

**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

**B.Sc. DEGREE EXAMINATION – MATHEMATICS & PHYSICS**

THIRD SEMESTER – NOVEMBER 2007

**CH 3202 - ADV. GENERAL CHEMISTRY FOR PHYS.& MATHS**

AD 5

Date : 05/11/2007  
Time : 9:00 - 12:00

Dept. No.

Max. : 100 Marks

**PART- A**

Answer **ALL** the questions

(10 x 2 = 20)

1. Boiling point of H<sub>2</sub>O is higher than H<sub>2</sub>S. Justify your answer.
2. How is o- and p-nitro phenol separated?
3. Draw the resonance structure of furan.
4. What is an antibiotic? Give an example
5. Define enthalpy of formation with an example.
6. State and explain Hess's law.
7. What are essential and non essential amino acids? Give an example.
8. What is absolute specificity? Give an example.
9. How will you prepare urea?
10. Draw the structure of 2,4,5-T and BHC.

**PART- B**

(8 x 5 = 40)

Answer any **EIGHT** questions.

11. Explain any one theory of hydrogen bonding with suitable examples.
12. What is lanthanide contraction? Give its causes and consequences.
13. What is electrophile in nitration of naphthalene? Write the mechanism.
14. How will you prepare pyridine? Explain any one electrophilic substitution reaction in pyridine
15. Discuss the preparation of Congo red dye.
16. Derive and explain Kirchoff's equation.
17. Explain Kohlrausch's law with an example.
18. Define lattice energy. Discuss any two factors affecting lattice energy.
19. Explain non competitive inhibition with an example.
20. How is an amino acid prepared by Strecker synthesis?
21. Write a note on a) octane number b) nuclear fission.
22. Explain the role of macro and micronutrients in agriculture.

**PART- C**

**(4 x 10 = 40)**

Answer any **FOUR** questions.

23. a) Suggest and explain the suitable method for the separation of lanthanides. (6)  
b) How is sulphanilimide prepared? (4)
24. Explain the theories involved in colour and constitution of dy
25. How is conductometric titration helpful for acid-base titrations?
26. Draw and explain a) calomel electrode b) standard hydrogen electrode. (5+5)
27. a) Explain the formation of  $\alpha$  and  $\beta$  anomers of glucose. (5)  
b) Discuss the secondary structure of proteins. (5)
28. a) What are the steps involved in the peptide synthesis? Explain with a suitable example. (5)  
b) How will you prepare the following  
(i) DDT (ii) super phosphate of lime. (5)

\*\*\*\*\*