

INTERNATIONAL INDIAN SCHOOL, RIYADH

First Term Examination 2014-15

SET-B

Class- XI
Sub. – Chemistry

Time- 3 hrs.
Max. Marks- 70

General Instructions:

- 1) Questions 1 to 5 are very short answer questions carrying 1 mark each.
- 2) Questions 6 to 10 are short answer questions carrying 2 marks each.
- 3) Questions 11 to 22 are short answer questions carrying 3 marks each.
- 4) Question 23 is value based question carrying 4 marks.
- 5) Questions 24 to 26 are long answer questions carrying 5 marks each.
- 6) There is no overall choice for questions. However internal choices have been provided for one 2 mark questions, one 3 mark question and for all questions carrying 5 marks.
- 7) Use of calculator is not allowed. However log tables can be used if necessary.

1. State the law of definite proportion.
2. Write the general electronic configuration of f-block elements.
3. Define molarity.
4. What is intramolecular hydrogen bonding?
5. State Heisenberg's Uncertainty Principle.
6. A) Write the electronic configuration of Cr (24).
B) State Pauli exclusion principle.
7. Chlorine is prepared in the laboratory by treating manganese dioxide (MnO_2) with aqueous hydrochloric acid according to the reaction,
 $4 \text{HCl} (\text{aq}) + \text{MnO}_2 (\text{s}) \rightarrow 2\text{H}_2\text{O} (\text{l}) + \text{MnCl}_2 (\text{aq}) + \text{Cl}_2 (\text{g})$
How many grams of HCl react with 5.0 g of manganese dioxide?

Or

2.46g of NaOH (molar mass = 40) are dissolved in water and the solution is made upto 100cm^3 in a volumetric flask. Calculate the molarity of the solution.

8. A compound contains 54.2% C, 9.2% H and 36.6% O. Determine its molecular formula if its molecular weight is 88u. [atomic wt. of C= 12u, H=1u, O=16u]
9. A. Give the drawbacks of Rutherford's model of atom.
B. Predict the group and period to which the element with the given outer electronic configuration belongs. $(n-1)d^6 ns^2$ for $n=5$
10. A) Arrange the given species in the increasing order of ionic radii.
 $\text{O}^{2-}, \text{K}^+, \text{Na}^+, \text{F}^-$



0.5

1.6

1.4

1.4 x 28

B) Give the IUPAC name and symbol of the element with $Z = 120$.

11. A. What is limiting reagent?
 B. 3 moles of N_2 combines with 5 moles of H_2 to form NH_3 by Haber process. Calculate grams of reactant left over.

12. i. Draw the shapes of orbital with $l = 2$.
 ii. What is the lowest value of n that allows g orbitals to exist?

13. A. Give reason.
 I) Be has higher ionization enthalpy than B.
 II) O has less negative electron gain enthalpy than S.
 B. What is the basic difference between the terms electron gain enthalpy and Electronegativity?

14. Explain the formation of H_2 molecule using valence bond theory.

Or

- I. Explain hybridization in PCl_5 .
 II. Why are axial bonds longer than equatorial bonds in PCl_5 ?

15. A. State Dalton's law of partial pressures.
 B. Calculate root mean square and most probable speed of oxygen molecules at $27^\circ C$.
 (Atomic mass of oxygen = 16)

$$\begin{array}{r} 28 \\ 14 \quad 3 \\ \hline 112 \end{array}$$

16. A neon-dioxygen mixture contains 70.6 g dioxygen and 167.5 g neon. If pressure of the mixture of gases in the cylinder is 25 bar. What is the partial pressure of dioxygen and neon in the mixture?

$$\begin{array}{r} 39.2 \end{array}$$

17.A. Give the IUPAC name of the following.



I.

II.

B. What kind of isomerism is exhibited by the following pairs?



II. CH_3CH_2-OH , CH_3-O-CH_3

- 18.A. How many σ and π bonds are present in each of the following molecules?
 (a) $HC \equiv CCH = CHCH_3$ (b) $CH_2 = C = CHCH_3$

