19U122 (Pages: 2) Name: …….

Reg. No……...……

FIRST SEMESTER B.Sc. DEGREE EXAMINATION, NOVEMBER 2019

(CBCSS UG)

CC19U CHE1 B01 - THEORETICAL AND INORGANIC CHEMISTRY - I

(Chemistry - Core Course)

(2019 Admissions - Regular)

Time: Two Hours Maximum: 60 Marks

Credit: 2

SECTION A (Short answers)

Each question caries 2 marks.

1. What are the main objectives of scientific research?
2. How many significance figures are there in each of the following values?
   a) 6800 ml b) 0.0092 g
3. What are isotones? Exemplify.
4. Name the important components of a research project report.
5. Explain the term precision with regards to analytical data.
6. Explain equivalent mass of an oxidizing agent with a suitable example.
7. How is endpoint detected in permanganometry? Why?
8. Why does F have a lower electron affinity than Cl?
9. What are the pictograms (laboratory signs) depicting the following?
   a) Radio activity hazard b) Compressed gas alert
10. What is the use of EDTA in volumetric analysis?
11. Define electron affinity.
12. What is meant by polarizability of anions? What are two important factors upon which it depends?

(Ceiling 20 Marks)

SECTION B (Paragraph Type)

Each question caries 5 marks.

13. A radioactive isotope decays at such a rate that after 50 minutes, only 10% of its initial amount remains. Calculate its decay constant and half-life.
14. Distinguish between the terms electronegativity and electron affinity. Explain variation of these properties along a period.
15. Write a note on radioisotopes as tracers.
16. Explain Lux-Flood concept of acids and bases.
17. Explain in detail a method for the manufacture of sulphuric acid in industry.

18. State the HSAB principle. Explain two of its applications.
19. Explain the principle of radiocarbon dating technique.

(Ceiling 30 Marks)

SECTION C (Essay Type)

Answer any ***one*** question. The question carries 10 marks.

20. (a) Write the structural formulae of four oxo acids of chlorine and draw structure of each compound.

    (b) Arrange the above in the increasing order of acid strength and explain the variation.

21. What is Born-Haber Cycle? Discuss with respect to NaCl.

(1 x 10 = 10 Marks)

****