LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – MATHEMATICS & PHYSICS

THIRD SEMESTER – NOVEMBER 2009

CH 3202 / 3200 - ADV. GENERAL CHEMISTRY FOR PHYS.& MATHS

Date & Time: 13/11/2009 / 9:00 - 12:00   Dept. No.   Max. : 100 Marks

PART A

Answer all the questions   10 x 2 = 20

1. Define chromophore.
2. How is furan converted to pyrrole?
3. What is the product obtained by the nitration of thiophene?
4. Write the structure of DDT.
5. What C-terminal of an amino acid in a protein?
6. How will you detect the presence of hydrogen bond in a system?
7. Why is ethanol soluble in water?
8. Account for the solubility of common salt in water.
9. How does the dilution effect specific conductance and molar conductance?
10. The molar ionic conductance at infinite dilution of silver ions is 61.85×10^{-4} Sm^2mol^{-1} at 25°C. Calculate the ionic mobility of silver ions.

PART B

Answer any eight questions   8 x 5 = 40

11. How is anthracene prepared by Haworth synthesis?
12. Explain the classification of dyes based on the mode of dyeing.
13. Discuss the importance of primary structure of proteins.
14. What are the types of soils? Explain.
15. Briefly discuss the different enzyme models and discuss the enzyme activity.
16. Explain the role of macro nutrients in agriculture.
17. Account for the following:

    i) The density of ice is lesser than that of liquid water

    ii) Molecular weight determination of acetic acid shows dimerisation.
18. Explain the different types of hydrogen bonding with suitable examples.

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19. The enthalpy of neutralization of every strong acid by a strong base is identical - Explain.

20. What is saturated calomel electrode? Explain the reaction involved in the electrode.

21. Explain the determination of lattice energy.

22. Explain the use of radio isotopes in agriculture and industry.

PART C

Answer any four questions   4 x 10 = 40

23. a) How is N-terminal of an amino acid determined by Sanger's method?

    b) Explain the mechanism of halogenation of naphthalane.   (5+5)

24. How is the structure of glucose elucidated? Explain.

25. Explain any one method of preparation and two electrophilic aromatic substitution reactions of furan.

26. What is lanthanide contraction? How are lanthanides extracted by ion-exchange method?

27. a) How is a mixture of strong and weak acids titrated conductometrically against a strong base? Mention the advantages of conductometric titrations.

    b) How is K_{sp} determined?   (6+4)

28. a) How will you calculate the enthalpy of formation of C-H bond in methane?

    b) Write a note on renewable and non-renewable energy resources. (5+5)

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