First Year B.Sc. Degree Examination
August/September 2010
Directorate of Correspondence Course

(Freshers)

CHEMISTRY

Paper-I: Chemistry

Time: 3 hrs]   [Max.Marks: 85

Note: 1) *This paper consists of Four sections. Answer all sections.*

2) *Write equations and neat diagrams wherever necessary.*

SECTION - A

I.   *Answer in a word, phrase or a sentence :*   10 X 1 = 10 Marks

1.   What is Aufbau principle?

2.   What is carbocation?

3.   Define critical temperature.

4.   Define Electron affinity.

5.   What is annealing?

6.   What is gel?

7.   State Markownikoff's rule.

8.   What is empirical formula?

9.   State Raoult's law.

10.   Give the mathematical expression of Heisenberg's uncertainty principle.

SECTION - B

II.   *Answer any FIVE of the following :*   5 X 3 = 15 Marks

11.   How is glass manufactured by Tank furnace method?

12.   Explain all the four quantum numbers.

13.   Explain Berkeley and Hartley's method for determining the osmotic pressure of a dilute solution.

14.   Explain the function of adsorption indicators by taking the titration of Nacl solution with A_gNO_3 solution using sodium salt of fluorescein as indicator.

15.   Discuss the sp hybridization of carbon in acetylene.

16.   How are cycloalkanes prepared by the following methods?

      i) Freund's Method   ii) Dieck mann's method.

17. Give the mechanism of Peroxide effect.

SECTION - C

III.   *Answer any FIVE of the following :*   5 X 6 = 30 Marks

18. a) Explain Bayer Strain theory.   4 Marks

    b) Explain Wurtz reaction.   2 Marks

19. How is nitrogen estimated by Kjeldahl's method?   6 Marks

20. Define the following terms.

    i) Gold number   ii) Flocculation value   iii) Electro osmosis
    iv) Molal elevation constant   v) Vapour pressure of a liquid   vi) Inductive effect
                                                          6 Marks

21. a) Explain the mechanism of Friedel Craft's alkylation of benzene.   3 Marks

    b) Explain P.V. isotherms of CO_2 (Andrews Curves)   3 Marks

22. a) Explain the mechanism of chlorination of Methane.   3 Marks

    b) Describe the Carius method of estimation of sulphur in an organic compound.
                                                           3 Marks

23. a) Derive Langumir's adsorption isotherm.   4 Marks

    b) A solution of an organic compound containing 18g/litre has an osmotic pressure of 2.39 atmospheres at 23^0C. Calculate the molecular weight of organic compound.   2 Marks

24. a) How is molecular weight of non volatile solute determined by Beckmann's method?   4 Marks

    b) Explain Translatory degree of freedom of motion.   2 Marks

SECTION – D

IV.   *Answer any THREE of the following :*   3 X 10 = 30 Marks

25. a) What is ionization energy? Explain the factors influencing ionization energy.
                                                              4 Marks

    b) What is biogas? Explain the production of biogas.   4 Marks

    c) Give the characteristics of Good paint.   2 Marks

26. a) Explain the experimental determination of critical constants.   4 Marks

    b) Explain the solubility of partially miscible liquids by taking Phenol-water system.
                                                             4 Marks

    c) Give the limitation of distribution law.   2 Marks

27. a) Discuss about Desilverisation of lead.   2 Marks

    b) Describe the Henry's law with its merits and demerits.   4 Marks

    c) Explain:

        i) Van't HOff Boyle's Law.
        ii) Van't HOff Charles Law.   4 Marks

28. a) Explain the acidic character of acetylene.   3 Marks

    b) Give the mechanism of SN^1 reaction.   4 Marks

    c) Derive the relation between molar mass of a non-volatile solute and elevation in boiling point of solution.   4 Marks

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