Paper: Chemistry | Total Marks: 17

Month Test: February | Obt. Marks: _____

Theme/Unit: 1st half | Grand Total: 85

Objective/Subjective: | ID: _____ | Time: _____

Roll No: _____ | class: 1st Year | Section: _____

Q. No. 1: Encircle the correct option: /17

1. The number of moles of Co_2 which contain 8.0g of oxygen.
   a. 0.25 c. 1.0
   b. 0.50 d. 1.50
2. Quantum number value for 2p subshell are:
   a. n=2, l=1 c. n=1, l=0
   b. n=1, l=2 d. n=2, l=0
3. the comparative rates at which the solute moves in paper chromatography depends on:
   a. size of paper c. Temperature
   b. R_f value of solute d. Size of tank
4. The mass of one mole of electron is:
   a. 1.008 mg c. 0.184 mg
   b. 0.55 mg d. 1.673mg
5. 27g of all will react with how much mass of O_2 to produce Al_2O_3:
   a. 8g c. 32g
   b. 16g d. 24g
6. Number of molecules in $1dm^3$ of water is close to:
   a. $\frac{6.02}{22.4} \times 10^{23}$ c. $\frac{18}{22.4} \times 10^{23}$
   b. $\frac{12.04}{22.4} \times 10^{23}$ d. 55.6 x 6.02 x 10^{23}
7. Splitting of spectral lines when atoms are subjected to electric field is called:
   a. Zeeman effect c. Photoelectric effect
   b. Stark effect d. Compton effect
8. One calorie is equivalent to:
   a. 0.4184 J c. 4.184 J
   b. 41.84 J d. 418.4 J
9. The e/m value for the positive rays is maximum for the gas:
   a. H_2 c. O_2
   b. He d. N_2
10. Orbitals having same energy are called:
   a. Hybrid orbitals c. Degenerate orbitals
   b. Valence orbitals d. D – orbitals
11. Feeling uncomfortable breathing in un-pressurized cabins s due to:
   a. High pressure of Co_2 c. Fatigue
   b. Low pressure of O_2 d. Low pressure of Co_2
12. Tin has isotopes:

a. 7
c. 5
b. 9
d. 11

13. Equal masses of CH_4 and O_2 are mixed in container at 25ºc. the fraction of total pressure exerted by O_2 is:
a. 1/9
c. 16/17
b. 1/3
d. 8/9

14. Which of the following species has unpaired electron in anti-bonding molecule orbitals:
a. O_2^{+2}
c. F_2
b. O_2^{-2}
d. N_2^{-2}

15. In the ground state of atom the electron is present:
a. In the nucleus
c. Nearest to nucleus
b. In 2nd shell
d. Far from nucleus

16. The order of the rate of diffusion of gases NH_3, So_2, Cl_2 and Co_2 is:
a. NH_3,> So_2 > Cl_2 > Co_2
c. Cl_2 > So_2 > Co_2 > NH_3
b. NH_3 > Co_2 > So_2 > Cl_2
d. NH_3 > Co_2 > Cl_2 > So_2

17. First ionization energy of Mg atom is
a. +738kjmol^{-1}
d. -500kjmol^{-1}

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b. +1450kjmol^{-1}
c. -349kjmol^{-1}

Q. No. 2: Give Brief answers. /44

1) Calculate percentage of nitrogen in urea. $H_2N - \overset{\overset{||}{O}}{C} - NH_2$
2) Ice floats on water. Give reason.
3) Why the atomic radii of atom cannot be determined precisely?
4) Write down two equations when slow moving neutrons hit the Cu metal.
5) How undesired able colour can be removed from a crude crystalline product?
6) Write two characteristics of plasma?
7) So_2 is comparatively non – ideal at 273k but behave ideally at 327ºC. why?
8) Differentiate between atomic absorption and emission spectrum.
9) One mg of K_2Cro_4 has thrice the number of ions than the number of formula units when ionized in H_2O. why?
10) Give significance of magnetic quantum number?
11) Name of factors influence ionization energy?
12) Give electronic configuration of $^{65}_{29}Cu$

13) Why repeated extraction of small portion of solvent is more efficient than using a single extraction of large volume?
14) Give two faulty postulates of KMT.
15) Give postulates of Mosleley's law.
16) No bond in chemistry is 100% ionic. Why?
17) How will you prove that cathode rays travel in straight line?
18) Write four features of good solvent.
19) Calculate the mass in grams of 10^{-3} moles of H_2o.
20) Why Nacl and CaCl have different structure?
21) Why the dipole moment of Co_2 is zero but that of water is 1.85 D?
22) Explain the structure of NH_3 molecule in the light VSEPR theory?

Q. No. 3: Give comprehensive answer: /24

Q. 1: (a). Describe the moment of vapour pressure by Monometric method.

(b). Calculate the number of grams of K_2So_4 and water produced when 14g of KoH are reacted with excess of H_2So_4? (k =39, S=32)

Q. 2: (a). Derive the equation for the radius of the nth orbit of H_2 – atom using Bohr's model.

(b). Describe hybridization of Ethene and Ethyne molecule.

Q. 3: (a). Give postulates of Bohr's atomic model.

(b). How do you measure the heat of combustion by bomb calorimeter?