



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – MATHEMATICS & PHYSICS

SECOND SEMESTER – APRIL 2015

CH 2104 - GENERAL CHEMISTRY FOR MATHS & PHYSICS

Date : 20/04/2015

Dept. No.

Max. : 100 Marks

Time : 01:00-04:00

Part-A

Answer all questions. Each question carries two marks:

(10x2=20)

1. Does the coordination complex $\text{Ni}(\text{CO})_4$ obey EAN rule?
2. Name any two metal chelates of biological importance.
3. What is inter molecular rearrangement reaction? Give an example.
4. Arrange the following in the increasing order of acidic strength.
 $\text{CH}_3\text{CHBrCOOH}$, $\text{CH}_3\text{CHF}_2\text{COOH}$, $\text{CH}_3\text{CHClCOOH}$, $\text{CH}_3\text{CH}_2\text{COOH}$
5. What are buffer solutions?
6. Give the rate constant expression and unit for first order reaction.
7. State Grotthuss – Drapper's law of photo chemical reaction.
8. Mention any two reasons for low quantum yield.
9. What is break point chlorination?
10. Name any two green house gases

Part-B

Answer any eight questions. Each question carries five marks:

(8x5=40)

11. Write down the differences between double salts and coordination compounds.
12. Describe the structure and functions of Chlorophyll.
13. What is inductive effect? Explain with suitable examples.
14. Describe optical isomerism in lactic acid.
15. Explain E1 elimination with an example.
16. Explain the construction and chemistry of calomel electrode.
17. Differentiate between galvanic and electrolytic cells.
18. How is order of a reaction determined by graphical method?
19. Write a note on photo sensitization reaction with an example.
20. Tabulate the differences between thermal and photo chemical reactions.
21. Explain the reverse osmosis process for the disinfection of drinking water.
22. Write the significance of BOD and COD values.

Part-C

Answer any four questions. Each question carries ten marks:

(4x10=40)

23. Using valence bond theory bring out the differences between the coordination complexes $[\text{Co}(\text{NH}_3)_6]^{3+}$ and $[\text{Fe}(\text{H}_2\text{O})_6]^{2+}$.
24. What are conformational isomers? Describe the conformational analysis of n-butane with potential energy diagram.
- 25a. What is a racemic mixture? Explain any two methods used to resolve them. (5)
- b. Discuss the methods of preventing corrosion. (5)
26. Derive Nernst Equation.
- 27a. Define quantum yield. Write a note on high quantum yield with examples. (7)
- b. Mention any five specifications for drinking water. (3)
- 28a. How will you estimate the hardness of water by EDTA method? (6)
- b. Explain the causes and effects of acid rain. (4)
