



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

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

**THIRD SEMESTER – NOVEMBER 2016**

**CH 3202 – ADVANCED GENERAL CHEMISTRY FOR PHYS. & MATHS**

Date: 10-11-2016

Dept. No.

Max. : 100 Marks

Time: 09:00-12:00

**Part-A**

**Answer ALL questions.**

**(10 × 2= 20)**

1. Identify the intermolecular force present between ethanol and water.
2. How is ionic radius measured?
3. What is mordant? Give an example.
4. Write the nitration reaction of naphthalene.
5. What is heat of combustion?
6. Define lattice energy.
7. What are disaccharides? Give an example.
8. What is polypeptide bond?
9. Draw the structure of BHC. Mention its uses.
10. Write the role of macro nutrients.

**Part-B**

**Answer any EIGHT questions.**

**(8 × 5= 40)**

11. Explain inter and intra molecular hydrogen bonding with suitable examples.
12. Discuss lanthanide contraction giving causes and its consequences.
13. Write the product formed for the halogenation and sulphonation reactions of anthracene.
14. How is naphthalene synthesized?
15. Write any two methods for the preparation of pyridine.
16. Derive Kirchoff's equation.
17. Explain Born-Haber cycle.
18. Describe the working principle of standard hydrogen electrode.
19. Discuss the primary structure of protein.
20. How are enzymes classified?
21. Give a brief description on fractional distillation of petroleum.
22. Explain nuclear fission reaction.

**Part-C**

**Answer any FOUR questions.**

**(4 × 10= 40)**

23. How are lanthanides separated by ion exchange method?
- 24a. Discuss the structure of the following a) Penicillin b) Sulfadiazine. (5)
- b. How is aspirin synthesized? Mention its uses. (5)
- 25a. What are chromophores and auxochromes? Give examples for each. (5)
- b. State and explain Kohlrausch's law. (5)
- 26a. How is  $K_a$  calculated from conductance measurements? (5)
- b. State and explain Hess's law of constant heat summation. (5)
- 27a. What are the factors affecting enzyme reaction? (5)
- b. How is N-terminal amino acid of a protein determined by Sanger's method? (5)
- 28a. Distinguish between thermal and catalytic cracking. (5)
- b. Briefly describe the manufacture of urea. (5)

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