



SOUNDARYA CENTRAL SCHOOL

Affiliated to CBSE - New Delhi

Mid Term-1 2019-2020

Subject: Chemistry

Grade: XI

Max Marks: 70

Time: 3hr

General Instruction:-

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

Section-A

- 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
- 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
- The maximum number of electrons present in 4th orbit
a. 16 b.32 c.10 d.14
- For an electron $n=2$ $l=1$. The electron is present in
a. 2S b. 2P c.3S d. 2d
- The IUPAC name of an element with atomic number 107 is ____
- As we move down a group in the periodic table atomic size of an element _____
- Which of the following is an S block element
a.Na b.C c. O_2 d.Xe
- Which of the following is an Amphoteric oxide
a. Na_2O b. Al_2O_3 c. SiO_2 d. Cl_2O_7
- The number of σ and π bonds present in $CH_3-C \equiv CH$ molecule are _____
- The shape of PCl_5 molecule is _____
- The bond order of H_2^+ is similar to that of _____ element
- The wave length of a radiations with frequency $7.5 \times 10^{15} S^{-1}$ will be
a. $5 \times 10^{-18}m$ b. $4 \times 10^1 nm$ c. $3 \times 10^7 cm$ d. $2 \times 10^{-2} pm$
- Metamers will have same functional group but differ is their _____
- Which one of the following is most acidic
a. Hexane b.Ethane c. Ethene d.Ethyne

15. The catalyst used in Friedel 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. Viscosity 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. Dispersion forces b. H_2 Bond c. Dipole-dipole 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 solution. 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 electronic configuration of Cu atom. (atomic number of Cu =29)

b. Write the n, l, m and s values of unpaired electrons in 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 in water is less than that of methane even though both are formed by sp^3 hybridisation.

2. Be-Cl has dipole moment whereas BeCl_2 has zero dipole moment. 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 would occupy at 22°C 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 propane to propene.

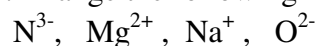
30. Explain the following with suitable examples

- 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 in the order of decreasing order of Ionic Radii



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

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

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

(Or)

Explain

a. Dalton's law of partial pressure

b. At 25°C and 760mm pressure of gas occupies 600 ml volume what will be its volume at STP (aqueous tension at 25°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 5th orbit of Hydrogen atom.

(Or)

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

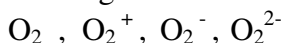
b. State Heisenberg's uncertainty principle. Write its mathematical form.

36. Define Hybridization. Explain the Hybridization in CH₄ and C₂H₂ molecule.

(Or)

a. Define bond order. Explain the paramagnetic behavior of O₂ molecule using molecular orbital theory.

b. Arrange the following in the increasing order of stability



37. Explain the principles involved in the following Electronic arrangements

a. 1. Hyperconjugation 2. Electromeric 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. C₂H₂ gas is allowed to pass in to water in presence of Hg²⁺ catalyst

b. Ethanol is heated with conc H₂SO₄ at 443 K.

c. Calcium carbide is Hydrolysed with water.

d. Huckles rule.

e. Mechanism of nitration in benzene molecule.
