Parvatibai Chowgule College of Arts & Science, Margao Goa.

(Higher Secondary Section)

Class: - XI Science **Max Marks:- 60**

Day: – Saturday **(Subject:-Chemistry)** **Date:- 3-11-2012**

Time: - 8.15 am. TO 10.45 am. **Duration: - 2 $\frac{1}{2}$Hours**

Total No of Questions: - 6 **First Terminal Examination- 2012** **Total No Of Printed ages: 4**

Q No ***INSTRUCTIONS:*** **Marks**

(1) All questions are compulsory.

(2) Answer each main question on a fresh page.

(3) Figures to the right-indicate full marks.

(4) Use of calculators is not permitted, however mathematical tables will be provided on request.

Atomic masses & Constants:-H=1,Ca=40,N=14,O=16 ,F = 96500 C mol^{-1}, N_A=6.023×10^{23} ,h=6.626 x 10^{-34}

Q 1 A Define the following and write their mathematical expression **3**

a) Mole fraction

b) Mass percentage

c) Molality

Q 1 B Dinitrogen and dihydrogen react with each other to produce ammonia according to the following chemical equation: **2**

$$N_2\,(g) + 3H_2\,(g) \rightarrow 2NH_3\,(g)$$

Write the information that is available from the above balanced chemical equation?

Q 1 C Write a point of difference between Molecular mass and Formula Mass giving one example of each. **2**

Q 1 D Calculate the following **2**

i. Number of moles of carbon dioxide which contain 8g of oxygen

ii. Numbers of moles present in 7.9 mg of calcium

Q 1 E Draw a flow sheet diagram showing classification of matter **1**

Q 2 A Answer the following **3**

(i) What sub shells are possible in n = 3 energy level?

(ii) How many orbitals of all kinds are possible in this level?

Q 2 B Write the electronic configurations of the following ions: **2**

(a) Na^{+} (b) O^{2-}

Q 2 C How does Bohr's theory account for stability of an atom? **2**

OR

Q 2 C Define isobars and isotopes giving examples? **2**

Q 2 D Calculate the uncertainty in velocity of a cricket ball of mass 0.15 kg if its uncertainty in position is of the order of $1A^{0}$ **2**

Q 2 E Draw diagrams depicting the shapes of **1s** and $\mathbf{2p_x}$ orbital. **1**

Q 3 A Define the following terms **3**

a) Bond Length

b) Bond angle

c) Bond order

Q 3 B Explain why the net dipole moment in NH_3 is much higher than NF_3? **2**

Q 3 C Write the Lewis dot structure for each of the following molecules. **2**

1. H_2O
2. CO_2

Q 3 D Write any two points of difference between Sigma and Pi bonds **2**

Q 3 E Draw the orbital picture of ethane molecule & show the type of hybridization **1**

Q 4 A Write any six postulates of Kinetic Molecular theory of gases **3**

OR

Q 4 A Answer the following **3**

i. Derive Ideal gas equation

ii. State Daltons law of partial pressures

Q 4 B Explain with a neat labeled diagram dispersion forces in non-polar molecules **2**

Q 4 C At 27^oC and 760 mm of Hg pressure a gas occupies 600 ml volume. What will be its pressure at a height where temperature is 20^o C and volume of the gas is 660 ml? **2**

OR

Q 4 C What is the temperature at which 80 cm^3 of a gas should be heated to increase its volume by 20% without changing the pressure? (Given that the initial temperature of the gas is 25^oC) **2**

Q 4 D Give reasons **2**

1) Viscosity of liquids decreases with the increase in temperature.
2) Liquid drops have nearly spherical shape.

Q 4 E State Charles Law. **1**

Q 5 A Define the following **3**

a. Open system
b. Entropy
c. Intensive property

Q 5 B What are Dobereiner's triads? Explain these triads with suitable example. **2**

OR

Q 5 B Differentiate between s and p block elements. **2**

Q 5 C What do you mean by isoelectronic species? Which of the following are isoelectronic species? **2**

Na^+, K^+, Mg^{2+}, Ca^{2+}, S^{2-}, Ar.

Q 5 D Give reasons. **2**

a) There are only 18 elements in the 5th period.
b) Ionic radii of sodium ion are less than that of sodium atom.

Q 5 E Write the IUPAC name and symbol of an element whose atomic number 108. **1**

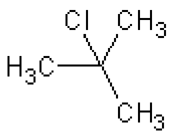
Q 6 A Explain the following with examples **3**

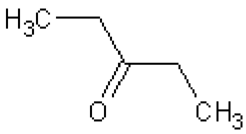
i. Position isomerism

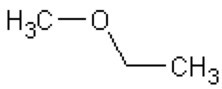
ii. Inductive effect

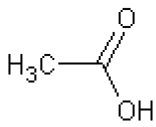
iii. Heterolytic fission

Q 6 B Write the IUPAC names for the following compounds by rewriting the structures **2**

I 

II 

III 

IV 

OR

Q 6 B Write the structures for the following compounds by rewriting their IUPAC names **2**

I. 4-Ethyl-1-fluoro-2-nitrobenzene

II. 2,2-Dimethylpropane

III. Cyclohexene

IV. Cyclopropane

Q 6 C Write the bond line formulas for the following compounds **2**

a) Propan-2-ol

b) 1,2-dimethylcyclohexane

c) But-2-ene

d) 2-methylpentane

Q 6 D Differentiate between nucleophiles and electrophiles giving examples of each. **2**

Q 6 E Draw the structural formula of 2,3 - Dibromo -1 - phenylpentane, **1**

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