**I.P.S.Sr.Sec.School**

**Max Time : 3 hr** **Class : 11th Max Marks : 70**

**Chemistry Final Exam**

**Section A**

**MCQs : [ 1 x 15 = 15 ]**

1. Which of the following options represents the correct bond order :

|  |  |  |  |
| --- | --- | --- | --- |
| a) > O2 > | b) < O2 < | c) > O2 < | d) < O2 > |

1. Which of the following is not paramagnetic ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) S2- | b) NO | c) | d) |

1. The type of hybrid orbitals used by chlorine atom in is

|  |  |  |  |
| --- | --- | --- | --- |
| a) sp3 | b) sp2 | c) sp | d) none of these |

1. For the reaction ; PCl3 (g) + Cl2 (g) PCl5 (g) the value of KC at 250˚C is 26. The value of KP at this temperature will be

|  |  |  |  |
| --- | --- | --- | --- |
| a) 0.61 | b) 0.57 | c) 0.83 | d) 0.46 |

1. How many moles of electrons weigh one kilogram ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) 6.022 x 1023 | b) 1031 | c) 1054 | d) 108 |

1. NH4COONH2 (s) 2 NH3 (g) + CO2 (g) , If equilibrium pressure is 3 atm for the above reaction, KP for the reaction is

|  |  |  |  |
| --- | --- | --- | --- |
| a) 4 | b) 27 | c) 4/27 | d) 1/27 |

1. The electronic configuration : 1s2 2s2 2p6 3s2 3p6 3d9, represents a :

|  |  |  |  |
| --- | --- | --- | --- |
| a) Metal atom | b) Non-metal atom | c) Non-metallic anion | d) Metallic cation |

1. Which of the following transitions will have minimum wavelength ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) n4 n1 | b) n2 n1 | c) n4 n2 | d) n3 n1 |

1. Element with valence shell electronic configuration as (n-1)d5 ns1 is placed

|  |  |  |  |
| --- | --- | --- | --- |
| a) 1, s-block | b) 16, s-block | c) 7, s-block | d) 6, s-block |

1. Atoms of the elements belonging to the same group of periodic table will have

|  |  |
| --- | --- |
| a) same number of protons | b) same number of electrons in the valence shell |
| c) same number of neutrons | d) same number of electrons |

1. Number of moles in 1 cm3 gas at NTP are

|  |  |  |  |
| --- | --- | --- | --- |
| a) 4.46 | b) 44.6 | c) 446 | d) 4460 |

1. The hybridisation of carbons of C – C single bond of HC C – CH CH2 is

|  |  |  |  |
| --- | --- | --- | --- |
| a) sp3 – sp3 | b) sp – sp2 | c) sp3 – sp | d) sp2 – sp3 |

1. IUPAC name of given structure are : (i) (ii)

 

|  |  |
| --- | --- |
| a) (i) hexane ; (ii) 3-methylbutane | b) (i) isopentane ; (ii) 2, 2-dimethylbutane |
| c) (i) 3-ethylbutane ; (ii) isopentane | d) (i) 3-methylpentane ; (ii) 2-methylbutane |

1. The value of Plank’s constant is 6.63 x 10 – 34 J s. The velocity of light is 3 x 108 m/s. Which value is closest to the wavelength in nanometers of a quantum of light with frequency of 8 x 1015 sec – 1 ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) 2 x 10 – 25 | b) 5 x 10 – 18 | c) 4 x 10 1 | d) 3 X 10 7 |

1. A species having only one electron has ionization energy of 11810 KJ/mol. The number of protons in its nucleus will be :

|  |  |  |  |
| --- | --- | --- | --- |
| a) 1 | b) 2 | c) 3 | d) 4 |

**One Mark Questions : [ 1 x 5 = 5 ]**

1. Explain Molality.
2. Explain open system
3. Calculate number of oxygen atoms in 10 molecules of CaCO3.
4. Explain Isobars with Examples.
5. Give IUPAC name of : CH2 CH – CH2 – COOH .

**Section – B [ 2 X 7 = 14 ]**

1. Calculate molarity of 10 % aqueous solution of NaOH , whose density is 1.2 g/mL.
2. Write the value of n , l and m for 4 dz2.
3. The concentration of Hydrogen ion in a sample of soft drink is 3.8 x 10 – 3 M. What is its pH?
4. Write the IUPAC name of the following elements with atomic number: (a) 116 (b) 103.
5. At 450 K , KP = 2 x 1010/bar for the given reaction at equilibrium: 2 SO­2 (g) + O2 (g) 2 SO3 (g) ,

What is KC at this temperature ?

**Or**

What are Extensive properties and intensive properties? Explain with example.

1. Calculate the magnetic moment of : (a) Fe3+ (b) Cu+.
2. Write two difference between Ionic and Covalent bond

**Section – C [ 3 X 7 = 21 ]**

1. State and explain the following:

(a) Hund’s rule of maximum multiplicity (b) Pauli exclusion principle (c) Aufbau principle

**Or**

Explain electrongain enthalpy and write two factors on which it depends

1. Assign oxidation number of the underlined element in each of the following cases:

(a) NaH2PO4 (b) CaO2 (c) KAl (SO4)2.12H2O

1. Write the Hybridization and draw the shape of the following : (i) SiF4 (ii) XeO3F2 (iii) PCl3.
2. Arrange the following in order of increasing radii?

a) I, I+, I- b) C, N, Si, P c) O2-, N3-, S2-, F -

1. Calculate the wavelength , frequency and wave number of a light wave whose period is 2 x 10 – 10 s.
2. Two moles of an ideal gas at 2 atm and 27˚C are compressed isothermally to half the volume by an external pressure of 4 atm. Calculate w , q and U.
3. A chemical is found to have the following composition:

C= 19.57% Fe = 15.2% N = 22.83% and K = 42.39%

Calculate the empirical formula of the compound. What will be its molecular formula if the molecular mass of the compound is 368?

**Section – D [ 5 X 3 = 15 ]**

1. (a) Balance the following equations by Acidic medium method :
2. (aq) + SO2 (g) Mn2+ (aq) +
3. (aq) + SO2 (g) Cr3+ (aq) + (aq)

(b) Define Penetration effect and shielding effect.

1. Write the IUPAC name of the following elements:

(a)  (b)  (c) 

(d)  (e) 

**Or**

Draw the structure of the following IUPAC compounds:

(a) N-Ethyl-N-methylethanamine. (b) 1, 1-Dimethoxypropane (c) Hexa-1, 4-diyne

(d) 2-Methyl-4-methoxypentan-3-one (e) 3-Bromo-4, 4-dimethylpentanoic acid

1. Draw M.O. diagram of F2 , write its electronic configuration and compare the bond order of F2 , and .