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Class – XI Subject – Chemistry

PERIODIC TEST-I (2017-18)

Time : 1:30 hr **MM : 50**

Instruction:

1. All questions are compulsory.
2. Marks allotted to questions are indicated against them.

1. Answer the following Questions: (1mark each)

a) Calculate the molecular mass of glucose ($C_6H_{12}O_6$) molecule.
b) Write the IUPAC Name of the element with atomic number 120.
c) Write the general electronic configuration of d-block elements.
d) Write the values of all the four quantum numbers for the last electron of Nitrogen.
e) What are isoelectronic species? Give example.

2. Answer the following questions: (2 marks each)

a) If the density of methanol is 0.793 Kg/L, what is its volume needed for making 2.5 L of its 0.25 M Solution..
b) Would you expect the first ionization enthalpies for two isotopes of the same element to be same or different? Justify your answer.
c) If ten volumes of dihydrogen gas reacts with five volumes of dioxygen gas, how many volumes of water vapour would be produced.
d) Calculate the energy associated with the first orbit of He^+. What is the radius of this orbit?
e) Why is first ionization enthalpy of Nitrogen greater than that of Oxygen?

3. Answer the following questions: (Any five – 3 marks each)

a) Calculate the wavelength of an electron moving with a velocity of 2.05×10^7 m/s
b) What is basic difference between the terms electron gain enthalpy and Ionization enthalpy? Give example of each.
c) a)How many sub-shells are associated with n=4? Write their names with their values of m_l.
b)How many electrons will be present in the sub-shells having ms value of -½ for n=4.
d) How would you explain the fact that the first ionization enthalpy of sodium is lower than that of magnesium but its second ionization enthalpy is higher than that of magnesium.
e) What is the concentration of sugar ($C_{12}H_{22}O_{11}$) in mol/L if its 20g are dissolved in enough water to make a final volume up to 2L?
f) A compound contains 4.07% hydrogen, 24.27% carbon and 71.65% chlorine. Its molar mass is 98.96 g/mol. What are its empirical and molecular formulas?

4. Answer the following questions: (5 marks each)

a) 50.0 kg of N_2 (g)and 10.0 kg of H_2 (g) are mixed to produce NH_3 (g). Calculate the NH_3 (g) formed. Identify the limiting reagent in the production of NH_3 in this situation.

b) (i) Describe the electronic configuration and show the filling of orbitals of the following elements/ions: Cr, Cu^+.
(ii) Write significant figures in following: 0.021, 1.11+2.1.
(iii) Write the following terms in scientific notation: 0.00042 and 4250000000.

c) i) Show by a chemical reaction with water that Na_2O is a basic oxide while Cl_2O_7 is an acidic oxide.
ii) Explain why cations are smaller and anions are larger in radii than their parent atoms.

d) i) State: Heisenberg Uncertainity Principle and Paulis's Exclusion Principle.
ii) A golf ball has a mass og 40 g, and a speed of 45m/sec. If the speed can be measured within accuracy of 2 %, .Calculate the uncertainity in the position.