



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

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

**SECOND SEMESTER – APRIL 2014**

**CH 2102/2100 - GENERAL CHEMISTRY FOR PHYSICS & MATHS**

Date : 07/04/2014

Dept. No.

Max. : 100 Marks

Time : 09:00-12:00

**Part-A**

**Answer all the questions. Each carries two marks.**

1. Write the general electronic configuration of transition elements.
2. Mention the uses of coordination compounds in qualitative and quantitative analysis.
3. Arrange the following acids in the increasing order of acidity.  
 $\text{CH}_2\text{ClCOOH}$ ,  $\text{CH}_3\text{COOH}$ ,  $\text{CCl}_3\text{COOH}$ , and  $\text{CHCl}_2\text{COOH}$
4. Draw the geometrical isomers of the following.  
 $\text{C}_6\text{H}_5\text{CH}=\text{CH}-\text{COOH}$  and  $\text{HOOC}-\text{CH}=\text{CH}-\text{COOH}$
5. State Raoult's law.
6. Write any two differences between order and molecularity of a reaction.
7. Name any two disease associated with abnormal metabolism of Thyroxin.
8. What is replication of DNA?
9. Draw the structure of vulcanized rubber.
10. Write the molecular formula of rust.

**Part-B**

**Answer any eight questions. Each carries five marks.**

11. Explain the optical isomerism exhibited by octahedral complexes with examples.
12. Mention the structure and functions of Chlorophyll.
13. Discuss the Werner's theory of coordination compounds.
14. Distinguish between maleic acid and fumaric acid.
15. Explain the  $\text{S}_{\text{N}}1$  mechanism with an example.
16. Explain the vapour-pressure composition diagram of phenol-water system.
17. Explain the differences between thermal and photochemical reactions.
18. Explain the concept of energy of activation and Arrhenius equation.
19. Mention the applications of genetic engineering.
20. List the functions of adrenaline.
21. How are polymers classified? Give examples?
22. How are PVC and PET manufactured?

**Part-C**

**Answer any four questions. Each carries ten marks.**

- 23a. What are ligands? How are they classified? Give examples for each type. (5)  
b. Predict the hybridization, shape and magnetic nature  $[\text{CoF}_6]^{3-}$  and  $[\text{Ni}(\text{CN})_4]^{2-}$  the basis of VB Theory. (5)
- 24a. Discuss in detail the conformational isomerism in cyclohexane. (5)  
b. Explain the mechanism of  $\text{E}_2$  reaction with a suitable example. (5)
- 25a. Write the differences between natural rubber and synthetic rubber. (5)  
b. What is corrosion? How is it classified and prevented? (5)
26. Explain the mechanism of the following electrophilic substitution reactions on benzene:  
(a) Nitration and (b) Friedel Crafts acylation. (5 + 5)
- 27a. How is pH of a solution determined using glass electrode? (5)  
b. How is nickel estimated by spectrophotocalorimetry? (5)
- 28a. Explain the structure of DNA. (5)

b. Write a note on the constitution and functions of oxytocin.

(5)