**19U123A** (Pages: 2) Name: …………………….

Reg. No………...………….

### FIRST SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2019
(Supplementary/Improvement)
(CUCBCSS-UG)
**CC15U CHE1 C01 - GENERAL CHEMISTRY**
(Chemistry - Complementary Course)
(2015 to 2018 Admissions)

Time: Three Hours                                                             Maximum: 64 Marks

### SECTION – A
Answer *all* questions. Each question carries 1 mark.

1. Frequency of electromagnetic radiation is inversely proportional to _____

2. _____ proposed the law of conservation of mass.

3. Ionic radius _____ along a period for isoelectronic ions.

4. Ostwald's process is used for the manufacture of _____

5. The volume occupied by 1 mole a substance at standard T and P is called _____

6. All cations are considered as _____ by Lewis theory.

7. EDTA is normally used in _____ titrations.

8. The stability of half filled or completely filled orbitals are _____ than other incompletely filled orbitals.

9. $H_2O$ is a liquid while $H_2S$ is a gas at room temperature, why?

10. The biochemical name of Vitamin $B_{12}$ is _____

**(10 x 1 = 10 Marks)**

### SECTION – B
Answer any *seven* questions. Each question carries 2 marks.

11. What are the major objectives of alchemists?

12. Using VSEPR theory explain the shape at $Becl_2$ molecule.

13. 15 g of urea dissolved in water gave 1 L of the solution. Calculate the molality of the solution. Density of the solution is 1.2 g/mL (Urea: $NH_2$–CO–$NH_2$).

14. Explain the Lewis theory of covalent bond with an example.

15. Define hybridization and explain the shape of methane molecule.

16. Explain group displacement law with an example.

17. What is the principle of a breader reactor?

18. What is the role of haemoglobin in $O_2$ and $CO_2$ transport in human beings?

19. Differentiate σ–bonds π–bond. Justify your answer for more stability of σ–bond.

20. Explain common ion effect with a suitable example.

**(7 x 2 = 14 Marks)**

## SECTION – C

Answer any *four* questions. Each question carries 5 marks.

21. What are the unusual properties of water? Give the reason for it.

22. Differentiate between bonding and antibonding molecular orbitals.

23. What are quantum numbers? What are the significance of different quantum numbers?

24. Write down the postulates of Bohr's atomic theory?

25. Explain double burette titration. What are its advantages over convetional method?

26. Define electronegativity. How does it varies along a group and a period?

**(4 x 5 = 20 Marks)**

## SECTION – D

Answer any *two* questions. Each question carries 10 marks.

27. Explain the salient features of long form of periodic table. What are its merits and demerits?

28. Describe various theories of acids and bases with suitable examples. Write the advantages and limitations of each theory.

29. Explain lattice energy with suitable example. Explain Born–Haber cycle and its application in lattice energy determinations

30. a) Write the characteristics of different types of radioactive rays.

    b) What is Sodium–Potassium pump? Explain the mechanism using schematic representation.

**(2 x 10 = 20 Marks)**

*******