LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

SECOND SEMESTER – NOVEMBER 2016

CH 2104 - GENERAL CHEMISTRY FOR MATHS & PHYSICS

Date: 15-11-2016 Dept. No. Max. : 100 Marks
Time: 01:00-04:00

Part-A

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

1. State the differences between double salts and coordination compounds.
2. Write the biological importance of haemoglobin.
3. Write the conditions for a compound to be optically active.
4. What is intramolecular rearrangement reaction? Cite an example.
5. Write the differences between order and molecularity of a chemical reaction.
6. What is a buffer solution? Cite an example.
7. State Beer-Lambert's law.
8. Define 'quantum yield'.
9. What is break point chlorination?
10. Write any two significances of COD.

Part-B

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

11. Explain Werner's theory with suitable examples.
12. Describe the structure and functions of chlorophyll.
13. What is steric effect? Explain with suitable examples.
14. Write the mechanism of E1 reaction with an example.
15. Explain the optical isomerism in lactic acid.
16. Derive Nernst equation.
17. Discuss the construction of standard hydrogen electrode.
18. What are homogeneous catalysts? Explain with suitable examples.
19. Compare thermal and photochemical reactions.
20. What is photosensitization? Explain with examples.
21. How is water purified by ion exchange method?
22. Briefly discuss the effect of water pollution.

Part-C

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

23 a. Explain the Sidgwick's theory of coordination compounds. **(5)**

b. Explain the hybridization and structure of $[CoF_6]^{3-}$, paramagnetic complex using VB theory (atomic number of Co is 27). **(5)**

24. Explain S_N2 reaction mechanism with an example.

25 a. Discuss the stability of all possible conformers of ethane with energy profile diagram. **(5)**

b. Write the differences between galvanic and electrolytic cell. **(5)**

26. Derive an expression for the rate constant of a second order reaction of the type,

$2A \rightarrow$ Products.

27 a. How is the order of reaction determined by graphical method? **(5)**

b. State the Grotthus-Drapper and Einstein laws of photochemistry. **(5)**

28 a. What are disinfectants? Discuss the chlorination process. **(5)**

b. Explain the causes and effects of acid rain. **(5)**

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