



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

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

**SECOND SEMESTER – APRIL 2016**

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

Date: 26-04-2016

Dept. No.

Max. : 100 Marks

Time: 01:00-04:00

**Part-A**

*Answer ALL questions.*

**(10 x 2= 20)**

1. Why the expected and actual configurations of Cr and Cu differ?
2. Draw the structure of EDTA.
3. Methyl amine is a stronger base than ammonia – Justify.
4. What are enantiomers? Cite an example.
5. Distinguish between homogeneous and heterogeneous catalysis.
6. State Grotthuss-Draper law of photochemistry.
7. Draw the structure of Adenosine nucleotide.
8. Write the functions of various types of RNA.
9. What are step and chain growth polymers?
10. What is galvanisation? Mention its significance.

**Part-B**

*Answer any EIGHT questions.*

**(8 x 5= 40)**

11. Calculate the EAN and predict whether the following complexes are stable or not.  
(a)  $[\text{Fe}(\text{CN})_6]^{3-}$  (b)  $[\text{Ni}(\text{CO})_4]$
12. Discuss the structure and functions of haemoglobin.
13. Write the postulates of Werner's theory of coordination complexes.
14. Explain the mechanism for the nitration of benzene.
15. Describe the optical isomerism of lactic acid.
16. Derive the rate constant expression for a first order reaction.
17. Compare the thermal and photochemical reactions with suitable examples.
18. State Raoult's law. Discuss the positive deviations of real solutions from their ideal behaviour.
19. Write the applications and possible risks of genetic engineering.
20. Draw the structure and functions of thyroxin.
21. Explain the classification of polymers with relevant examples.
22. How do the following polymers prepared? Give any two uses of them.  
(a) Buna-S (b) Bakelite

**Part-C**

*Answer any FOUR questions.*

**(4 x 10= 40)**

- 23.a. Predict the structure and magnetic property of  $[\text{CoF}_6]^{3-}$  using valence bond theory. (5)  
b. Discuss the geometrical isomerism exhibited by complexes with square planar geometry. (5)
- 24.a. Explain the mechanism of  $\text{S}_{\text{N}}2$  reactions of alkyl halides. (6)  
b. Draw the structures of maleic and fumaric acids and explain any two methods to differentiate them. (4)
25. State the phase rule and explain how it can be applied to one component system. (4)
26. a. Define (a) photosensitisation and (b) quantum yield (4)  
b. Differentiate order and molecularity of a reaction with relevant examples. (6)
27. Discuss the structure of DNA on the basis of Watson - Crick Model. (5)
- 28.a. Explain the electrochemical mechanism of corrosion. (5)  
b. Write a note on vulcanisation of rubber. (5)

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