



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

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

THIRD SEMESTER – NOVEMBER 2017

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

Date: 15-11-2017  
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

**Part-A**

*Answer ALL questions.*

**(10 × 2= 20)**

1. Why does water boil at high temperature than ethanol?
2. What are the oxidation states exhibited by lanthanides?
3. What are natural dyes? Give an example.
4. Write the nitration of naphthalene.
5. Define heat of combustion.
6. Define lattice energy.
7. Write the products of acid catalyzed hydrolysis of maltose.
8. What is polypeptide bond?
9. Mention the role of macro nutrients.
10. Draw the structure of 2,4-dichlorophenoxyacetic acid. Mention its uses.

**Part-B**

*Answer any EIGHT questions.*

**(8 × 5= 40)**

11. Write the causes and consequences of lanthanide contraction.
12. Explain the hydrogen bonding involved in ortho- and para-nitrophenols.
13. How is aspirin synthesized? Mention its uses.
14. How is naphthalene synthesized?
15. Write any two methods for the preparation of pyridine.
16. State and explain Kohlrausch's law.
17. How is lattice energy of NaCl crystal obtained using Born-Haber cycle?
18. Explain the working principle of a secondary reference electrode.
19. Discuss the secondary structure of protein.
20. How are enzymes classified?
21. Give a brief description of fractional distillation of petroleum.
22. How is urea manufactured in industry?

### Part-C

Answer any **FOUR** questions.

(4 × 10= 40)

23. How are lanthanides separated by ion exchange method?
- 24a. How is sulphanilimide synthesized? (5)
- b. Predict the product of halogenation of anthracene. (5)
- 25a. What are chromophores and auxochromes? Give an example each. (5)
- b. Derive Kirchoff's equation. (5)
- 26 a. Explain the principle of conductometric titration of strong acid-strong base. (5)
- b. Define a) Hess's law b) bond enthalpy. (5)
- 27a. Explain the Emil Fischer mechanism of enzymes. (5)
- b. How is N-terminal sequence of an amino acid determined? (5)
- 28 a. Explain nuclear fusion reaction. (5)
- b. What are pesticides? Draw the structures of DDT and BHC. (5)

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