(Pages:2)   Name……………………..

Reg. No………………………

FIRST SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2016
(Regular/Supplementary/Improvement)
(CUCBCSS-UG)
CC15UCHE1C01- GENERAL CHEMISTRY
(Chemistry - Complementary Course)
(2015 Admission Onwards)

Time: Three Hours   Maximum: 64 Marks

SECTION – A

(Answer all questions. Each question carries 1 mark)

1. ……………. is the most electronegative element in the periodic table.

2. Among the nitrogen, oxygen and fluorine, the element having lowest ionization enthalpy is …

3. Murexide belongs to the class of……………………..indicator.

4. In inorganic qualitative analysis, group V cations are precipitated as their…………..…

5. The magnetic quantum number value for the valence electron of potassium atom (Z=19) is…

6. A molecule which possess pentagonal bipyramidal shape is …………………

7. Isotones are substances having the same number of …………….

8. To diagonise thyroid disorders, the radioactive isotope used is …………………….

9. The metal present in Vitamin B_{12} is…………………….

10. …………………is an enzyme containing zinc.   **(10x1=10 marks)**

SECTION – B

(Answer any seven questions. Each question carries 2 marks)

11. Calculate the absolute mass of one water molecule in grams. (H=1, O=16)

12. Distinguish between the terms *atomic radius* and *covalent radius*.

13. What is meant by primary standard? Give two examples.

14. Explain the term *accuracy* with regard to an analytical resut.

15. Calculate the wavelength of matter wave (in meters) associated with an object of mass 10g moving with a velocity of $100ms^{-1}$.

16. Write down the Born-Lande equation for calculating the lattice energy per mole of an ionic crystal?

17. Name the three types of attractive intermolecular forces (Vanderwaal's forces).

18. Calculate the number of alpha and beta particles emitted during the disintegration of $^{238}_{92}U$ to $^{206}_{82}Pb$.

19. Define 'critical mass' of a target material.

20. What is the oxidation number and coordination number of Iron in haemoglobin? How does haemoglobi differ from myoglobin?   **(7x2=14 Marks)**

SECTION – C

(Answer any four questions, each questions carries 5 marks)

21. Define electron affinity. Arrange halogens in the increasing order of electron affinity giving proper explanations.

22. Define equivalent mass of an oxidizing agent. Calculate the equivalent mass of $KMnO_4$ based on this concept.

23. What are redox indicators? Give three essential requirements for functioning a substance as a redox indicator. Give two examples for redox indicators.

24. Differentiate between *'electro magnetic waves'* and *'matter waves'*.

25. Explain the hybridization in phosphorous pentachloride.

26. Derive the de Broglie relationship.   **(4x5=20 Marks)**

SECTION – D

(Answer any two questions. Each question carries 10 marks) **(2x10=20 marks)**

27. a) Write down the rules for determining oxidation number of an element in a molecule or ion based on oxidation number concept.   (3 Marks)

    b) Find the oxidation number of chlorine in each of the following

    (1) HCl   (2) $HClO_3$ (3) Cl_2O_7 (4) $HClO_4$ (4 Marks)

    c) In what mass of water should 18g of glucose ($C_6H_{12}O_6$) be dissolved to get its 0.01 molal solution.   (3 Marks)

28. a) Explain Born-Haber cycle taking NaCl as example.   (5 Marks)

    b) The enthalpy of formation of NaCl, enthalpy of sublimation of Na, first ionization energy of Cl_2 and electrn affinity of Cl are respectively – 410, 109, 495, 240 and -349 $Kjmol^{-1}$. Calculate the lattice energy of sodium chloride using Born-Haber Cycle.   (5 Marks)

29. a) Explain the principle of radio carbon dating   (5Marks)

    b) The activity of C-14 in an old sample of wood is found to be one-fourth of that in a fresh piece of wood. Calculate the age of the wood, if the half-life period of C-14 is 5730 years.

                    (5 Marks)

30. a) Explain 'Sodium – potassium' pump.   (5 Marks)

    b) How does the solubility product and common ion effect are applied in inorganic qualitative analysis   (5 Marks)

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