SOUNDARYA CENTRAL SCHOOL

Affiliated to CBSE - New Delhi

Mid Term-1 2019-2020

Grade: XI **Subject: Chemistry** Max Marks: 70

Time: 3hr

General Instruction:-

i) Question numbers 1 to 20 are objective type question carrying one mark each.
ii) Question number 21 to 27are short answer type question carrying 2 marks each.
iii) Question number 28-34are short answer type questions carrying 3 marks each.
iv) Question numbers 35,36 and 37 are long answer type questions carrying 5 marks each.
v) Use log tables wherever is required.

Section-A

1. The number of moles present in 9 grams of water is
   a.1 mole b.0.5 mole c.1.5 mole d.2 moles
2. In the reaction A+B $\rightarrow$ AB_2 5 mole of A react with 2.5 mol of B. The limiting reagent is
   a.A b.B c.AB_2 d.AB
3. The maximum number of electrons present in 4^{th} orbit
   a. 16 b.32 c.10 d.14

4.For an electron n=2 l=1. The electron is present in
   a. 2S b. 2P c.3S d. 2d

5. The IUPAC name of an element with atomic number 107 is ___

6. As we move down a group in the periodic table atomic size of an element _____

7.Which of the following is an S block element
a.Na b.C c.O_2 d.Xe

8.Which of the following is an Amphoteric oxide
   a.Na_2O b. Al_2O_3 c.SiO_2 d.Cl_2O_7

9.The number of σ and π bonds present in CH_3 –C CH molecule are_____

10.The shape of PCl_5 molecule is _____

11. The bond order of H_2^- is similar to that of _____element

12. The wave length of a radiations with frequency 7.5 $x10^{15}$ S^{-1} will be
   a. $5x10^{-18}$m b.$4x10^{1}$nm c.$3x10^{7}$ cm d.2 x 10^{-2} pm

13.Metamers will have same functional group but differ is their_____

14.Which one of the following is most acidic
a. Hexane b.Ethane c. Ethene d.Ethyne

15.The catalyst used in Fridel craft reaction is _____

16.Hydrolysis of Aluminium carbide gives
a.CH_4 b. C_3H_3 C.C_6H_6 d.C_2H_4

17.Benzene is the polymer made from
a.C_2H_2 b. C_2H_3 C.CH_4 d.C_2H

18. The spherical shape of water molecular is due to
a.Viscocity b. surface tension c. vapour density d. H_2 Bond

19.The PV curves obtained at constant temperature are known as_____

20.The forces of attraction between Ar-Ar atoms is
a.Dispension forces b. H_2 Bond c.Dipole-diploe forces d.Induced forces

Section-B
Each question carries 2 marks

21.What is the volume of CO_2 gas liberated when 50g of calcium carbonate strongly heated at STP. (Ca=40g C=12g O=16g)

22.Define the following:-
a.Mole fraction b.Law of definite proportions

Or

Define molality of a solutions. The density of 3M solution of NaCl is 1.25g/ml. Calculate the molality of the Solution (Na:23g, Cl:35.5g)

23.a.Write the electric configuration of Cu atom. atomic number of Cu =29)

b.Write the n,l m and s values of unpaired electrons is the valency shell of Cu atom.

24.Write any two differences between σ and π bonding.

(Or)

Write any two differences between bonding and antibonding orbitals.

25.1.Why the bond angle is water is less than that of methane even though both are formed by Sp^3 Hybridisation.
2. Be-Cl has dipole moment where as $BeCl_2$ has zero dipole moments give reason.
26.a. Define compressibility factor.

b.Write the VanderWalls equation for n moles of gas.

(Or)

Define Charles law. Calculate the volume of 47cm^3 of a gas at 27 C^0 would occupy at 22 C^0 at constant pressure.

27. Write the structure or IUPAC names of the following:-
a.t-butyl chloride
b. 3- oxo pentanal.

Section-C
Each question carries 3 marks

28. What are conformer. Explain the conformational isomerism by taking ethane as an example.

29.Explain the mechanism involved in the free radical substitution reaction of chlorination of methane.

(Or)

Convert the following
i)Chloro methane to ethane.
ii)Ethene to methanol.
iii)Bromo proprane to propene.

30. Explain the following with suitable examples
i)Coordinate covalent bond.
ii)Hydrogen bond .
iii)Polar covalent bond.

31.What are transition elements. Write their general properties.

32.a.What are Iso electronic Ions

b.Arrange the following Ions is the order to decreasing order to Ionic Radii
N^{3-}, Mg^{2+} , Na^{+} , O^{2-}

c.Why the Ionisation enthalpy of Nitrogen is more than that of oxygen.

33.A compound or analysis contains 4.07% of hydrogen 24.47% carbon and 71.65% chlorine. Its molecular mass is 99g find it's Empirical and Molecular formulae (C=12, H=1, Cl=35.5g)

34.Write the Postulates of kinetic molecular theory of gases.

(Or)

Explain
a.Daltons law of partial pressure
b.At 25^0C and 760mm pressure of gas occupies 600 ml volume what will be its volume at STP (aqueous tension at 25^0 c is 11.2 mm)

Section-D
Each question carries 5 marks

35. a.Write the postulates of Bohr's atomic model. Calculate the energy associated with 5^{th} orbit of Hydrogen atom.

(Or)

a.Draw the shapes of s,p and d orbitals

b.State Heisenbergs uncertainty principle. Write its mathematical form.

36. Define Hybridization. Explain the Hybridization in CH_4 and C_2H_2 molecule.

(Or)

aDefine bond order. Explain the paramagnetic behavior of O_2 molecule using molecular orbital theory.

b.Arrange the following in the increasing order of stability
O_2 , O_2^+, O_2^-, O_2^{2-}

37..Explain the principles involved in the following Electronic arrangements
a.1.Hyperconjugation 2.Electomeric effect 3.Inductive effect

b.Convert propene to 1 – Bromo propane and 2-bromo propane. Write the rules involved in it

(or)

Write the reasons for the following:-

a.C_2H_2 gas is allowed to passed in to water is pressure of Hg^{2+} catalyst
b.Ethanol is heated with conc H_2SO_4 at 443 K.
c.Calcium carbide is Hydroloysed with water.
d.Huckles rule.
e.Mechanism of nitration is benzene molecule.

****