21I108 (Pages: 2) Name: ……..

Reg. No……...…….

FIRST SEMESTER M.Sc. INTEGRATED GEOLOGY DEGREE EXAMINATION, NOV. 2021

(CBCSS-UG)

(Regular/Supplementary/Improvement)

CC19I CHE1 C01 - GENERAL CHEMISTRY

(Chemistry - Complementary Course)

(2020 Admission onwards)

Time: 2 ½ Hours Maximum: 80 Marks

Credit: 4

PART A

Answer ***all*** questions. Each question carries 2 marks.

1. What are intensive properties? Give two examples.
2. Define the term root mean square velocity of a gas.
3. What is meant by reverse Osmosis?
4. State Heisenberg's Uncertainty principle.
5. Define Normality of a solution.
6. Explain the term Accuracy.
7. Define Lewis base. Give an example.
8. State and explain Henry's law.
9. What are the ***n, l*** and ***m*** values for an electron in the $2p_z$ orbital?
10. What is meant by common ion effect?
11. What are the essential requirements for a primary standard?
12. What are strong electrolytes? Give two examples.

(Ceiling: 20 Marks)

PART B

Answer ***all*** questions. Each question carries 5 marks**.**

13. Explain the term spontaneous process and non-spontaneous process.
14. State and explain the law of rational Indices.
15. Discuss sp^3d^2 hybridisation using one example.
16. Explain Born Haber cycle.
17. What are the advantages of double burette method of titration over the conventional single burette method?
18. Describe the standard Hydrogen electrode.
19. Write a note on EDTA titrations.
20. Draw the Molecular orbital diagram for N_2 and calculate its bond order.

21. What are the geometries of a. XeF_2 b. XeF_4 and c. XeF_6
22. Explain why water exhibits capillary rise while mercury exhibits capillary Fall.

(Ceiling: 40 Marks)

PART C

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

23. Discuss the theory of acid-base indicators.
24. What are quantum numbers? Discuss the significance of each quantum number.
25. What are Fuel cells? Give a typical example and explain its function. What are the advantages of fuel cells over conventional energy producing methods?
26. Discuss the different kinds of non-stochiometric defects found in crystals.

(2 × 10 = 20 Marks)

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