

22U161

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Name:

Reg. No.....

FIRST SEMESTER M.Sc. INTEGRATED GEOLOGY DEGREE EXAMINATION, NOV. 2022

(CBCSS-UG)

(Regular/Supplementary/Improvement)

CC20 CHE1 IC01 - 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 is meant by the term molar mass?
2. Define the term equivalent mass of an acid. How is equivalent mass of an acid related to its molecular mass?
3. Write the balanced chemical equation of the redox titration of potassium dichromate and ferrous sulphate.
4. Calculate the energy associated with a photon of light having wavelength 6000\AA .
5. Write all the possible values of l if $n=4$.
6. Define hyperconjugation.
7. Draw the resonance structures of aniline.
8. Define heat capacity.
9. Define enthalpy.
10. What are crystal planes?
11. What is meant by space lattice?
12. State and explain Boyle-van't Hoff law for solutions.
13. What is meant by reverse osmosis?
14. Define conductivity (specific conductance) of an electrolyte solution. What are its units?
15. What is meant by a reversible cell? Give an example.

(Ceiling: 25 Marks)

PART B

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

16. Explain electronic concept of oxidation and reduction.
17. Derive the de Broglie relation.
18. State the principles relevant in the filling up of atomic orbitals.
19. Bring out the distinguishing features of inductive effect and electrometric effect.

20. What is meant by spontaneous process? Explain the criteria for spontaneity and equilibrium in terms of Gibbs energy change.
21. What are the laws of crystallography?
22. Explain how reverse osmosis is applied in desalination of sea water.
23. Explain the principle of conductometric titrations with a suitable example. What are the advantages of the method?

(Ceiling: 35 Marks)

PART C

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

24. Discuss the theory of acid base indicators.
25. Write down the Born-Haber cycle for BaCl_2 , what are the applications of Born Haber cycle?
26. Write a note on defects in ionic crystals.
27. (a) What are buffer solutions?
(b) Explain the term 'buffer action'.
(c) Give an example each for two types of buffer solutions and explain the action of each.
(d) Explain the significance of buffer solutions.

(2 × 10 = 20 Marks)
