LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

THIRD SEMESTER – **NOVEMBER 2012**

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

Date : 09/11/2012 Dept. No. Max. : 100 Marks

Time : 9:00 - 12:00

**PART-A**

***Answer ALL questions*: (10 × 2 = 20)**

1. Mention any two methods to detect hydrogen bonding.

2. Account for “Water having low molecular weight boils at a high temperature than ethyl alcohol”

3. Write the Reimer-Tiemann reaction of pyrrole.

4. Give a method for the preparation of furan.

5. Write the mathematical equation of first law of thermodynamics. Mention the terms involved.

6. Define lattice energy.

7. Draw the structure fructose.

8. What is polypeptide bond?

9. Draw the structure of BHC. Mention its uses.

10. List any two uses of radioisotopes.

**PART-B**

***Answer any EIGHT questions*: (8 × 5 = 40)**

11. o-nitro phenol is steam volatile and the para isomer is not volatile. Explain.

12. a) Give reason “Ethanoic acid in benzene have a relative molecular mass twice as

large as expected” (3)

b) Why does ice float? (2)

13. How is malachite green prepared? Give its uses.

14. Explain the Haworth’s synthesis of naphthalene.

15. Write any three methods for the preparation of pyridine?

16. Derive Kirchoff’s equation.

17. Describe the working principle of Calomel electrode.

18. Define the following with an example

a) heat of formation b) neutralization

19. How are enzymes classified?

20. Discuss the secondary structure of protein.

21. Discuss the following:

a) thermal cracking b) catalytic cracking

22. Explain nuclear fission reaction.

**PART-C**

***Answer any FOUR questions*: (4 × 10 = 40)**

23. a) Write the consequences of lanthanide contraction. (6)

b) Explain the different types of hydrogen bonding with suitable examples. (4)

24. a) Give any two methods of synthesis of pyrrole. (5)

b) What are chromophore and auxochromes? Give examples for each. (5)

25. a )Write the chlorination and nitration reaction of anthracene. (5)

b)State and explain Kohlrausch’s law. (5)

26. a) Explain Born-Haber cycle with an example. (5)

b) Explain strong acid-weak base titration by conductometric method. (5)

27.a) What are the factors affecting enzyme reaction? (5)

b) Explain the lock and key mechanism of enzymes. (5)

28. a) Give a brief description on fractional distillation of petroleum. (5)

b)Write short notes on renewable energy. (5)

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