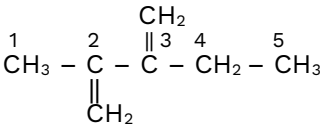
(2) 

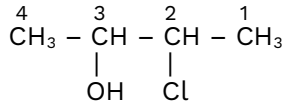
(3) 

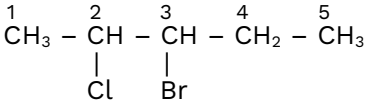
(4) 

4. Which of the following has correct numbering according to IUPAC :-

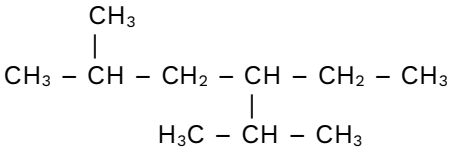
(1) 

(2) 

(3) 

(4) 

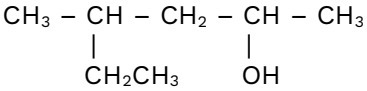
5. The IUPAC name for the given structure is: -



(1) 3–Isopropyl–4–methylhexane (2) 4–Isopropyl–3–methylhexane

(3) 3–Ethyl–2,5–dimethylhexane (4) 2–Ethyl–3–isopropylpentane

6. IUPAC name of compound is :-



(1) 4–Methyl–3–hexanol (2) Heptanol

(3) 4–Methyl–2–hexanol (4) 4–Ethylpentan–2–ol

7. The correct decreasing order of priority for the functional group in the IUPAC system of nomenclature:-

(1) $-CONH_2, -CHO, -SO_3H, -COOH$ (2) $-COOH, -SO_3H, -CONH_2, -CHO$

(3) $-SO_3H, -COOH, -CONH_2, -CHO$ (4) $-CHO, -COOH, -SO_3H, -CONH_2$

8. In which of the following compound acetylinic bond may be present:

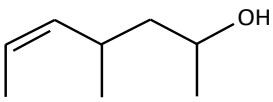
(1) C_5H_{12} (2) C_4H_8 (3) C_6H_{12} (4) C_6H_{10}

9. The correct IUPAC name of isooctane is :-

(1) 2,4,4-Trimethylpentane (2) 2,2,4-Trimethylpentane

(3) 2,2,4-Trimethylbutane (4) 2,4-Dimethylpentane

10. IUPAC name of the following compound is:-

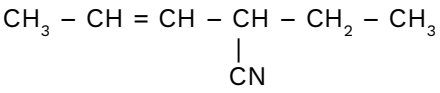


(1) 1,3–Dimethylhex–4–en–1–ol (2) 4,6–Dimethylhex–4–en–6–ol

(3) 4–Methylhept–2–en–6–ol (4) 4–Methylhept–5–en–2–ol

NEET-CHEMISTRY **ELP NO.-4** **CLASSIFICATION & NOMENCLATURE**

1. What is the correct IUPAC name of the following?



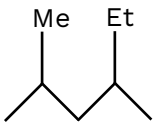
(1) 4–Cyanohex–2–ene

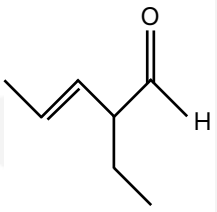
(2) Hex–4–ene–3–nitrile

(3) 2–Ethylpent–3–enenitrile

(4) 2–(Prop–1–enyl)butanenitrile

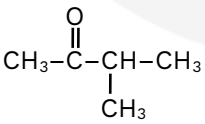
2. Select the incorrect match of IUPAC name with following structure:

(1)  (2-Ethyl-4-methylpentane)

(2)  (2–Ethylpent–3–enal)

(3) CH_3COOMe (Methylethanoate)

(4) $HC\equiv C-CH=CH-CH_3$ (Pent–3-en–1–yne)

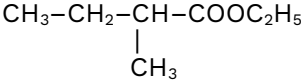
3. The IUPAC name of  is:

(1) 2–Methylbutan–3–one

(2) 3–Methylbutan–2–al

(3) 2–Methylbutan–3–al

(4) 3–Methylbutan–2–one

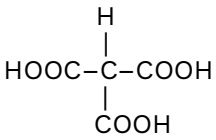
4. The IUPAC name of : 

(1) 2–Methyl–ethylpropanoate

(2) Ethyl–3–ethyl acetate

(3) Ethyl–2–methylbutanoate

(4) 2–Methylbutanoic acid ethylester

5. The IUPAC name of compound is: 

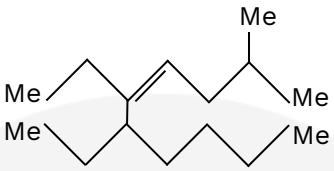
(1) Tricarboxy methane

(2) 2-Carboxypropanoic acid

(3) Tributanoic acid

(4) Methanetricarboxylic acid

6. The IUPAC name of the structure is:

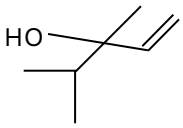


(1) 2,4,5–Triethyl–3–nonene

(2) 5,6–Diethyl–2–methyl–4–decene

(3) 2,4,5–Triethyl–3–octene

(4) 3–Ethyl–5–methyl–3–heptane

7.  has the IUPAC name: -

(1) 3,4–Dimethylpent–1–en–3–ol

(2) Isopropyl 3–methyl vinyl carbinol

(3) 2,3–Dimethylpent–4–en–3–ol

(4) 1–Vinyl–1,2–dimethylpropanol

8. Which of the following pairs of trivial/common names and IUPAC name are incorrectly matched

(1) Isohexane — 2–Methylhexane

(2) Isooctane — 2,2,4–Trimethylpentane

(3) Isobutyraldehyde — 2–Methylpropanal

(4) Isobutylene — 2–Methylpropene

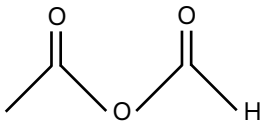
9. Correct IUPAC name is:

(1) 3–Methyl–2–ethylpentane

(2) 2–Ethyl–3–methylpentane

(3) 3–Ethyl–2–methylpentane

(4) 2–Ethyl–2–methylpentane

10. The IUPAC name of  is:

(1) Acetic anhydride

(2) Formyl ethanoate

(3) Butane–2,4–dione

(4) Ethanoic methanoic anhydride

11. Select the correct IUPAC name of the following compound $NC-CH_2-CH_2-\overset{\overset{O}{\|}}{C}-OH$

(1) 3–Carboxypropanenitrile

(2) 4–Carboxypropanenitrile

(3) 3–Cyanopropanoic acid

(4) 4–Cyanopropanoic acid

12. The IUPAC name of given compound is: $CH_3\text{-}CH_2\text{-}N(CH_3)\text{-}CH_2\text{-}CH_3$

(1) N–Methyl–N–ethylethylamine

(2) N–Ethyl–N–methylethanamine

(3) Methyldiethylamine

(4) Diethylmethylamine

13. The IUPAC name for $CH_3-\overset{\overset{O}{\|}}{C}-NH_2$ and $CH_3-\overset{\overset{O}{\|}}{C}-Cl$ are:

(1) 1–Amino–1–oxoethane, 1–chloroethanal

(2) 1–Aminoethanal, acetoylchloride

(3) 1–Oxoethanamine, ethanoylchloride

(4) Ethanamide, Ethanoylchloride

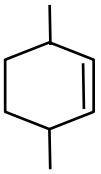
14. The number of carbon atoms in the principal carbon chain (PCC) of the given compound are:

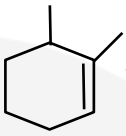
$$CH_3-CH_2-CH_2-\underset{\underset{NC-C-CH_2-CH_3}{\|}}{C}-COOH$$

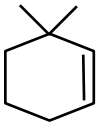
(1) 7 (2) 5 (3) 4 (4) 6

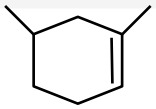
NEET-CHEMISTRY **ELP NO.-5** **CLASSIFICATION & NOMENCLATURE**

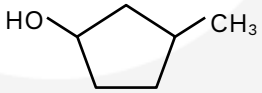
1. Which of the following name will be incorrect?

(1)  3,6–Dimethylcyclohexene

(2)  1,6–Dimethylcyclohexene

(3)  6,6–Dimethylcyclohexene

(4)  1,5–Dimethylcyclohexene

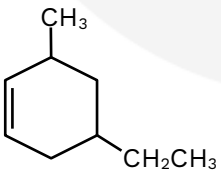
2. The IUPAC name of given compound is 

(1) 3–Methylcyclopentanol

(2) 4–Methylcyclopentanol

(3) 1–Hydroxy–3–methylcyclopentane

(4) None of these

3. The IUPAC name of 

is: -

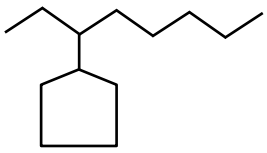
(1) 1-Methyl-5-ethylcyclohex-2-ene

(2) 5-Ethyl-3-methylcyclohex-1-ene

(3) 4-Ethyl-6-methylcyclohex-1-ene

(4) 1-Ethyl-5-methylcyclohex-3-ene

4. The IUPAC name of the given compound is: -

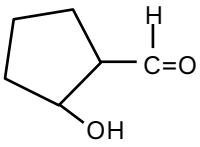


(1) Octylcyclopentane

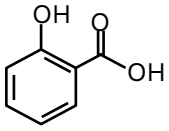
(2) 3-Cyclopentyloctane

(3) Cyclopentaneoctane

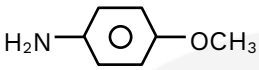
(4) 6-Cyclopentyloctane

5. The correct name for  is:

(1) 2-Hydroxycyclopentanal
(2) 2-Formyl-1-hydroxycyclopentane
(3) 2-Hydroxycyclopentanecarbaldehyde
(4) Cyclopentane-2-ol-1-al

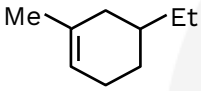
6. The IUPAC name of  is:

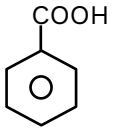
(1) 2-Carboxyphenol
(2) 2-Hydroxybenzoic acid
(3) 1-Carboxy-2-hydroxybenzene
(4) (2-Hydroxyphenyl)methanoic acid

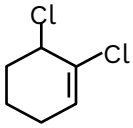
7. The IUPAC name of  is: -

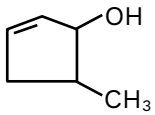
(1) 1-Methoxy-4-aminobenzene
(2) Aminophenyl methyl ether
(3) 4-Methoxyaniline
(4) 4-Aminoanisol

8. Which of the following has wrong IUPAC name

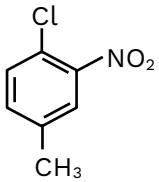
(1)  5-Ethyl-1-methylcyclohexene

(2)  Benzenecarboxylic acid

(3)  1,6-Dichlorocyclohexene

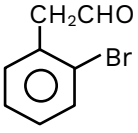
(4)  2-Methylcyclopent-4-en-1-ol

9. The IUPAC name for:



(1) 1-Chloro-2-nitro-4-methylbenzene
(2) 1-Chloro-4-methyl-2-nitrobenzene
(3) 2-Chloro-1-nitro-5-methylbenzene
(4) m-Nitro-p-chlorotoluene

10. Give IUPAC name of the following compound



(1) 2-(2-Bromophenyl)ethanal
(2) 2-Bromophenylethanal
(3) 2-Bromobenzeneethanal
(4) Bromobenzenecarbaldehyde

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

1. 1,2-Epoxy propane and Allyl alcohol are:

(1) Position isomers (2) Functional group isomers

(3) Chain isomers (4) Metamers

2. Minimum number of carbon atoms required by an alkane, alkene and alkyne to show chain isomerism respectively are:

(1) 4,4,4 (2) 4,3,3 (3) 4,5,4 (4) 4,4,5

3. The number of aldehydes and ketones with formula $C_5H_{10}O$ are (structural isomers)

(1) 7 (2) 6 (3) 5 (4) 8

4. How many structural isomers are possible for the formula C_4H_8

(1) 3 (2) 5 (3) 2 (4) 4

5. Total number of ethers having molecular formula $C_4H_{10}O$ are (structural only) :

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

6. Total number of different isomeric amines corresponding to the molecular formula $C_4H_{11}N$ (structural only) :

(1) 4 (2) 8 (3) 5 (4) 2

7. The number of structural isomers for C_5H_{10} are :

(1) 8 (2) 6 (3) 9 (4) 10

8. The formula $C_3H_6O_2$ represents

(1) Methylethanoate (2) Propanoic acid (3) Ethylmethanoate (4) All of the above.

9. Number of structural isomers of C_6H_{14} are :-

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

10. Which of the following compound is isomeric with propanoic acid :-

(1) $CH_3-\overset{\overset{O}{\|}}{C}-OC_2H_5$

(2) $CH_2(OH)-CH_2-\overset{\overset{O}{\|}}{C}-H$

(3) $CH_3-CH(OH)-CH_3$

(4) CH_3O-CH_2-OH

11. Total number of primary alcohols having molecular formula $C_5H_{12}O$ (Excluding stereoisomer)

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

12. The minimum number of carbon atoms in ketone to show metamerism: -

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

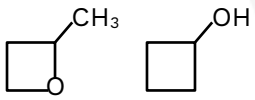
13. Which are metamers :-

(1) $CH_3-O-CH_2CH_2CH_3$, $CH_3-O-CH(CH_3)_2$

(2) $C_2H_5-O-C_2H_5$, $CH_3CH_2CH_2CH_2OH$

(3) $CH_3-O-C_2H_5$, $CH_3-CH_2-O-CH_3$

(4) $CH_3-\overset{\overset{O}{\|}}{C}-CH_3$, $CH_3-CH_2-\overset{\overset{O}{\|}}{C}-H$

14.  (I)

 (II)

$CH_2=CH-CH_2-OCH_3$ (III)

Which among these are structural isomers?

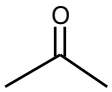
(1) I and II only (2) I and III only (3) II and III only (4) All of these

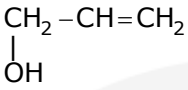
15. How many position isomers are possible for dichlorobenzene?

(1) 2 (2) 3 (3) 4 (4) 5

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

1. Which of the following is not isomeric with Propanal.

(1) 

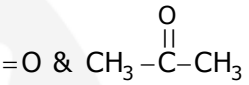
(2) 

(3) 

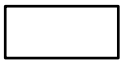
(4) $CH_3-O-CH_2-CH_3$

2. Which of the following pair is isomer of each other.

(1) $CH_2=CH-CH_3$ & $CH_3-C\equiv CH$

(2) $CH_2=CH-CH=O$ & 

(3) CH_3-CH_2-Cl & CH_3-CH_2-Br

(4)  & 

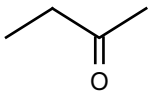
3. Incorrect statement is: -

(1) Two or more than two compound which have same molecular formula but different physical or chemical or both properties are known as isomers.

(2) Two homologue can not be isomers.

(3) Isomers have different molecular formula

(4) Stereoisomers have same structural formula but different arrangement of atom or group in space.

4. 

(A)

(B)

(A) and (B) are:

(1) Chain isomers

(2) Position isomers

(3) Metamers

(4) Functional group isomers

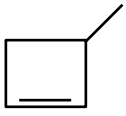
5. $CH_3CHOHCH_2CHO$ and $CH_3CH_2CH_2COOH$ constitute a pair of: -

(1) Position isomers

(2) Metamers

(3) Optical isomers

(4) Functional group isomers

6. Compound $CH_3-CH_2-CH_2-C\equiv CH$ and  show.

(1) Position isomers

(2) Chain isomers

(3) Ring chain isomers

(4) All of these

7. o-Cresol and benzyl alcohol are:

(1) Functional group isomers (2) Position isomers

(3) Chain isomers (4) Metamers

8. $CH_3-CH_2-CH_2-CN$ and $CH_3-\underset{\underset{CN}{|}}{CH}-CH_3$ are called as:

(1) Position isomers (2) Chain isomers

(3) Functional group isomers (4) Metamers

9. Compound $CH_3-CH_2-\overset{\overset{O}{||}}{C}-HN-CH_3$ and $CH_3-\overset{\overset{O}{||}}{C}-NH-CH_2-CH_3$ are:

(1) Functional group isomers (2) Position isomers

(3) Metamers (4) All of these

10. Which of the following compound is not isomer of C_4H_6.

(1) $CH_2=CH-CH=CH_2$ (2) 

(3) $CH\equiv C-CH=CH_2$ (4) 

11. The minimum number of carbon atoms present in an organic compound to show chain isomerism is

(1) 2 (2) 3 (3) 5 (4) 4

12. The minimum number of carbon atoms present in an organic compound to be able to show position isomerism is:

(1) 3 (2) 4 (3) 2 (4) 5

13. $CH_3-NH-C_2H_5$ and $(CH_3)_3N$ show which type of isomerism:

(1) Position isomerism (2) Functional group isomerism

(3) Chain isomerism (4) None of these

14. The minimum number of carbon atoms in ketone to show position isomerism.

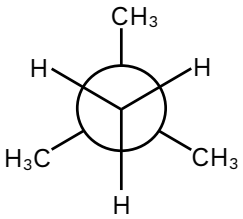
(1) 3 (2) 4 (3) 5 (4) 6

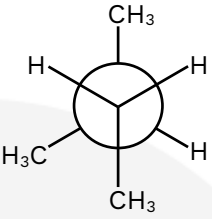
15. Structures $CH_3-CH=CH-CH_3$ and $CH_3-\underset{\underset{CH_3}{|}}{C}=CH_2$ are:-

(1) Chain isomers (2) Position isomers (3) Metamers (4) Not isomers

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

1. The two structures (i) and (ii) represent

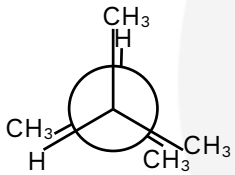
(i) 

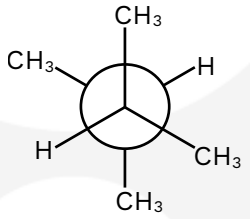
(ii) 

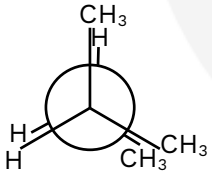
(1) Conformational isomers (2) Stereoisomers

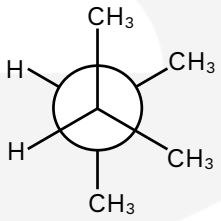
(3) Constitutional isomers (4) Identical

2. In which of the following has minimum torsional strain and minimum Van der Waals strain?

(i) 

(ii) 

(iii) 

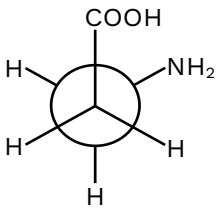
(iv) 

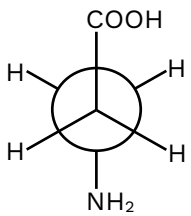
3. The dihedral angle between two methyl groups in partially eclipsed conformation of n-butane is

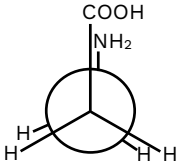
(1) 180° (2) 120°

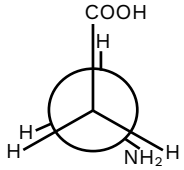
(3) 90° (4) 109°28'

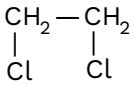
4. Which of the following is most stable?

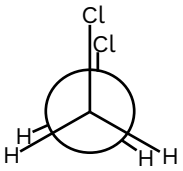
(1) 

(2) 

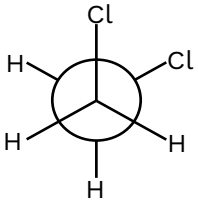
(3) 

(4) 

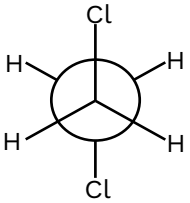
5. Most stable conformation of 



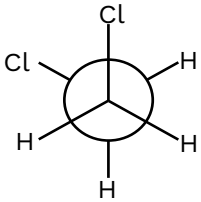
(1)



(2)



(3)



(4)

6. Which of the following statements about conformers of ethane is/are correct?

(1) The energy difference between the two extreme forms is of the order of 12.5 kJ mol^{-1} in ethane.

(2) The energy difference between two extreme forms of ethane is overcome through intermolecular collisions.

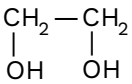
(3) Conformers can not be separated at room temperature.

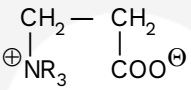
(4) All of these

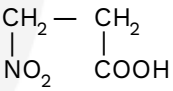
7. Dihedral angle of most stable conformer of ethane is:

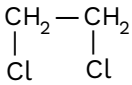
(1) 120° (2) 180° (3) 60° (4) 0°

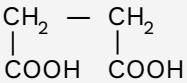
8. In which of the following compound gauche conformation is more stable than anti conformation:

(a) 

(b) 

(c) 

(d) 

(e) 

(1) a, b, c only (2) a, b, c, e (3) a, b, d, e only (4) a, b, c, d, e

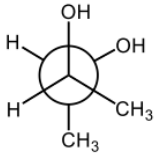
9. Which of the following compounds will exhibit conformational isomerism?

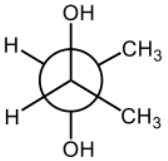
(1) $CH_2 = C = CH_2$ (2)  (3)  (4) All of these

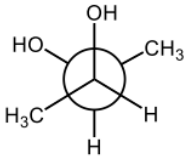
10. Which of the following compound will exhibit conformational isomerism?

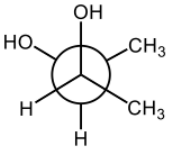
(1) $CH_2 = CH_2$ (2) CH_4 (3) CH_3Cl (4) None of these

11. Which one of the following is the most stable conformation of 2, 3-butanediol?

(1) 

(2) 

(3) 

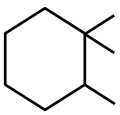
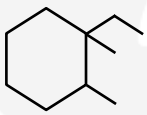
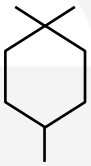
(4) 

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

1. Geometrical isomers arises due to
(1) Free rotation about a bond
(2) Restricted rotation about a bond
(3) Different connectivity of atoms
(4) Same arrangement of atoms/groups in 3-D-space (same spatial arrangement of atoms and groups)

2. All alkenes do not exhibit geometrical isomerism. For an alkene to exhibit geometrical isomerism, which of the following conditions is required?
(1) Two atoms or groups bonded with each C of C=C bond should be same.
(2) Two atoms or groups bonded with each C of C=C bond should not be same.
(3) C=C bond should bear at least three identical groups.
(4) C=C bond should bear all four atoms or groups identical.

3. Which of these compounds will exhibit geometrical isomerism?

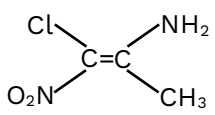
(1) 
(2) 
(3) 
(4) All of these

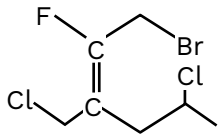
4. Among these groups, which of the following orders is the correct priority order in accordance with sequence rule (CIP rule)?

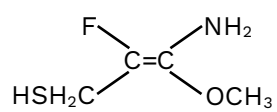
−CHO	−COOH	−CN	$-NO_2$
I	II	III	IV

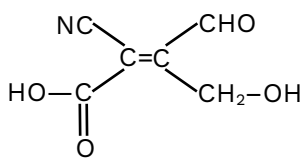
(1) IV > III > II > I (2) IV > II > I > III (3) II > I > III > IV (4) III > IV > II > I

5. Assign the configuration E/Z to the following compounds:−

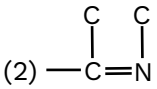
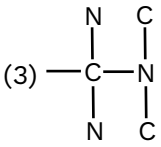
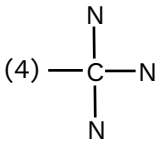
(1) 

(2) 

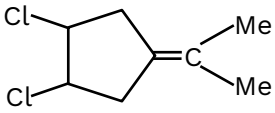
(3) 

(4) 

6. To apply sequence rule (CIP rule), —CN group should be written as

(1) $-C\equiv N$ (2)  (3)  (4) 

7. Geometrical isomerism is shown by:

(1)  (2) HN = NH

(3)  (4) All of the above

8. Which of the following compound can show geometrical isomerism

(1) Pent–3–en–1–yne (2) Acetaldoxime

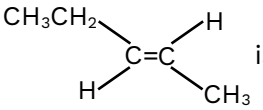
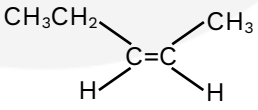
(3) 1,2–Dimethylcyclopropane (4) All of the above

9. Which statement is incorrect?

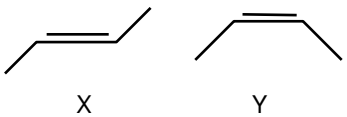
(1) *cis*–isomer of symmetrical alkene has definite dipole moment ($\mu \neq 0$)

(2) *trans*–isomer of symmetrical alkene has zero dipole moment ($\mu = 0$)

(3) The *trans*–isomer has higher melting point than the *cis*–isomer due to symmetrical nature and more close packing

(4)  is more polar than 

10. which of the following statement(s) is (are) incorrect?



X Y

(1) X is *cis* and Y is *trans* (2) X is Z and Y is E

(3) X is *trans* and Y is *cis* (4) X and Y are diastereomers

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

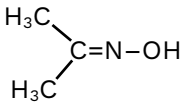
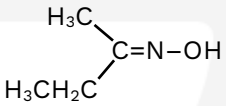
1. Which of the following compound show geometrical isomerism

(1) 1,1-Diphenyl-1-butene (2) 1,1-Diphenyl-2-butene

(3) 2,3-Dimethyl-2-butene (4) 3-Phenyl-1-butene

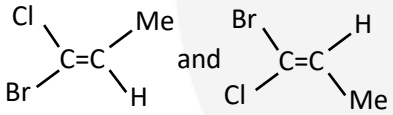
2. Which of the following show geometrical isomerism :

(i) $CH_3-CH_2-CH=N-OH$ (ii) $H_2C=N-OH$

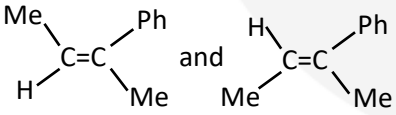
(iii)  (iv) 

(1) i, iv (2) i, iii (4) iii, iv (4) ii, iv

3. Which is a pair of geometrical isomers :

(1) 

(2) 

(3) 

(4) 

4. Fumaric acid shows geometrical isomerism with

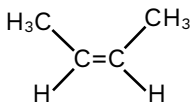
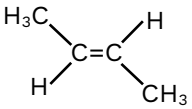
(1) Malonic acid (2) Maleic acid (3) Malic acid (4) Succinic acid

5. The number of geometrical isomers for the given compound are :-

$CH_3-CH=CH-CH=CH-CH_2-CH_3$

(1) 2 (2) 5 (3) 4 (4) 3

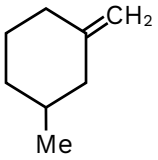
6. Which of the following statement is incorrect for following compounds are :-

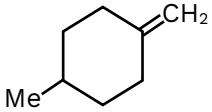
(a)  (b) 

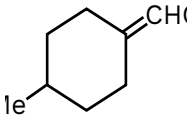
(1) A is z and b is E (2) Boiling point : a > b

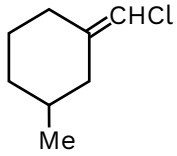
(3) Melting point : b > a (4) Polarity : b > a

7. The geometrical isomerism is shown by

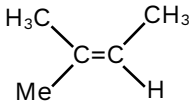
(1) 

(2) 

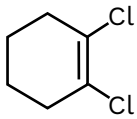
(3) 

(4) 

8. Which of the following compounds will not show geometrical isomerism :-

(a) 

(b) $H_3C-C\equiv C-CH_3$

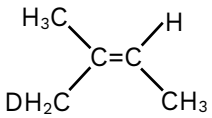
(c) 

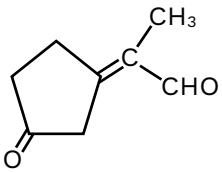
(d) $H_2C=CH-CH_2-CH=CH_2$

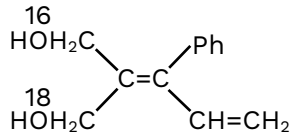
(1) b, c, d only (3) b, d only (3) a, b, c only (4) a, b, c, d

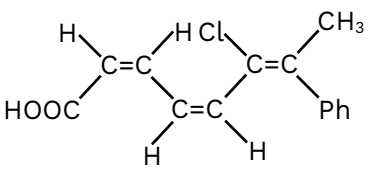
9. **Statement I:** Restricted rotation about a bond is the necessary condition for geometrical isomerism.
Statement II: Alkene having different atoms/groups attached to each sp^2 hybridised carbon can have two different orientations about π-bond.
In the light of above statements, choose the **most appropriate** from the options given below:
(1) **Statement I** is correct but **statement II** is incorrect.
(2) **Statement I** is incorrect but **statement II** is correct.
(3) Both **statement I** and **statement II** are correct.
(4) Both **statement I** and **statement II** are incorrect.

10. Assign the configuration E/Z to the following compounds:-

(1) 

(2) 

(3) 

(4) 

NEET-CHEMISTRY | **ELP NO. 1** | **GENERAL ORGANIC CHEMISTRY**

1. Which of the following is nucleophile

(a) $:\ddot{C}H_2$ (b) $R-\overset{O}{\overset{\|}{C}}-\ddot{N}:$ (c) $C_6H_5-\overset{\oplus}{N}_2$ (d) $H_2\ddot{O}:$

(1) a, b, d (2) b, d (3) b, c (4) d

2. Inductive effect involves:-

(1) Partial displacement of σ e^-
(2) Complete delocalisation of σ e^-
(3) Partial displacement of π e^-
(4) Complete delocalization of π e^-

3. The number of following group which show -I effect:-

$\overset{\ominus}{C}H_2$, $-CH=CH_2$, $-\overset{\ominus}{O}$, $-NR_2$, $-NO_2$,

$-CN$, $-CH_2CH_3$, $-Cl$, $-COOH$, $-CO\overset{\ominus}{O}$

(1) 6 (2) 8 (3) 7 (4) 5

4. Which of the following statement is false:

(1) Inductive effect is a permanent effect operates through σ bond only.
(2) Polarisation of σ bond caused by the polarisation of adjacent σ bond is called Inductive effect.
(3) Inductive effect is distance dependent effect.
(4) Alkyl group in $CH_3-CH_2-CH_2-MgBr$ show +I effect.

5. Which of the following is incorrect order for inductive effect :-

(1) $-NO_2 > -C\equiv N > -\overset{O}{\overset{\|}{C}}-OH$ (−I effect)

(2) $-\overset{\ominus}{C}H_2 > -\overset{O}{\overset{\|}{C}}-\overset{\ominus}{O} > -\underset{CH_3}{\underset{|}{\overset{CH_3}{\overset{|}{C}}}}-CH_3$ (+I effect)

(3) $-CT_3 > -CD_3 > -CH_3$ (+I effect)

(4) $-OH > -OR > Cl$ (−I effect)

6. Which of the following compound is electrophile:

(1) CO_2 (2) NH_3 (3) $H_3O^{\oplus}$ (4) 

7. Which of the following stability order is incorrect:

(1) $F^{\ominus} > Cl^{\ominus} > Br^{\ominus} > I^{\ominus}$

(2) $F^{\ominus} > \overset{\ominus}{O}H > \overset{\ominus}{N}H_2 > \overset{\ominus}{C}H_3$

(3) $I^{\ominus} > Br^{\ominus} > Cl^{\ominus} > F^{\ominus}$

(4) $\underset{F}{CH_2-\overset{\ominus}{C}H_2} > \underset{Cl}{CH_2-\overset{\ominus}{C}H_2} > \underset{Br}{CH_2-\overset{\ominus}{C}H_2} > \underset{I}{CH_2-\overset{\ominus}{C}H_2}$

8. Which of the following statement is/are correct

(a) Reagents attack the reactive site of substrate.

(b) Nucleus seeking species is called nucleophile

(c) A reagent that brings an electron pair to the reactive site is called nucleophile

(d) Electron seeking species is called electrophile

(e) A reagent that takes away an electron pair from reactive site is called electrophile

(1) a, c, e only (2) b, c, d, e only (3) a, b, d only (4) a, b, c, d, e

9. Which of the following intermediate has complete octet.

(1) Carbocation (2) Carbene (3) Carbanion (4) Carbon free radical

10. $\overset{\ominus}{C}H_3$ is less stable than

(1) $CH_3-\overset{\ominus}{C}H_2$ (2) $\overset{\ominus}{C}H_2-NO_2$ (3) $CH_3-\overset{\ominus}{C}H-CH_3$ (4) $CH_3-\overset{\ominus}{C}H-C_2H_5$

NEET-CHEMISTRY **ELP NO. 2** **GENERAL ORGANIC CHEMISTRY**

1. The number of electrons present in the valance shell of carbon of $CH_3\overset{\oplus}{C}H_2$ ion bearing +ve charge:-

(1) 8 (2) 7 (3) 6 (4) 4

2. Wrong statement regarding methyl carbonium ion $(\overset{\oplus}{C}H_3)$:-

(1) It is sp^2 hybridised.

(2) It is electrophile with sextet of electron.

(3) Vacant orbital is pure p-orbital which is perpendicular to molecular plane.

(4) Vacant orbital is sp^2 hybridised.

3. Carbanion is a:-

(1) Base (2) Nucleophile (3) Both (1) and (2) (4) None of the above.

4. Mesomeric effect involves:-

(1) Complete delocalisation of σ electrons.

(2) Complete delocalization of π electrons.

(3) Delocatisation of H-atom

(4) Partial delocalization of π electrons.

5. 

Hybridisation of the negatively charged C-atom of given anion is:-

(1) sp^3 (2) sp^2 (3) sp (4) Unhybridised.

6. Hydrogen attached to sp^3 carbon in cyclopentadiene can be easily removed as:-

(1) Hydride ion (2) Hydrogen atom (3) Proton (4) Hydrogen molecule

7. The sum of π electrons in benzene and naphthalene are:-

(1) 16 (2) 8 (3) 6 (4) 10

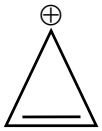
8. In benzene C–C bond length between all carbons are equal because of:-

(1) Resonance
(2) sp^2 hybridisation
(3) Inductive effect
(4) Isomerism.

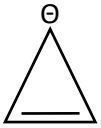
9. An aromatic molecule will not:-

(1) Have 4nπ electrons
(2) Have (4n+2) π electron
(3) Be planar
(4) Be cyclic

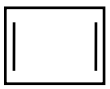
10. Identify aromatic, antiaromatic and nonaromatic compounds from following molecules :-

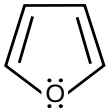
(1) 

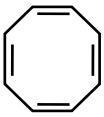
(2) 

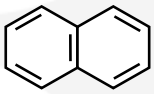
(3) 

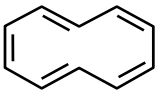
(4) 

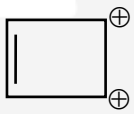
(5) 

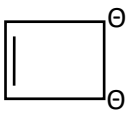
(6) 

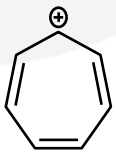
(7) 

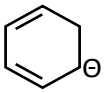
(8) 

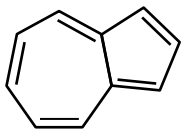
(9) 

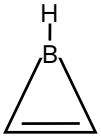
(10) 

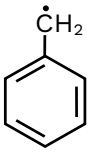
(11) 

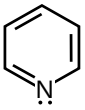
(12) 

(13) 

(14) 

(15) 

(16) 

(17) 

NEET-CHEMISTRY **ELP NO. 3** **GENERAL ORGANIC CHEMISTRY**

1. In which of the following compounds the carbon marked with asterisk is expected to have greatest positive charge?

(1) $*CH_3 - CH_2 - Cl$ (2) $*CH_3 - CH_2 - \overset{\oplus}{Mg}Cl^-$ (3) $*CH_3 - CH_2 - Br$ (4) $*CH_3 - CH_2 - CH_3$

2. Show the polarisation of carbon-magnesium bond in the following structure.

$CH_3–CH_2–CH_2–CH_2–Mg–X$

(1) $CH_3–CH_2–CH_2–\overset{\delta-}{C}H_2–\overset{\delta-}{M}g – X$ (2) $CH_3–CH_2–CH_2–\overset{\delta+}{C}H_2–\overset{\delta-}{M}g – X$

(3) $CH_3–CH_2–CH_2–\overset{\delta+}{C}H_2–\overset{\delta+}{M}g – X$ (4) $CH_3–CH_2–CH_2–\overset{\delta-}{C}H_2–\overset{\delta+}{M}g – X$

3. Match the intermediates given in Column I with their probable structure in Column II.

Column I	**Column II**
(i) Free radical	(a) Trigonal planar
(ii) Carbocation	(b) Pyramidal
(iii) Carbanion	(c) Linear

(1) (i) → (a); (ii) → (b); (iii) → (b) (2) (i) → (c); (ii) → (b); (iii) → (a)

(3) (i) → (a); (ii) → (a); (iii) → (b) (4) (i) → (a); (ii) → (b); (iii) → (c)

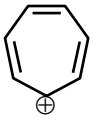
4. (I) $-CH_3$ (II) $-\overset{\overset{O}{\|}}{C}-O^{\ominus}$ (III) $-O^{\ominus}$

Which of these groups has +I effect?

(1) I (2) II (3) III (4) all of these

5. Which of the following groups has +M effect?

(1) $-OH$ (2) $-OCH_3$ (3)  (4) All of these

6. 

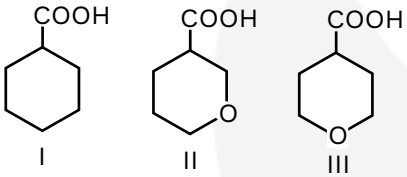
Which of the following statements is correct for this carbocation?

(1) Positive charge is resonance stabilized because empty orbital is 2p which can overlap with p-orbitals on adjacent C-atoms.

(2) Positive charge is not resonance stabilized because empty orbital is sp^2 which can not overlap with p-orbitals on adjacent C-atoms.

(3) Positive charge is not resonance stabilized because empty-orbital is sp which cannot overlap with p-orbital on adjacent C-atoms

(4) Positive charge is not resonance stabilized because empty orbital is sp^3 which cannot overlap with p-orbitals on adjacent C-atoms.

7. 

Which of the following orders is correct the strength of these carboxylic acids?

(1) I > II > III (2) III > II > I (3) II > I > III (4) II > III > I

8. In which of the following pairs of resonance contributors is the structure on the right a important contributor?

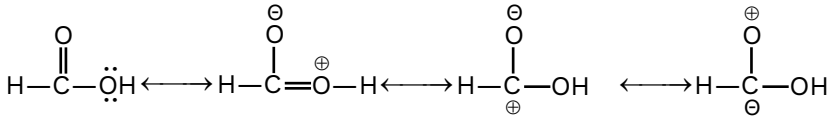
(1) $H-\overset{\oplus}{C}=\ddot{O}: \longleftrightarrow H-C\equiv\overset{\oplus}{O}:$

(2) $\overset{\ominus}{C}H_2-\overset{\oplus}{N}\equiv\ddot{N}\longleftrightarrow CH_2=\overset{\oplus}{N}=\overset{\ominus}{N}$

(3) $CH_3-\overset{\oplus}{C}H-\ddot{O}H\longleftrightarrow CH_3-CH=\overset{\oplus}{O}H$

(4) All of the above

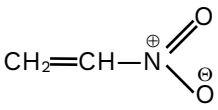
9. Examine the following resonating structures of formic acid and arrange them in decreasing order

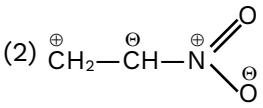


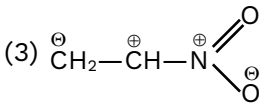
of stability:

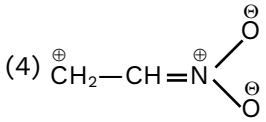
(1) II > I > III > IV (2) I > II > III > IV (3) III > II > IV > I (4) IV > III > I > II

10. Less contributing structure of nitroethene is:

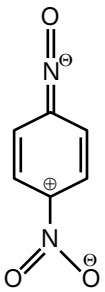
(1) 

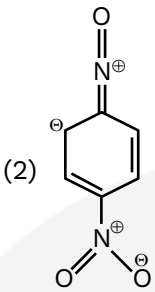
(2) 

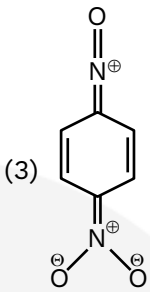
(3) 

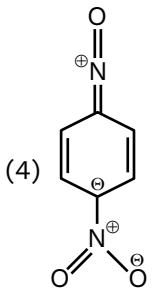
(4) 

11. The most stable resonating structure is:

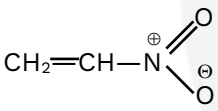
(1) 

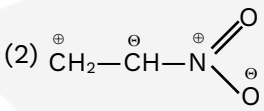
(2) 

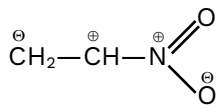
(3) 

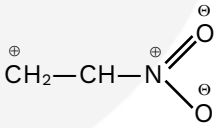
(4) 

12. Most contributing structure in nitroethene is:

(1) 

(2) 

(3) 

(4) 

13. **Assertion:** Cyclic conjugated compounds having (4n+2) πe^- are aromatic.

Reason: Cyclic compounds containing non-planar atom known as non-aromatic.

(1) If both assertion and reason are correct and reason is correct explanation of assertion.

(2) If both assertion and reason are correct but reason is not correct explanation of assertion.

(3) If assertion is correct but reason is wrong.

(4) If assertion and reason both are wrong.

1. Which of the following statements is true about hyperconjugation?

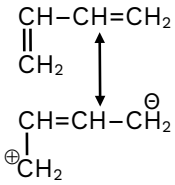
(1) Transmittance of substituent effect through π-π conjugation is called hyperconjugation.

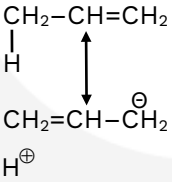
(2) Transmittance of substituent effect through σ-π conjugation is called hyperconjugation.

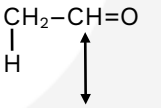
(3) Transmittance of substituent effect through σ-σ conjugation is called hyperconjugation

(4) Both (1) and (2)

2. Which of the following represents the case of hyperconjugation?

(1) 

(2) 

(3) 

(4) Both (2) and (3)

3. Hyperconjugation is possible in

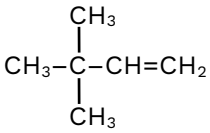
(1) Alkenes

(2) Carbon free radical

(3) Carbocations

(4) All of these

4. Hyperconjugation occurs in

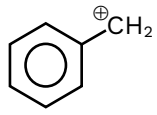
(1) 

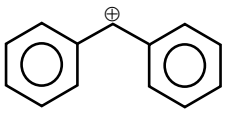
(2) $CH_3-CH=CH-CH_3$

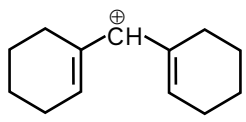
(3) $Ph-CH=CH_2$

(4) 

5. Hyperconjugation occurs in

(1) 

(2) 

(3) 

(4) All of these

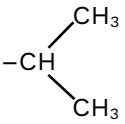
6. Which of the following statements is true about hyperconjugation?

(1) It is like resonance except that in this case σ-π conjugation occurs but in resonance π-π conjugation occurs.

(2) Like resonance, hyperconjugation also leads to delocalization of electrons.

(3) Both (1) and (2)

(4) None of these

7. (I) $-CH_3$ (II) $-CH_2-CH_3$ (III) 

Which of the following orders is correct for electron-donating power of these alkyl groups through Hyperconjugation?

(1) I > II > III (2) III > II > I (3) II > I > III (4) I > III > II

8. Correct order of stability is:

(1) 1-butene>trans-2-butene>cis-2-butene

(2) Trans-2-butene>1-butene>cis-2-butene

(3) Trans-2-butene>cis-2-butene>1-butene

(4) Cis-2-butene>trans-2-butene>1-butene

9. **Assertion:** Resonance which inbolve delocalization of C— H, σ e^- known as hyperconjugation.

Reason: Hyperconjugation proceed by 'H' of α-C, which is attached with sp^2 hybridised 'C'.

(1) If both assertion and reason are correct and reason is correct explanation of assertion.

(2) If both assertion and reason are correct but reason is not correct explanation of assertion.

(3) If assertion is correct but reason is wrong.

(4) If assertion and reason both are wrong.

10. **Assertion:** As number of α-H' s in alkenes increases their stability also increases.

Reason: Stability of alkene also decided by inductive effect.

(1) If both assertion and reason are correct and reason is correct explanation of assertion.

(2) If both assertion and reason are correct but reason is not correct explanation of assertion.

(3) If assertion is correct but reason is wrong.

(4) If assertion and reason both are wrong.

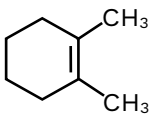
NEET-CHEMISTRY **ELP NO. 5** **GENERAL ORGANIC CHEMISTRY**

1. (I) $HC\equiv CH$ (II) $CH_3-C\equiv CH$ (III) $CH_3-C\equiv C-CH_3$

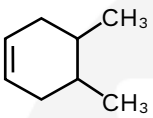
Which of the following orders is correct for heat of combustion of these alkynes?

(1) I > II > III (2) III > II > I (3) II > I > III (4) III > I > II

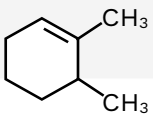
2.



I



II

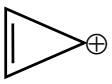


III

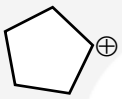
Which of the following orders is correct for heat of hydrogenation of these compounds?

(1) I > II > III (2) III > II > I (3) II > III > I (4) III > I > II

3. (I)



(II)

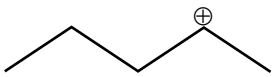


(III)

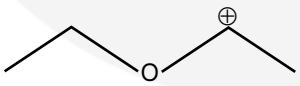
Which of the following orders is correct for the stability of these carbocations?

(1) I > II > III (2) III > II > I (3) I > III > II (4) II > I > III

4.



I



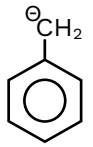
II

III

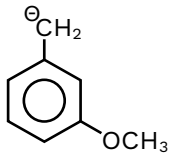
Which of the following orders is correct for the stability of these carbocations?

(1) I > II > III (2) III > II > I (3) II > I > III (4) II > III > I

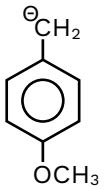
5.



I



II

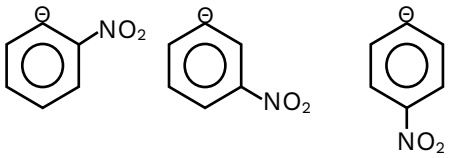


III

Which of the following orders is correct for the stability of these carbanions?

(1) I > II > III (2) III > II > I (3) III > I > II (4) II > I > III

6.

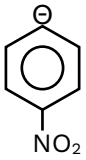


I II III

Which of the following orders is correct for the stability of these carbanions?

(1) I > II > III (2) III > II > I (3) II > I > III (4) II > III > I

7.

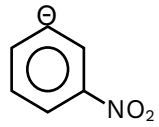


Which of the following effects of the nitro group operates on this carbanion?

(1) Only inductive effect (2) Only mesomeric effect

(3) Both (1) and (2) (4) None of these

8.



Which of the following effects of the nitro group operates on this carbanion?

(1) Only inductive effect (2) Only mesomeric effect

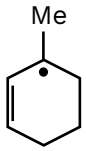
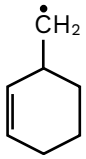
(3) Both (1) and (2) (4) None of these

9. (I) $\overset{\ominus}{C}H_2-CH=CH_2$ (II) $\overset{\ominus}{C}H_2-CH=O$ (III) $\overset{\ominus}{C}H_2-CH_2-CH_3$

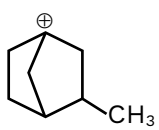
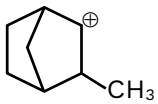
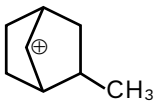
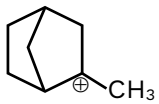
Which of the following orders is correct for the stability of these carbanions?

(1) I > II > III (2) III > II > I (3) II > I > III (4) II > III > I

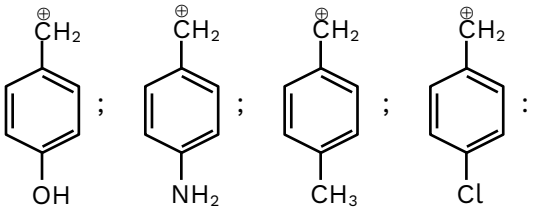
10. Which one is most stable free radical?

(1)  (2)  (3) $CH_2=CH-\dot{C}H_2$ (4) $CH_3-\overset{\overset{\bullet}{C}H_3}{\underset{|}{C}}-CH_3$

11. Which of the following cations is most stable?

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

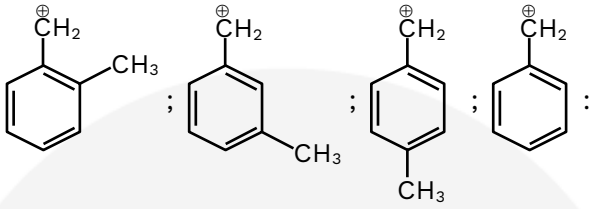
12. Correct decreasing order of stability of following cations is:-



(P) (Q) (R) (S)

(1) P > Q > R > S (2) Q > S > R > P (3) Q > P > S > R (4) Q > P > R > S

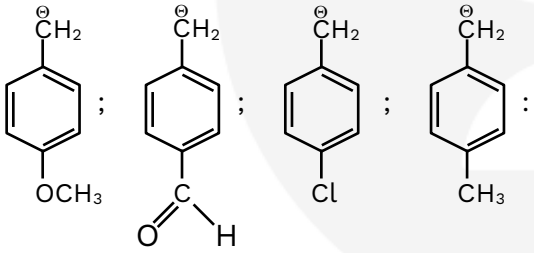
13. Correct decreasing order of stability of following cations is:-



(P) (Q) (R) (S)

(1) Q > R > P > S (2) P > S > Q > R (3) P > R > Q > S (4) S > R > Q > P

14. Correct decreasing order of stability of following anion is:



(P) (Q) (R) (S)

(1) Q > R > S > P (2) R > Q > P > S (3) S > P > R > Q (4) P > Q > R > S

15. **Assertion:** $\overset{\ominus}{C}Cl_3$ is more stable than $\overset{\ominus}{C}F_3$

Reason: In $\overset{\ominus}{C}Cl_3$ negative charge of 'C' is delocalized to d-orbital of 'Cl'.

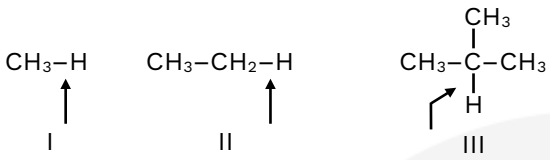
(1) If both assertion and reason are correct and reason is correct explanation of assertion.

(2) If both assertion and reason are correct but reason is not correct explanation of assertion.

(3) If assertion is correct but reason is wrong.

(4) If assertion and reason both are wrong.

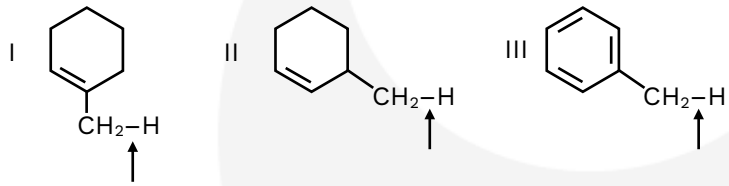
1.



Which of the following orders is correct for the energy required for homolytic cleavage of indicated C-H bonds?

(1) I > II > III (2) III > II > I (3) III > I > II (4) II > I > III

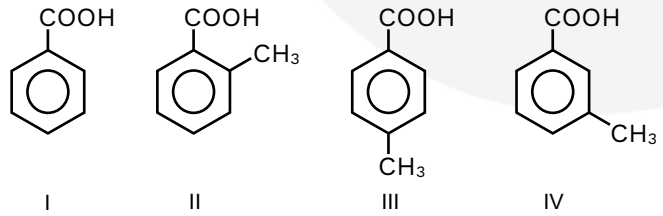
2.



Which of the following orders is correct for the energy required for homolytic cleavage of indicated C-H bond?

(1) I > II > III (2) III > II > I (3) II > I > III (4) III > I > II

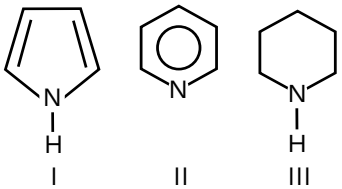
3.



Which of the following orders is correct for the strength of these carboxylic acids?

(1) II > IV > I > III (2) III > II > I > IV (3) I > II > III > IV (4) II > I > IV > III

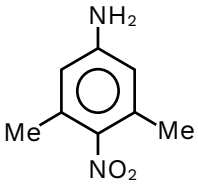
4.



Which of the following order is correct for the basic strength of these compounds?

(1) I > II > III (2) III > II > I (3) III > I > II (4) II > I > III

5.



Which of the following effects of $-NO_2$ group operates on $-NH_2$ group in this molecule?

(1) Only –I effect (2) Only +M effect

(3) Only –M effect (4) Both –I and –M effect

6. Arrange the following in correct order of acidic strength:

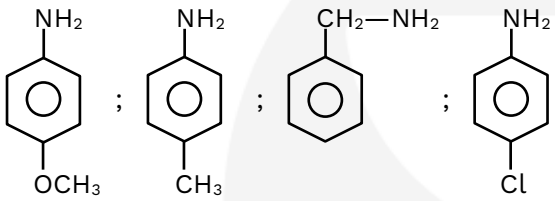
(I) $CH_3—NO_2$ (II) $NO_2—CH_2—NO_2$ (III) $CH_3—CH_2—NO_2$ (IV) $NO_2—\underset{\displaystyle NO_2}{\overset{\displaystyle |}{CH}}—NO_2$

(1) IV > II > I > III (2) IV > II > III > I (3) III > I > II > IV (4) III > I > IV > II

7. Which of the following is more basic than aniline?

(1) Diphenyl amine (2) Triphenyl amine (3) p-nitro aniline (4) Benzyl amine

8.

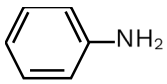
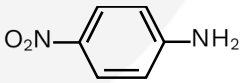


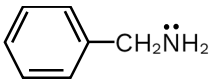
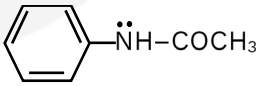
(I) (II) (III) (IV)

The correct decreasing order of pK_b is:

(1) I > II > III > IV (2) III > IV > II > I (3) II > III > IV > I (4) IV > II > I > III

9. Which of the following compounds is most basic?

(1)  (2) 

(3)  (4) 

10. Which of the following exhibit electromeric effect?

(1) Alkanes (2) Aldehydes (3) Alkyl halides (4) Alkyl amines

11. Shifting of electron of a multiple bond under the influence of a reagent is called:

(1) I-effect (2) M-effect (3) E-effect (4) Non of these

12. **Assertion:** *p*-nitrobenzoic acid is more acidic than *p*-methyl benzoic acid.

Reason: EDG increases acidity of benzoic acid while EWG decreases acidity of benzoic acid.

(1) If both assertion and reason are correct and reason is correct explanation of assertion.

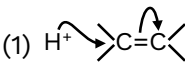
(2) If both assertion and reason are correct but reason is not correct explanation of assertion.

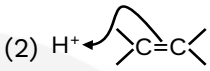
(3) If assertion is correct but reason is wrong.

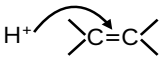
(4) If assertion and reason both are wrong.

NEET-CHEMISTRY **ELP NO. 7** **GENERAL ORGANIC CHEMISTRY**

1. The addition of HCl to an alkene proceeds in two steps. The first step is the attack of H^+ ion to $>C=C<$ portion which can be shown as

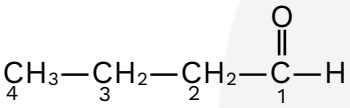
(1) 

(2) 

(3) 

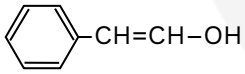
(4) All of these are possible

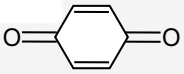
2. Which hydrogen in the following compound is most acidic?

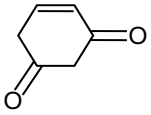


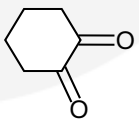
(1) C_1—H (2) C_2—H (3) C_3—H (4) C_4—H

3. Tautomerism is not exhibited by:

(1) 

(2) 

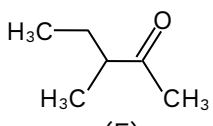
(3) 

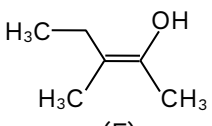
(4) 

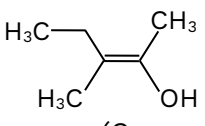
4. Which of the following compounds can exhibit tautomerism?

(1) C_6H_5CHO (2) $C_6H_5-\overset{\overset{O}{\|}}{C}-CMe_3$ (3) $C_6H_5-\overset{\overset{O}{\|}}{C}-CH_2-\overset{\overset{O}{\|}}{C}-H$ (4) $C_6H_5-\overset{\overset{O}{\|}}{C}-C_6H_5$

5. The correct statement(s) concerning the structures E, F and G is (are):


(E)

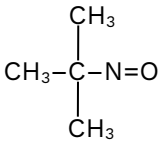
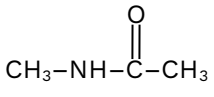
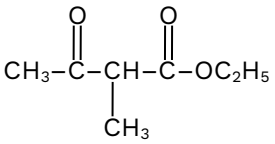

(F)


(G

(1) E, F and G are resonance structures (2) E, F and E, G are tautomers

(3) F and G are geometrical isomers (4) F and G are diastereomers

6. Which one of the following compounds does not show tautomerism?

(1) $CH_3CH_2NO_2$ (2)  (3)  (4) 

7. Tautomerization is that isomerization which involves.

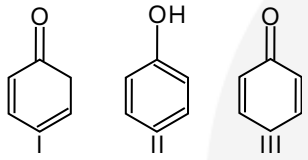
(1) Change in the position of a H-atom only

(2) Change in the position of a π-bond only

(3) Change in the position of a H-atom as well as change in the position of a π-bond

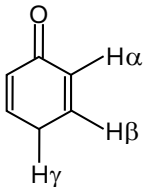
(4) No change in the position of either a π-bond or a H-atom

8. The tautomer of II is.



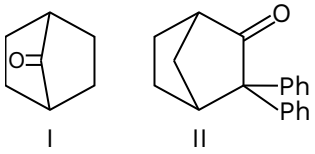
(1) I (2) III (3) Both I and III (4) None of these

9. This molecule can be enolized involving



(1) α-H (2) β-H (3) γ-H (4) Cannot be enolized

10. Which among these can exhibit tautomerism?



(1) I only (2) II only (3) Both I and II (4) None of these

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ELP

Educator Led Practice

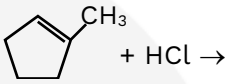
NEET-CHEMISTRY **ELP NO.-1** **HYDROCARBONS**

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.

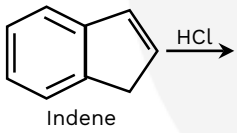
(a) $CH_3C(CH_3) = CH_2 + HI \longrightarrow$

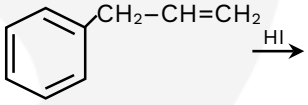
(b)  + HCl →

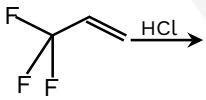
3. Arrange the following alkenes in decreasing order of reactivity towards acid-catalysed hydration?

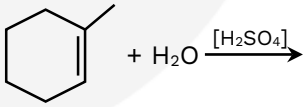
(I)  (II)  (III) $CH_2 = CH_2$

4. Complete the following reactions:

(iii) 

(iv) 

(vii) 

(viii) 

5. Rank the following carbocations in each set from most stable to least stable:

(a) (i) $CH_3CH_2\overset{+}{C}(CH_3)_2$ (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) $CH_3\underset{F}{CH}CH_2\overset{+}{C}H_2$

6. (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 ?

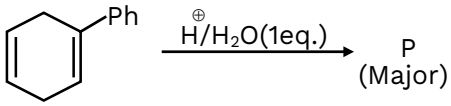
7. Incorrect statement is:

(1) Alkene & Alkyne can show electrophilic addition reaction.

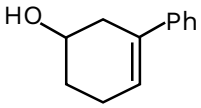
(2) Alkene can show free radical addition reaction as well as free radical substitution reaction.

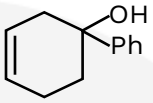
(3) Alkene is more reactive than alkyne towards electrophilic addition reaction.

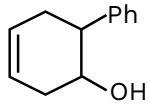
(4) Alkene & Alkyne are electrophilic in nature.

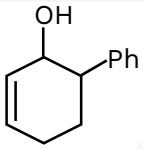
8. 

P should be

(1) 

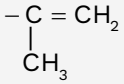
(2) 

(3) 

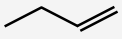
(4) 

9. In which of the following reaction product is not formed according to markovnikov's rule?

(1) CH_3-CH=CH_2

(2) 

(3) CCl_3–CH=CH_2

(4) 

10. 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.

11. A $\xrightarrow[H_2O/zn]{O_3}$ $2CH_3–CH=0$ A is:

(1) But–1–ene

(2) But–2–ene

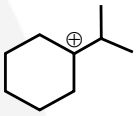
(3) But–1–yne

(4) But–2–yne

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

1. 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

2. Which of the following carbocation can not show rearrangement phenomena

(1)  (2)  (3) $CH_3-\overset{\oplus}{C}=CH_2$ (4) 

3. Incorrect statement regarding given reaction:-

$CH_2=CH_2 \xrightarrow[CCl_4]{Cl_2}$

(1) $CH_2—CH_2$ (Cl⊕) formed as intermediate
(2) Cl_2 act as electrophile
(3) Geminal dichloride formed as product
(4) This reaction is example of electrophilic addition reaction.

4. 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

5. $CH_3-CH=CH_2 \xrightarrow[(II)\,H_2O_2/\ \overset{\ominus}{O}H]{(I)\,B_2H_6,\,THF} CH_3-\underset{H}{CH}-\underset{OH}{CH_2}$

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

6. Which of the following statement is not correct?

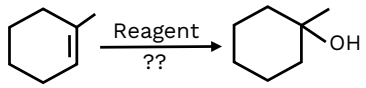
(1) Acidic hydration of alkyne complete with slow rate as compared to alkene

(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. $H_2SO_4/HgSO_4$.

7.



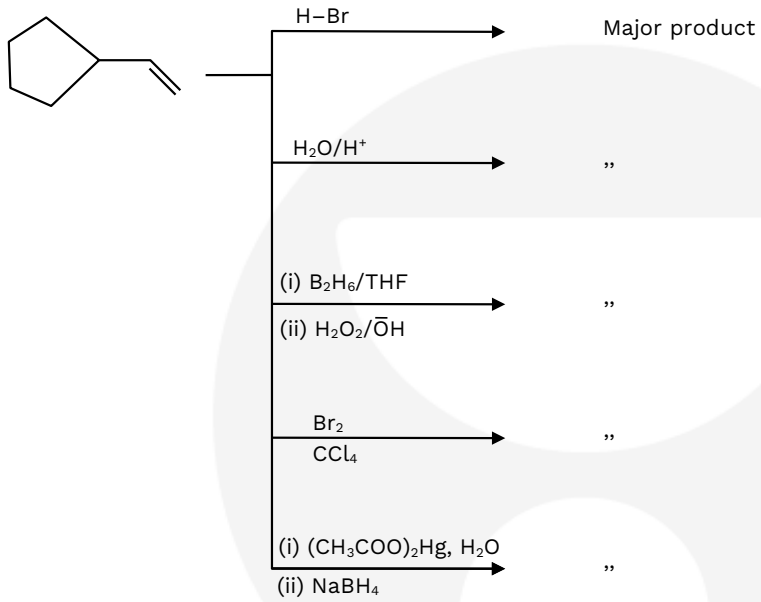
(1) H_2O/H^+

(2) $\dfrac{\text{(i) } (CH_3COO)_2\ Hg,\ H_2O}{\text{(ii) } NaBH_4}$

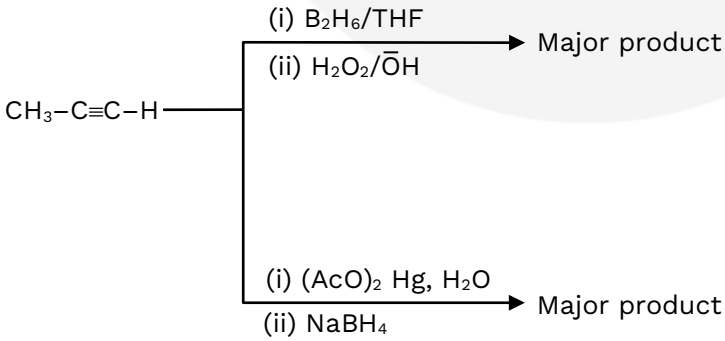
(3) $\dfrac{\text{(i) } B_2H_6\ /\ THF}{\text{(ii) } H_2O_2\ /\ \bar{O}H}$

(4) Both (1) & (2)

8.



9.



10. $CH_2{=}CH{-}C{\equiv}CH \xrightarrow[(1\,eq)]{H-Cl}$ major product (A)

Correct statement is/are:-

(1) A $\Rightarrow$ $CH_2{=}CH{-}\underset{\displaystyle Cl}{\underset{|}{C}}{=}CH_2$

(2) Chloroprene formed as major product

(3) Polymerisation of chloroprene give synthetic rubber (neoprene)

(4) All of the above

11. Match the column if alkene is treated with given reagent.

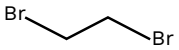
Reagent	**Reaction name**
(a) H_2O/H^+	(p) Free radical addition reaction
(b) H–X	(q) Hydroboration oxidation
(c) X_2/CCl_4	(r) Oxymercuration demarcuration
(d) $\xrightarrow[(ii)\ H_2O]{(i)\ B_2H_6/THF}$	(s) Hydroboration reduction
(e) $\xrightarrow[(ii)\ NaBH_4]{(i)\ (CH_3COO)_2Hg, H_2O}$	(t) Halogenation
(f) $\xrightarrow[(ii)\ H_2O_2/\bar{O}H]{(i)\ B_2H_6/THF}$	(u) Hydrohalogenation
(g) $\xrightarrow[(ii)\ R_2O_2]{H-Br}$	(v) Acidic hydration

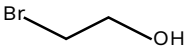
12. Match the following if given reagent is treated with ethene

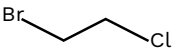
Reagent	Product
(a) H–X	(p) Alcohol
(b) H_2O/H^+	(q) Alkane
(c) X_2/CCl_4	(r) Alkyl halide
(d) $\xrightarrow[(ii)\ H_2O]{(i)\ B_2H_6/THF}$	(s) Vicinal dihalide
(e) $\xrightarrow[(ii)\ NaBH_4]{(i)\ (AcO)_2Hg, H_2O}$	

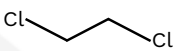
NEET-CHEMISTRY **ELP NO.-3** **HYDROCARBONS**

1. When ethene gas is passed into an aqueous solution containing bromine and sodium chloride. Which of the following is not formed?

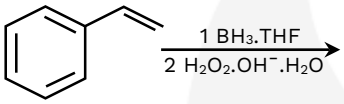
(1) 

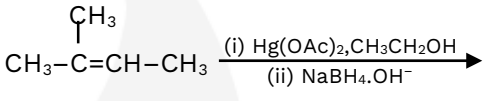
(2) 

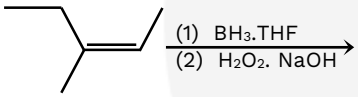
(3) 

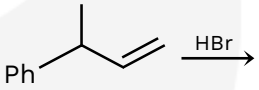
(4) 

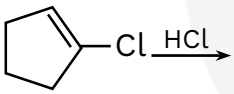
2. Complete the following reactions

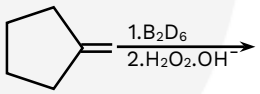
(i) 

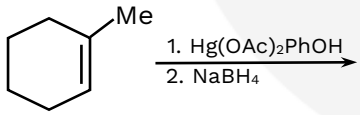
(ii) 

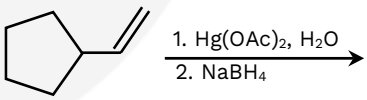
(iii) 

(iv) 

(v) 

(vi) 

(vii) 

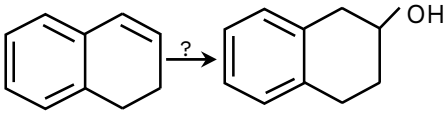
(viii) 

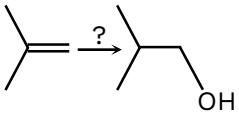
3. What alkylborane is formed from hydroboration of each alkene?

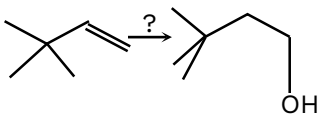
(i) 

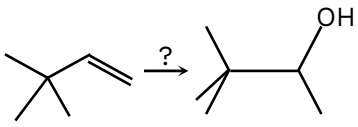
(ii) 

4. Suggest the reagents for the following conversions.

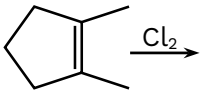
(i) 

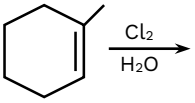
(ii) 

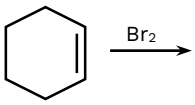
(iii) 

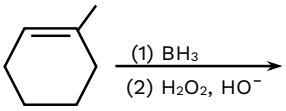
(iv) 

5. Draw the major product(s) of each reaction, including stereoisomers.

(i) 

(ii) 

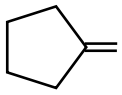
(iv) 

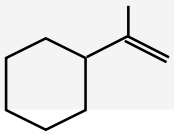
(v) 

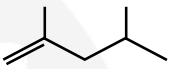
6. Draw the constitutional isomer formed when the following alkenes are treated with each set of reagents

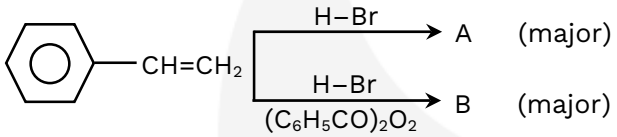
(1) H_2O, H_2SO_4;

(2) BH_3 followed by H_2O_2, OH^-

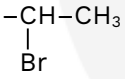
(a) 

(b) 

(c) 

7. 

Incorrect statement:

(1) A = 

(2) B = 

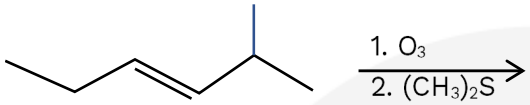
(3) A & B are position isomer of each other

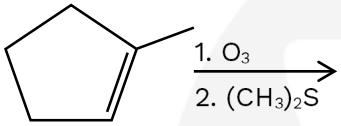
(4) A & B are chain isomer of each other

8. How many Alkene can be taken to form n-butane by hydrogenation method.

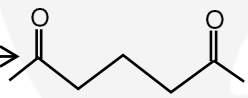
(1) 2 (2) 3 (3) 1 (4) 4

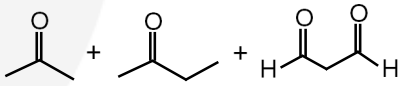
1. Draw structural formulas for the products of the following ozonolysis reactions and name the new functional groups formed in each oxidation.

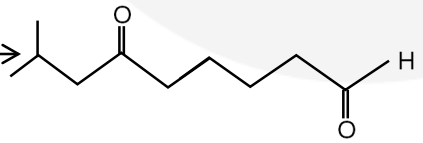
(a) 

(b) 

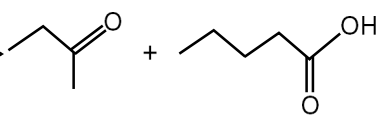
2. Draw the structural formula of the alkene that reacts with ozone followed by dimethyl sulfide to give each product or set of products

(1) $C_7H_{12} \xrightarrow[2.(CH_3)_2S]{1.O_3}$ 

(2) $C_{10}H_{18} \xrightarrow[2.(CH_3)_2S]{1.O_3}$ 

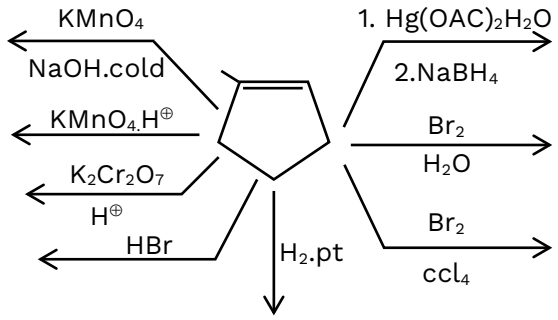
(3) $C_{10}H_{18} \xrightarrow[2.(CH_3)_2S]{1.O_3}$ 

3. What is X is given reaction?

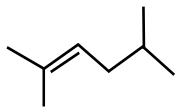
Alkene $\xrightarrow{KMnO_4H^+,\Delta}$ 

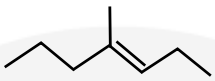
4. Which of the following statement is incorrect
(1) o–xylene gives three products on O_3 ozonolysis.
(2) m–xylene gives two products on O_3 ozonolysis.
(3) p–xylene gives two products on O_3 ozonolysis.
(4) Benzene forms diozonide with ozone

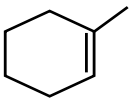
5. Predict the major product for each of the following reactions:



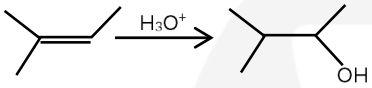
6. What product is formed when each alkene is treated with H_2 and a Pd catalyst?

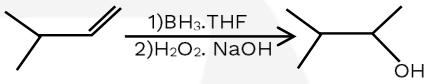
(a) 

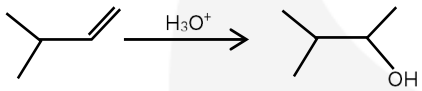
(b) 

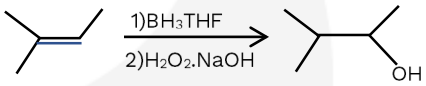
(c) 

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. $CH_3-CH=CH_2 \xrightarrow[(II)\ H_2O_2/\ \overset{\ominus}{O}H]{(I)\ B_2H_6,\ THF} CH_3-\underset{H}{\underset{|}{CH}}-\underset{OH}{\underset{|}{CH_2}}$

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

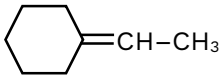
(1) b,c,d,f (2) b,c,d,e (3) a,b,c,d,e (4) b,c,d

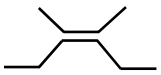
10. Which of the following compound give only aldehyde as product on ozonolysis.

(1) But–1–ene (2) But–2–ene

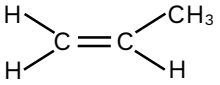
(3) Ethene (4) All of the above

11. Which of the following alkene give mixture of aldehyde & ketone on ozonolysis.

(1) 

(2) 

(3) $CH_3–CH=CH–CH_3$

(4) 

12. 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

13. Which of the following is not correct.

(1) Alkene $\xrightarrow{H–Br}$ EAR

(2) Alkene $\xrightarrow[Peroxide]{H–Br}$ FRAR

(3) Alkene $\xrightarrow[Peroxide]{H–Cl}$ FRAR

(4) Both 2 & 3

14. Which of the following compound can not react with bromine water solution.

(1) 

(2) 

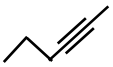
(3) 

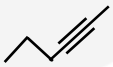
(4) Both 2 & 3

15. 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

16. 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

17. 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.

18. 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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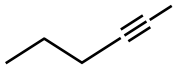
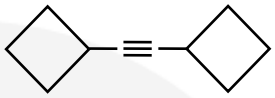
ELP

Educator Led Practice

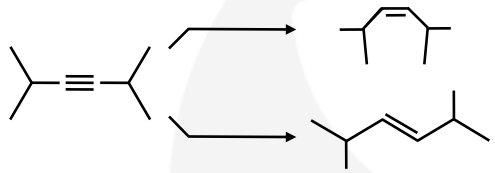
NEET-CHEMISTRY **ELP NO.-5** **HYDROCARBONS**

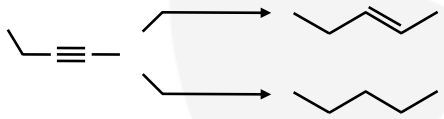
1. Draw the major product expected when each of the following alkynes is treated with sodium metal in liquid ammonia:

(1) 

(2) 

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) $CH-C\equiv C-CH_3 \xrightarrow[\text{Peroxide}]{HBr}$

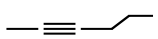
(3) $R-C\equiv CH \xrightarrow[Dil H_2SO_4]{HgSO_4}$

(4) $CH_3-C\equiv C-CH_3 \xrightarrow[H_3O^+]{Hg^{2+}}$

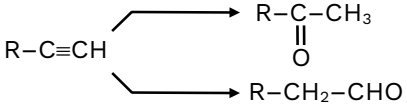
(5) $CH_3-C\equiv CH \xrightarrow[2.\ H_2O_2\,.\,OH^-]{1.\ BH_3\,.\,THF}$

(6) $HC\equiv CCH_3 \xrightarrow[CH_2Cl_2]{\text{excess } Br_2}$

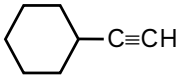
(7) $CH_3CH_2C\equiv CCH_3 + H_2 \xrightarrow[\text{catalyst}]{\text{Lindlar}}$

(8)  $\xrightarrow[NH_3\,(liq)\ -78°C]{Na}$

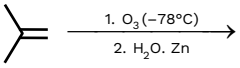
4. Identify reagents that you could use to achieve each of the following transformations:

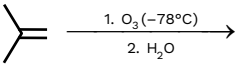


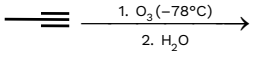
5. Draw the products formed when each alkyne is treated with O_3 followed by H_2O.

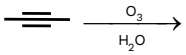
(a) $CH_3–C\equiv C–CH_2CH_3$ (b) 

6. In which of the following reaction CO_2 gas is released?

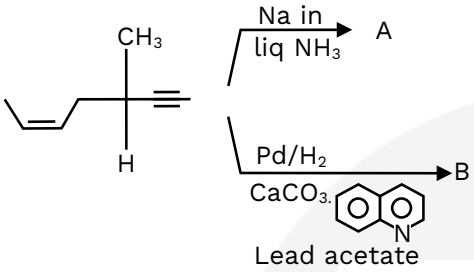
(a) 

(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. $CH_3-C\equiv CH + NaNH_2 \rightleftharpoons CH_3C\equiv \overset{\ominus}{C}\overset{\oplus}{N}a + NH_3$
2. $CH_3C\equiv CH + NaOH \rightleftharpoons CH_3-C\equiv \overset{\ominus}{C}\overset{\oplus}{N}a + H_2O$
3. $CH_3C\equiv CH + CH_3COONa \rightleftharpoons CH_3C\equiv \overset{\ominus}{C}\overset{\oplus}{N}a + CH_3COOH$
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 $CH_2=CH_2$ $HC\equiv CH$ 

(I) (II) (III) (IV)

(2) CH_3COOH $CH\equiv CH$ H_2O NH_3

(I) (II) (III) (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. $CH\equiv CH \xrightarrow[\text{Fe tube}]{\text{Red hot}} A$ is:

(1) Ethene (2) Ethane (3) Benzene (4) None of these

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'

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) $\underset{\text{(excess)}}{CH_4} + Cl_2 \longrightarrow \underset{\text{(major)}}{CH_3 - Cl}$

(2) $CH_4 + \underset{\text{(excess)}}{Cl_2} \longrightarrow \underset{\text{(major)}}{CCl_4}$

(3) $CH_4 + Cl_2 \xrightarrow{dark}$ no rxn

(4) $CH_4 + Cl_2 \xrightarrow[\text{sunlight}]{\text{bright}} \underset{\text{(major)}}{CCl_4}$

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.

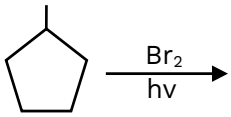
5. Which of the following isomer of C_5H_{12} give only one mono chloro product on photochemical chlorination

(1) n-pentane (2) iso-pentane (3) neo-pentane (4) both (1) and (2)

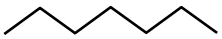
6. Mono chloro product of iso-pentane (excluding stereoisomer)

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

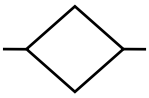
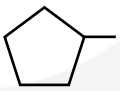
7. Find major product in given reaction:-

(1)  $\xrightarrow[h\nu]{Br_2}$

(2)  $\xrightarrow{KMnO_4}$

(3)  $\xrightarrow[heat]{Cr_2O_3-Al_2O_3}$

8. Compare heat of composition.

(a)  (b)  (c) 

(1) a > b > c (2) b > a > c (3) a > c > b (4) c > b > a

1. Arenium ion formed in:-

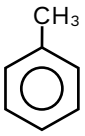
(1) Electrophilic addition reaction

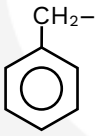
(2) Free radical addition reaction

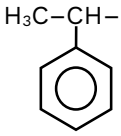
(3) Electrophilic aromatic substitution reaction

(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

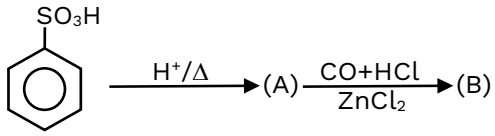
(d) Conc. HNO_3 + conc.H_2SO_4 is used as reagent

(e) Neutronium ion is act as electrophile

(f) HNO_3 act as acid in nitrating mixture (HNO_3 + H_2SO_4)

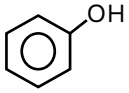
(1) a, b, d (2) a, d, e

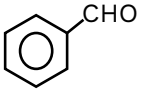
(4) a, b, c, d, e, f, (4) a, e, d, f

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) $-\ddot{O}CH_3$ (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?

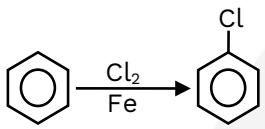
(1) $-NO_2$, $-CN$, $-CHO$ are meta directing groups

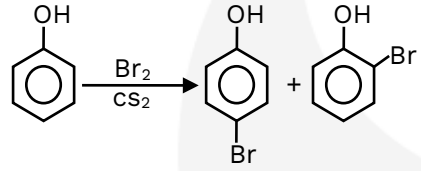
(2) Halogens are weak deactivator but ortho & para directing group

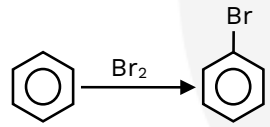
(3) $-OCH_3$, $-OH$, $-NH_2$ are ortho & para directing group

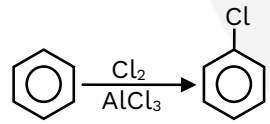
(4) $-M$ group are meta directing group because it decreases e^- density at ortho & para position whereas e^- density increases at meta positions

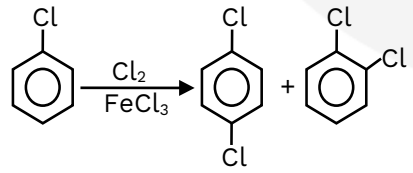
7. Incorrect reaction is:-

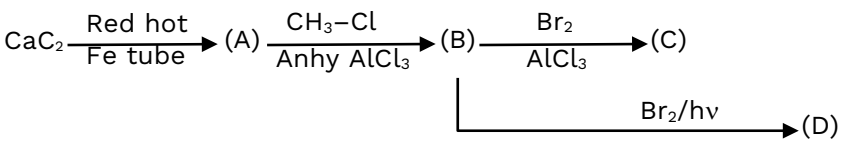
(1) 

(2) 

(3) 

(4) 

(5) 

8. 

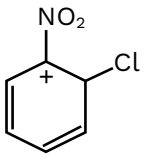
9. Write the structure of major products expected form:-

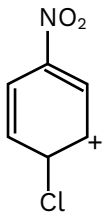
(1) Mononitration of 3-methyl phenol

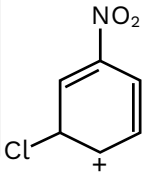
(2) Dinitration of 3-methyl phenol

(3) Mononitration of phenyl methonoate

1. Which of following arenium ion is most stable when nitrobenzene is treated with Cl_2 in presence of anhydrous $AlCl_3$

(1) 

(2) 

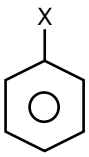
(3) 

(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.

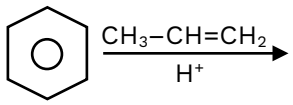
3. **Statement-I:** In monohaloarenes, further electrophilic substitution occurs at ortho & para position.
Statement-II: Halogen atom is ring deactivator.
(1) Both Statement-I and Statement-II is correct.
(2) Both Statement-I and Statement-II is incorrect.
(3) Statement-I is correct and Statement-II is incorrect.
(4) Statement-I is incorrect and Statement-II is correct.

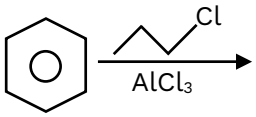
4.

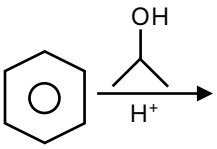
Column I	**Column II**
(i) $CH_3-\underset{\displaystyle X}{\underset{\vert}{CH}}-CH_3$	(a) Aryl halide
(ii) $CH_2=CH-CH_2-X$	(b) Alkyl halide
(iii) 	(c) Vinyl halide
(iv) $CH_2=CH-X$	(d) Allyl halide

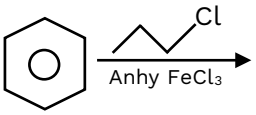
(1) (i) → (c), (ii) → (a), (iii) → (d), (iv) → (b)
(2) (i) → (b), (ii) → (d), (iii) → (a), (iv) → (c)
(3) (i) → (d), (ii) → (c), (iii) → (b), (iv) → (a)
(4) (i) → (a), (ii) → (b), (iii) → (c), (iv) → (d)

5. Which of the following reaction will form n-propyl benzene

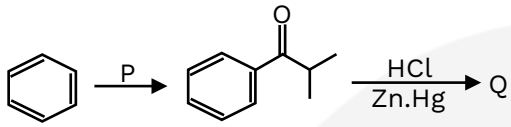
(1) 

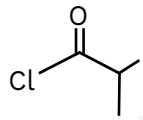
(2) 

(3) 

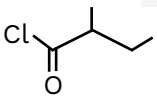
(4) 

6. Find out P & Q in the following reaction.

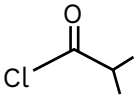


(1) P = 

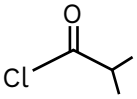
+ $AlCl_3$, Q = H_2/Pd

(2) P = 

+ $AlCl_3$, Q = Red P/HI

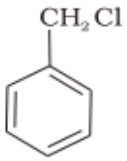
(3) P = 

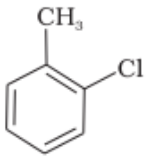
+ $AlCl_3$, Q = Zn–Hg/Hd

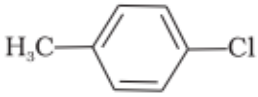
(4) P = 

+ $AlCl_3$, Q = $NaBH_4$

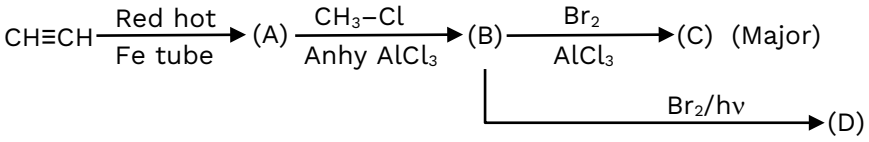
7. The reaction of toluene with chlorine in the presence of iron and in the absence of light yields _____.

(1) 

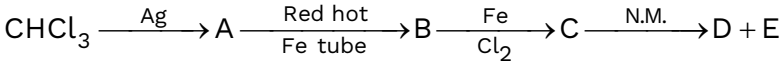
(2) 

(3) 

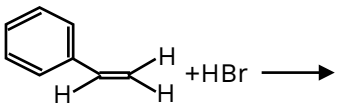
(4) Mixture of (ii) and (iii)

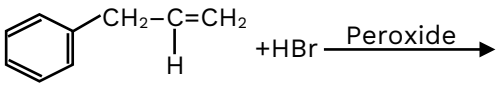
8. 

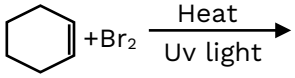
9. Find out A, B, C & D in the following reaction.

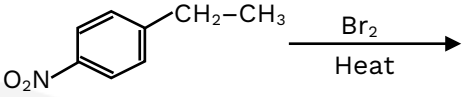


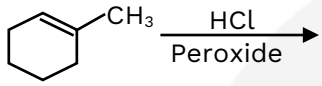
10. Write the product of the following reaction.

(i) 

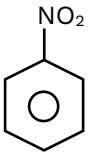
(ii) 

(iii) 

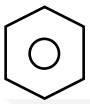
(iv) 

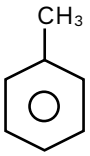
(v) 

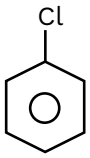
11. Which of the following cannot give Friedel craft reaction.

(i) 

(ii) Aniline

(iii) 

(iv) 

(v) 

NEET-CHEMISTRY **ELP NO. 1**

PURIFICATION & ANALYSIS OF ORGANIC COMPOUNDS

1. The most suitable method of separation of 1 : 1 mixture of ortho and para-nitrophenols is:

(1) Chromatography (2) Crystallisation

(3) Steam distillation (4) Sublimation

2. Paper chromatography is an example of:

(1) Column chromatography (2) Adsorption chromatography

(3) Partition chromatography (4) Thin layer chromatography

3. A liquid compound (x) can be purified by steam distillation only if it is:

(1) Steam volatile, immiscible with water (2) Not steam volatile, miscible with water

(3) Steam volatile, miscible with water (4) Not steam volatile, immiscible with water

4. The fragrance of flowers is due to the presence of some steam volatile organic compounds called essential oils. These are generally insoluble in water at room temperature but are miscible with water vapour in vopour phase. A suitable method for the extraction of these oils from the flowers is:

(1) Distillation (2) Crystallisation

(3) Distillation under reduced pressure (4) Steam distillation

5. During hearing of a court case, the judge suspected that some changes in the documents had been carried out. He asked the forensic department to check the ink used at two different places. According to you which technique can give the best results?

(1) Column chromatography (2) Solvent extraction

(3) Distillation (4) Thin layer chromatography

6. The principle involved in paper chromatography is

(1) Adsorption (2) Partition (3) Solubility (4) Volatility

7. Match the type of mixture of compounds in column I with the technique of separation /purification given in column II.

Column-I		Column-II	
(i)	Two solids which have different solubilities in a solvent and which do not undergo reaction when dissolved in it.	(a)	Steam distillation
(ii)	Liquid that decomposes at its boiling point	(b)	Fractional distillation
(iii)	Steam volatile liquid	(c)	Simple distillation
(iv)	Two liquids which have boiling points close to each other	(d)	Distillation under reduced pressure
(v)	Two liquids with large difference in boiling points	(e)	Crystallisation

(1) (i)-(e), (ii)-(d), (iii)-(a), (iv)-(b), (v)-(c) (2) (i)-(c), (ii)-(d), (iii)-(b), (iv)-(a), (v)-(e)

(3) (i)-(c), (ii)-(d), (iii)-(e), (iv)-(a), (v)-(b) (4) (i)-(c), (ii)-(a), (iii)-(b), (iv)-(e), (v)-(d)

8. **Assertion (A):** Simple distillation can help in separating a mixture of propan-1-ol (boiling point ~ 97°C) and propanone (boiling point 56°C)

Reason (R): Liquids with a different of more than 20°C in their boiling points can be separated by simple distillation.

(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) Both assertion and reason are not correct

(4) Assertion is not correct but reason is correct.

9. **Assertion (A):** components of a mixture of red and blue inks can be separated by distributing the components between stationary and mobile phases in paper chromatography.

Reason (R): The coloured components of inks migrate at different rates because paper selectively retains different components according to the difference in their partition between the two phases.

(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) Both assertion and reason are not correct

(4) Assertion is not correct but reason is correct.

10.

Mixture	**Purification technique**
(A) Chloroform & aniline	(P) Distillation (Simple Distillation)
(B) Glycerol & spent lye	(Q) Fractional distillation
(C) Aniline & water	(R) Steam distillation
(D) Crude oil in Petroleum industry	(S) Distillation under reduced pressure

Correct match

(1) A-P, B-Q, C-R, D-S (2) A-P, B-S, C-R, D-Q

(3) A-P, B-R, C-S, D-Q (4) A-R, B-S, C-P, D-Q

NEET-CHEMISTRY **ELP NO. 2**

PURIFICATION & ANALYSIS OF ORGANIC COMPOUNDS

1. Correct statement is/are:

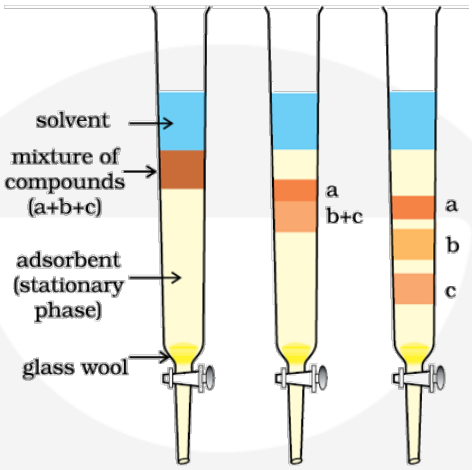


Fig.12.11 Column chromatography. Different stages of separation of components of a mixture.

(I) Rate of adsorption is a > b > c (II) Rate of adsorption is c > b > a

(III) c is least polar (IV) a is least polar

(1) I and III (2) III only (3) II and IV (4) IV only

2. Which of the following is used as adsorbent in chromatography

(1) Silica gel or alumina (2) n-Hexane

(3) Ethyl acetate (4) Ninhydrin solution

3. Sodium nitroprusside $Na_2[Fe(CN)_5NO]$ is used as reagent for detection of _____ and the compound formed is _____.

(1) Sulphur, $Na_4[Fe(CN)_5NOS]$ (2) Nitrogen, $Na_4[Fe(CN)_6]$

(3) Sulphur, $Na_2[Fe(CN)_4NOS]$ (4) Sulphur, $Na_2[Fe(CN)_5NOS]$

4. The prussian blue colouration obtained in the test for nitrogen in the organic compound is

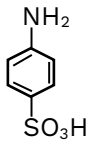
(1) $K_4[Fe(CN)_6]$ (2) $Fe_4[Fe(CN)_6]_3$ (3) $Fe[Fe(CN)_6]$ (4) $Fe_3[Fe(CN)_6]_2$

5. If N and S both are present in an organic compound during Lassaigne's test, both will change into

(1) Na_2S and NaCN (2) NaSCN

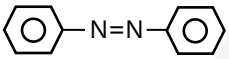
(3) Na_2SO_3 and NaCN (4) Na_2S and NaCNO

6. Which of the following will not give test for 'N' in sodium extract?

(1) $C_6H_5NHNH_2$ (2) NH_2CONH_2 (3) $NH_2–NH_2$ (4) 

7. Kjeldahl's method for detection of nitrogen in organic compound, cannot be used in case of

(1) $CH_3– NO_2$ (2) 

(3) 
 (4) All of these

8. Carius method is used for the estimation of

(1) Halogens (2) Sulphur 9

(3) Phosphorus (4) All of these

9. Match the column-I to column-II

Column-I	**Column-II**
a. Carius method	(i) $(NH_4)_2SO_4$
b. Duma's method	(ii) Sodium fusion extract
c. Kjeldahl's method	(iii) N_2–gas
d. Lassaigne's test	(iv) $AgNO_3$

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

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

10. On complete combustion of 0.25 g of an organic compound 0.22 g of CO_2 and 0.18 g of H_2O are obtained. The percentage of C and H respectively in the organic compound are

(1) 8 and 20 (2) 24 and 12 (3) 24 and 8 (4) 24 and 10

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	4	1	2	4	3	2	4	2	4	1

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	2	4	1	2	2	4	4	4	4

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	1	1	2	4	4	4	1	4	3	1	2	1	2	2	3

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	4	3	3	3	2	3	1	1	2	1

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	3	2	4	3	1	3	3	1	3

ELP-6

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	2	2	2	2	1	4	1	3	1	4

ELP-7

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	2	3	3	1	1	3	2	1	4

ELP-1

Que.	1	2	3	4	5	6	7
Ans.	2	4	2	1	1	3	1

ELP-2

Que.	1	2	3	4	5	6	7	8
Ans.	4	4	4	3	2	1	1	4

ELP-3

Que.	1	2	3	4	5	6	7	8
Ans.	4	1	1	1	2	1	3	1

ELP-4

Que.	1	2	3	4	5	6	7	8	9
Ans.	2	3	1	1	1	1	4	4	4

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	2	2	3	1	2	1	3	3	2	1

ELP-6

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	2	3	2	2	4	3	4	2	2

ELP-7

Que.	1	2	3	4	5	6	7	8	9	10	11	12
Ans.	2	1	3	2	3	2	3	4	2	3	4	3

ELP-8										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	3	1	2	1	1	3	2	4	3	4

ELP-9										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	4	3	4	2	4	1	3	2	1	1

ELP-10												
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Ans.	1	3	3	1	4	4	1	4	3	2	1	1

ELP-11												
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Ans.	2	3	3	2	2	2	1	4	2	4	4	4

ELP-12												
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**
Ans.	2	3	2	4	4	3	3	1	2	2	1	1

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	3	4	3	1,4	3	3	4	3	2

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	4	2	1	1	1	1	2	2	2	2

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	2	1	1	4	1	3	4	2	1

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13
Ans.	3	1	4	2	4	2	2	2	3	1	2	4	3

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	2	4	3	2	1	1	1	3	3	1

ELP-6

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	2	2	3	4	3	3	1	3	2

ELP-7

Que.	1	2	3	4				
Ans.	3	1,2	3,4	(i-e; ii-d; iii-f; iv-a; v-g,k,l; vi-b; vii-c; viii-j; ix-h; x-i; xi-l,m; xii-g,k)				
Que.	5	6	7		8	9	10	
Ans.	3	3,4	(i-b; ii-c; iii-a)		2	1	(i-c; ii-a; iii-b)	

ELP-8										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	2	1	1	2	2	2	3	3	4	2

ELP-9										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	2	3	4	1	1	2	4	4	2	(i) $\rightarrow$ b, d, (ii) $\rightarrow$ b, (iii) $\rightarrow$ c, (iv) $\rightarrow$ a

ELP-10										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	2	3	2	3	3	1	2	2	4	1

ELP-11										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	1	2	3	1	2	1	4	4	2	2

ELP-12										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	2	2	2	4	4	2	3	2	3	2

ELP-13										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	1	2	1	2	4	2	1	1	2	3

ELP-14											
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
Ans.	2	1	3	2	2	4	4	2	3	3	1

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	2	4	4	1	1	2	3	1	2

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	1	3	4	2	2	1	3	4	3

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	4	3	4	1	2	2	2	2	2	4

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	4	2	4	1	1	4	3	3	4

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10	11	12
Ans.	4	3	4	1	2	1	4	4	1	4	1	3

ELP-6

Que.	1	2	3	4	5	6	7	8	9	10	11	12
Ans.	1	1	3	4	1	3	2	3	1	4	1	3

ELP-7

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	2	3	1	2	3	2	3	1	2	3

ELP-8										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	3	2	4	2	3	4	4	2	1	3

ELP-9										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	2	3	3	4	1	1	1	4	1	1

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	4	4	3	3	2	3	2	2	3	3

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	2	3	2	3	4	4	1	2	2

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	4	2	2	1	2	2	2	4	2	2

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	3	4	1	2	3	4	4	3	1

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ans.	1	1	1	3	4	2	1	1	2	3	1	3	1	3

ELP-6

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	3	4	1	1	4	4	2	1	2

ELP-7

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	2	4	4	3	2	2	3	2	3

ELP-8									
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
Ans.	1	1	1	2	3	2	1	2	4

ELP-9										
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Ans.	2	4	2	3	2	3	1	2	3	2

ELP-10																
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Ans.	4	1	3	1	4	4	2	3	3	2	2	1	1	3	1	3

ELP-1					
Que.	1	2	3	4	5
Ans.	1	2	1	4	(i) → (d), (ii) → (e), (iii) → (c), (iv) → (a)
Que.	6	7	8	9	10
Ans.	2	1	3	4	(i) → (e), (ii) → (d), (iii) → (c), (iv) → (b), (v) → (f)

ELP-2										
Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	1	4	3	1	3	3	3	3	4

ELP-3										
Que.	1	2	3	4	5	6	7	8	9	10
Ans.	4	4	3	2	2	3	2	4	4	4

ELP-4										
Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1,4	3,4	3,4	3,4	2	1	1	2	1	1

ELP-5										
Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	3	4	2	4	2	4	3	4	1

ELP-6										
Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	1	4	3	2	3	2	2	1	1

ELP-7														
Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ans.	3	3	3	3	1	1	2	3	4	3	4	1	1	1

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ELP

Educator Led Practice

ANSWER KEY **CLASSIFICATION OF ELEMENTS AND PERIODICITY IN PROPERTIES**

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	4	1	4	1	3	4	4	1	1	3	2	1	4	4
Que.	16	17	18												
Ans.	3	2	4												

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	4	2	2	2	2	4	4	4	3	3	3	3	1	4	1
Que.	16	17	18												
Ans.	3	1	2												

ELP-3

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	2
Que.	16	17	18	19	20	21									
Ans.	1	2	1	3	3	2									

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	1	1	3	1	1	1	1	2	4	3	1	3	3	2	1
Que.	16	17	18	19	20	21	22								
Ans.	1	3	1	2	3	3	3								

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	4	1	4	2	4	3	2	4	2	2	2	2	2	1
Que.	16	17	18	19	20										
Ans.	3	4	4	2	3										

ELP-6															
Que.	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Ans.	3	1	3	4	2	4	2	3	3	1	3	3	2	1	1
Que.	**16**	**17**	**18**	**19**	**20**										
Ans.	3	1	1	2	4										

ELP-7															
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

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ans.	3	2	2	1	1	4	4	3	3	3	4	1	1	2	3	1

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ans.	2	3	2	4	1	2	2	4	2	3	3	4	1	3

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13
Ans.	2	3	4	3	2	3	4	3	4	4	3	4	1

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13
Ans.	3	4	4	4	3	2	4	4	2	3	3	2	2

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Ans.	3	2	2	3	2	2	3	3	1	2	3	3	2	3	4	4	1

ELP-6

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ans.		1	4	2	2	2	1	4	2	4	3	2	2	4

ELP-7

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ans.	2	2	4	2	2	4	1	1	4	1	1	4	1	2

ELP-8															
Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ans.	2	3	2	4	1	3	4	1	3	2	3	3	1	1	1	4

ELP-9													
Que.	1	2	3	4	5	6	7	8	9	10	11	12	13
Ans.	1	2	1	3	3	4	2	1	2	4	1	1	3

ELP-10													
Que.	1	2	3	4	5	6	7	8	9	10	11	12	13
Ans.	3	2	2	3	2	2	2	2	1	3	3	3	3

ELP-11																
Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ans.	4	4	1	2	1	4	4	2	2	1	3	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	1	4	1	4	1	1

ELP-13																
Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Ans.	2	2	1	3	1	4	4	2	2	1	2	3	3	2	4	1

ELP-14															
Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	1	3	3	2	4	3	1	4	2	1	3	1	4	4

ELP-15														
Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ans.	3	4	3	2	4	1	3	2	4	4	1	2	1	1

ELP-16								
Que.	1	2	3	4	5	6	7	8
Ans.	1	4	1	4	2	2	1	2

ELP-17									
Que.	1	2	3	4	5	6	7	8	9
Ans.	4	2	4	4	3	3	2	3	4

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	15	16
Ans.	4	3	3	3	1	1	2	3	3	2	3	2	3	4	4	3

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	3	3	1	2	1	3	2	3	2	3	3	1	3	4
Que.	16	17	18	19	20										
Ans.	4	3	4	2	3										

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	4	2	3	2	2	3	4	2	3	1

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	4	4	4	3	3	2	4	2	4

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Ans.	3	1	4	3	4	2	1	1	3	4	3	2	4	2

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	1	2	2	3	2	3	4	2	1

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	4	1	2	2	2	4	4	2	2	3	3	1	4	2

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	4	4	3	4	4	3	1	2	3	3	4	3	2	3	1

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11
Ans.	3	2	2	1	3	4	3	2	3	4	3

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	2	2	2	2	(Z)–a, b; (E)–c, d	3	4	4	4	1,2

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	2	1	3	2	3	4	4	4	3	(1) (Z), (2) (Z), (3) (E), (4) (2Z,4Z,6E)

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	4	1	1	4	4	1	1	4	3	2

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	4	3	2	2	3	1	1	1	Aromatic:- 1,4,6,8,10,11,12,14,15,16,17 Antiaromatic:- 2,3,5 Nonaromatic:-7,9,13

ELP-3

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13
Ans.	1	4	3	4	4	1	4	4	2	3	3	1	2

ELP-4

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	2	2	4	2	3	3	1	3	1	3

ELP-5

Que.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Ans.	2	3	3	3	4	1	1	1	3	1	4	4	3	1	1

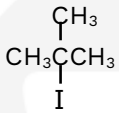
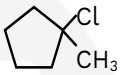
ELP-6

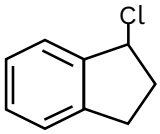
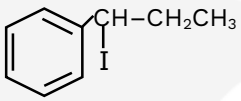
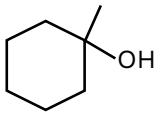
Que.	1	2	3	4	5	6	7	8	9	10	11	12
Ans.	1	3	4	2	1	1	4	4	3	2	3	3

ELP-7

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	2	2	2	3	2, 3, 4	2	3	3	3	4

ELP-1

Que.	1	2 (a)	2 (b)	3
Ans.	3	 2-Iodo-2-methylpropane	 1-Chloro-1-methylcyclopentane	I > II > III

Que.	4 (i)	4 (ii)	4 (iii)	4 (iv)
Ans.			$F_3C-CH_2-CH_2-Cl$	

Que.	5 (a)	5 (b)
Ans.	i > ii > iii	ii > i > iii

Que.	6 (a) (i)	6 (a) (ii)	6 (a) (iii)	6 (b)
Ans.	One	Two	Five	Sec. Butyl cation

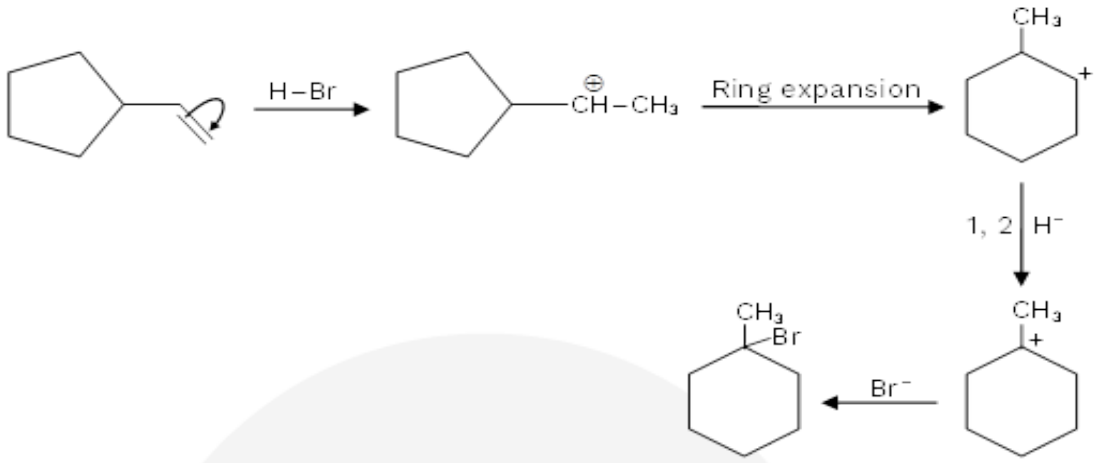
Que.	7	8	9	10	11
Ans.	4	2	3	3	2

ELP-2

Que.	1	2	3	4	5	6	7
Ans.	4	3	3	4	2	4	4

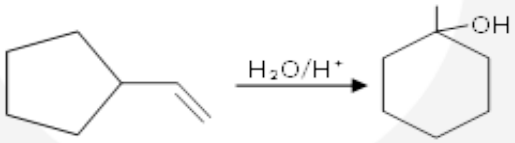
Que. 8 (a)

Ans.



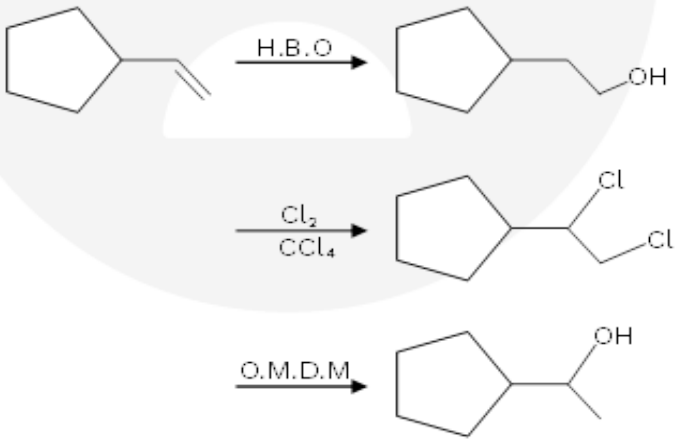
Que. 8 (b)

Ans.



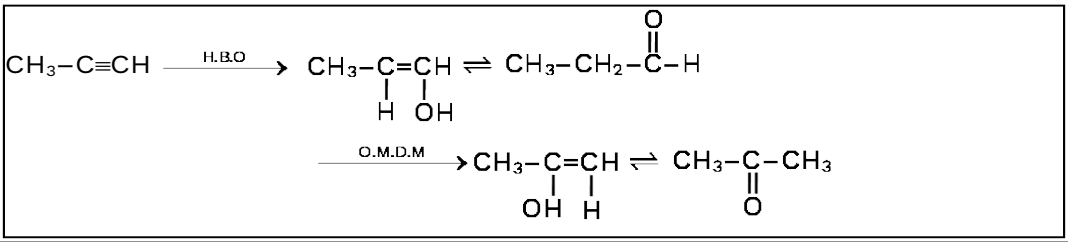
Que. 8 (c)

Ans.



Que. 9

Ans.

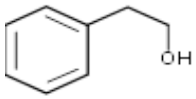
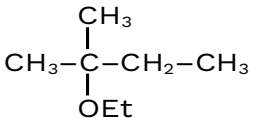
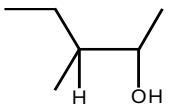
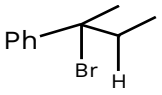


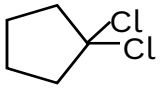
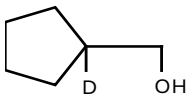
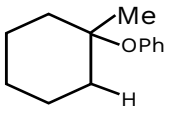
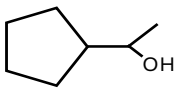
Que.	10	11
Ans.	4	(a) → v, (b) → u, (c) → t, (d) → s, (e) → r, (f) → q, (g) → p

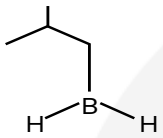
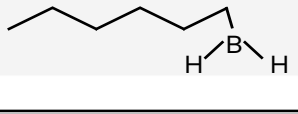
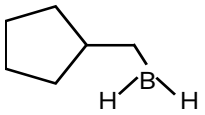
Que. 12

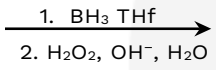
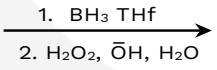
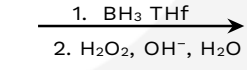
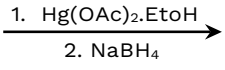
Ans. (a) → r, (b) → p, (c) → s, (d) → q, (e) → p

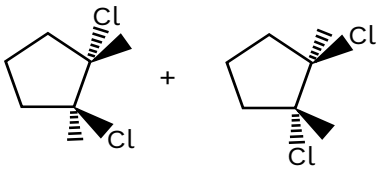
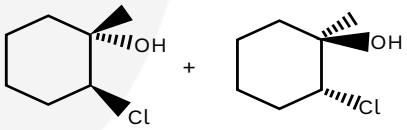
ELP-3

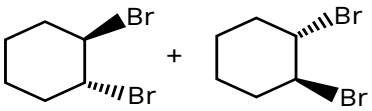
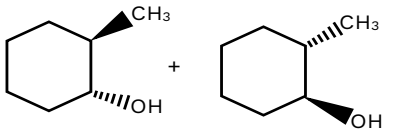
Que.	1	2			
		(i)	(ii)	(iii)	(iv)
Ans.	4				

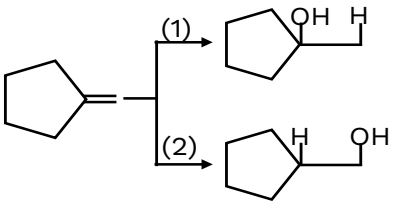
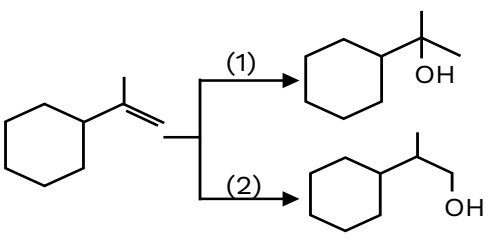
Que.	2			
	(v)	(vi)	(vii)	(viii)
Ans.				

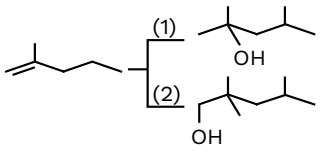
Que.	3		
	(i)	(ii)	(iii)
Ans.			

Que.	4			
	(i)	(ii)	(iii)	(iv)
Ans.				

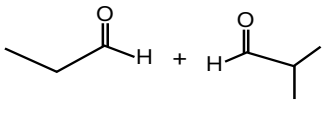
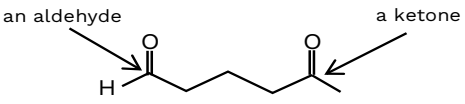
Que.	5	
	(i)	(ii)
Ans.		

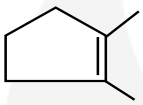
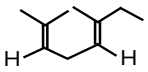
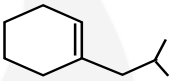
Que.	5	
	(iii)	(iv)
Ans.		

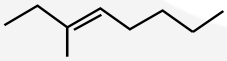
Que.	6	
	(a)	(b)
Ans.		

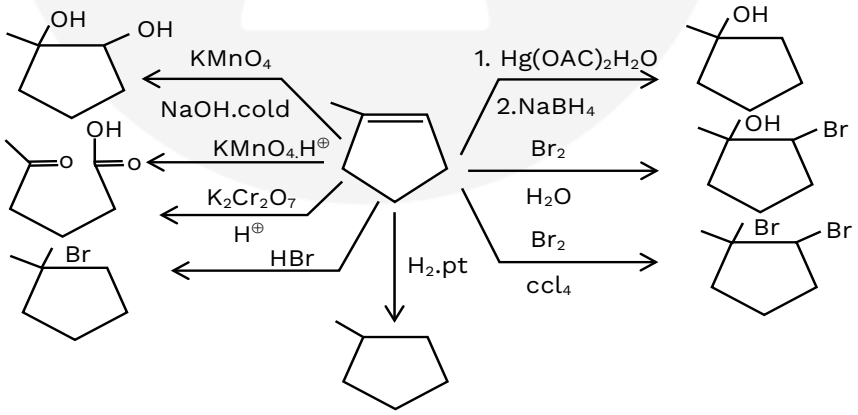
Que.	6	7	8
	(c)		
Ans.		3	2

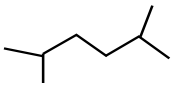
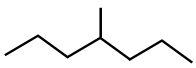
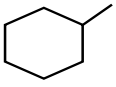
ELP-4

Que.	1	
	(a)	(b)
Ans.	 Propanal (an aldehyde) 2-Methylpropanal (an aldehyde)	 5-Oxohexanal (a ketoaldehyde)

Que.	2		
	(a)	(b)	(c)
Ans.			

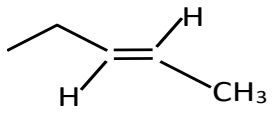
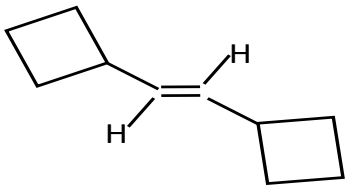
Que.	3	4
Ans.	 (X)	4

Que.	5
Ans.	

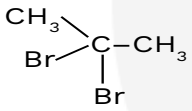
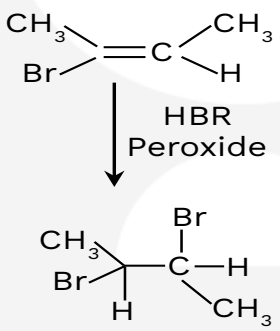
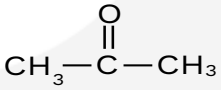
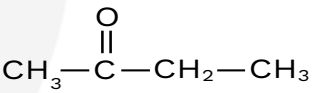
Que.	6		
	(a)	(b)	(c)
Ans.			

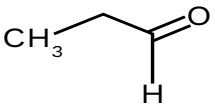
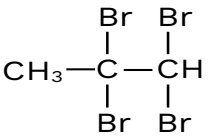
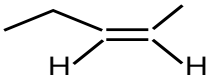
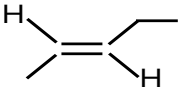
Que.	7	8	9	10	11	12	13	14	15	16
Ans.	4	3	2	4	1	4	3	4	4	4
Que.	17	18								
Ans.	3	4								

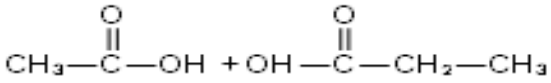
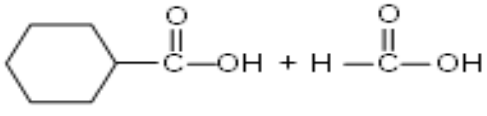
ELP-5

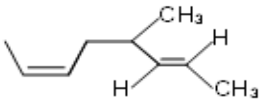
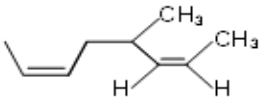
Que.	1	
	1	2
Ans.		

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.	$\xrightarrow[\text{2. } H_2SO_4\text{(dil.)}]{\text{1. } HgSO_4}$ $\xrightarrow[\text{2. } H_2O_2.OH^{\ominus}]{\text{1. } BH_3.THF}$	(a)  (b) 

Que.	6	7
Ans.	Terminal Alkyne Release CO_2. (a), (b), (c), (e)	 (A)  (B) Which statement is incorrect (2) B is optically inactive

Que.	8			
	1	2	3	4
Ans.	Feasible	Not Feasible	Not Feasible	Feasible

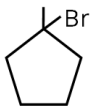
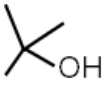
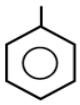
Que.	9		10	11
	1	2		
Ans.	III > IV > II > I	I > III > II > IV	4	3

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

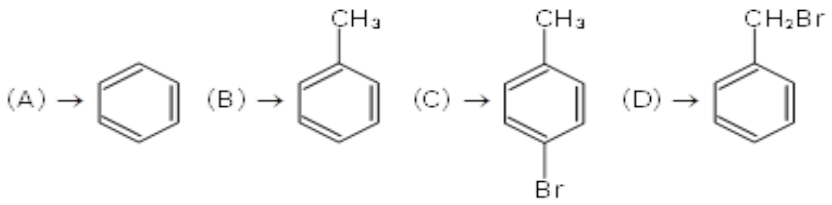
ELP-7

Que.	1	2	3	4	5	6
Ans.	1	4	4	1, 2, 3, 4, 5	3	2

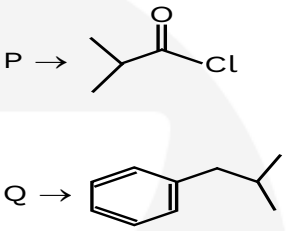
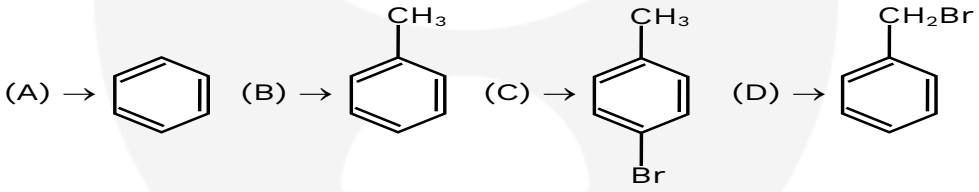
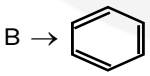
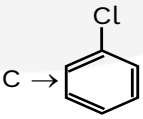
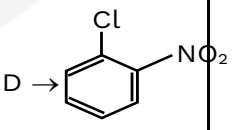
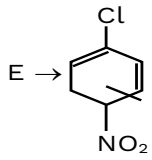
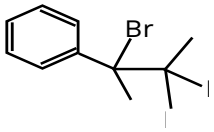
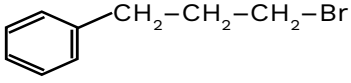
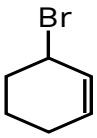
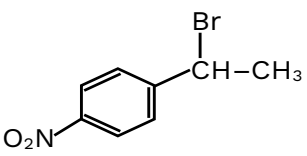
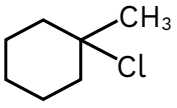
Que.	7				
	1	2	3	4	5
Ans.				$R-SO_3H$	$CH_3-\underset{NO_2}{CH}-CH_3$ (major)

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		4
Que.	8						
Ans.							
Que.	9						
Ans.	A → CH≡CH						
Que.	10						
	1	2	3				
Ans.							
Que.	10					11	
	4		5				
Ans.						(i) and (ii)	

ELP-1

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	3	3	1	4	4	2	1	1	1	2

ELP-2

Que.	1	2	3	4	5	6	7	8	9	10
Ans.	1	1	1	2	2	3	4	4	4	3