



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – MATHEMATICS & PHYSICS

SECOND SEMESTER – APRIL 2017

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

Date: 25-04-2017
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

Part-A

Answer ALL questions.

(10 x 2 = 20)

1. What are chelating ligands? Cite an example.
2. Why are the compounds of transition elements generally coloured?
3. Draw *cis* and *trans* isomers of 2-butene.
4. Why is aniline a weaker base than ammonia?
5. State Henry's law.
6. Write Arrhenius equation and mention the terms involved in it.
7. What is replication of DNA?
8. Draw the structure of thyroxine.
9. What is vulcanisation of rubber?
10. Differentiate thermoplastics from thermosetting plastics.

Part-B

Answer any EIGHT questions.

(8 x 5 = 40)

11. Write IUPAC name and calculate EAN for the following:
(i) $K_3[Cu(CN)_4]$ (ii) $[Cr(NH_3)_6]Cl_3$
12. Discuss the structure and function of chlorophyll.
13. Explain the geometrical isomerism exhibited by square planar complexes.
14. What is mesomeric effect? Explain its types.
15. Discuss the conformational isomerism in ethane.
16. Write the mechanism for nitration of benzene.
17. Compare thermal and photochemical reactions.
18. Discuss phenol-water system with a neat diagram.
19. What is RNA? Mention their types and functions.
20. Write a note on adrenaline and oxytocin.
21. Discuss the classification of high polymers.
22. How are the following synthesised? Mention their uses.
(i) PVC (ii) Buna-S

Part-C

Answer any FOUR questions.

(4 x 10= 40)

23 a. Discuss Werner's theory of coordination complexes.

b. Using valence bond theory, predict the hybridization, structure and magnetic property of $[\text{FeF}_6]^{3-}$

(5+5)

24. Differentiate $\text{S}_{\text{N}}1$ and $\text{S}_{\text{N}}2$ reaction mechanisms with suitable examples.

25a. Derive the expression for the rate constant of a first order reaction.

b. Explain how pH is determined using glass electrode?

(6+4)

26. State phase rule and apply it to water system.

27a. Mention any two applications and two possible risks of genetic engineering.

b. Explain the Watson and Crick model of DNA.

(4+6)

28a. Discuss any two methods of preventing corrosion.

b. What are step growth and chain growth polymers?

(5+5)

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