



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

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

THIRD SEMESTER – APRIL 2018

**16UCH3AL01- GENERAL CHEMISTRY FOR PHYSICS-I**

Date: 03-05-2018  
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

**Part-A**

*Answer ALL questions.*

**(10 × 2 = 20)**

1. Give the IUPAC name of the following coordination compounds  
a)  $K_3 [Fe(CN)_6]$  b)  $[Cr(H_2O)_6]Cl_3$
2. Write any two functions of chlorophyll.
3. Arrange the following acids in the increasing order of their acidity. Justify your answer  
 $ClCH_2COOH$ ,  $CH_3COOH$ ,  $CCl_3COOH$ ,  $Cl_2CHCOOH$
4. Give the conformational isomers of ethane.
5. What is buffer solution? Cite an example.
6. State the differences between galvanic and electrolytic cell.
7. Write Arrhenius equation and mention the terms involved in it.
8. Define 'quantum yield'.
9. Differentiate temporary and permanent hardness of water.
10. Give an example for addition polymerization.

**Part-B**

*Answer any EIGHT questions.*

**(8 × 5 = 40)**

11. Discuss the crystal field splitting of d orbitals of metal in octahedral complexes.
12. Predict the hybridization and geometry to account for the magnetic property of  $[Fe(CN)_6]^{3-}$  using VB theory.
13. Give an example for each of the following reaction  
i) Addition reaction ii) Elimination reaction
14. Explain the mechanism of  $E_2$  reaction.
15. Discuss the optical isomerism in tartaric acid.
16. State and explain the Arrhenius and Lewis concept of acids and bases.

17. Derive Nernst equation.
18. Define order of the reaction. How is it determined by graphical method?
19. Compare thermal and photochemical reactions.
20. Write the differences between fluorescence and phosphorescence.
21. How is water purified by ion-exchange method?
22. Write a short note on vulcanization of rubber.

**Part-C**

*Answer any FOUR questions.*

**(4 × 10= 40)**

- 23.a. Describe the postulates of Werner's theory of coordination compounds. (5)
  - b. Explain the Sidgwick theory of coordination compounds. (5)
24. Discuss S<sub>N</sub>1 and S<sub>N</sub>2 reaction mechanism of alkyl halides.
- 25.a. Discuss the construction of standard calomel electrode. (5)
  - b. What is corrosion? How is it prevented? (5)
- 26.a. State Grotthus-Draper and Einstein's law of photochemical reaction. (5)
  - b. What is photosensitization? Explain with suitable examples. (5)
27. Derive the rate equation for a second order reaction of the type A+B → Product
28. How is the hardness of water estimated by EDTA method?

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