LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

SECONDSEMESTER – APRIL 2018

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

Date: 28-04-2018 Dept. No. Max. : 100 Marks
Time: 01:00-04:00

Part-A

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

1. Write the oxidation number of the metal, IUPAC name and coordination number of the complex, $K_3[Fe(CN)_6]$.
2. What is EDTA? Mention its application in quantitative analysis.
3. Write the resonance structure of aniline.
4. Draw the chair and boat conformers of cyclohexane.
5. Define quantum yield of a photochemical reaction.
6. What is meant by replication of DNA?
7. Define molecularity of a reaction.
8. Mention any two applications of genetic engineering.
9. What are thermoplastics? Cite an example.
10. How is Buna-S manufactured?

Part-B

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

11. Write the postulates of Werner's theory of coordination complexes.
12. Discuss the hybridization, shape and magnetic nature of $[Ni(CO)_4]$ using valence bond theory.
13. Draw the structure of heme group and mention the biological importance of hemoglobin.
14. Explain the mechanism of chlorination of benzene.
15. Discuss the conformational isomerism in butane.
16. What is inductive effect? Explain its types with suitable examples.
17. Derive the expression for the rate constant of a first order reaction.
18. Apply phase rule to triple point, one line and one area of water system.
19. Draw the structure of thyroxin and mention its functions.
20. Discuss the types of RNA and write their functions.
21. Explain the vulcanization of rubber.
22. Write the monomers and uses of the following polymers:
    (i) Bakelite (ii) neoprene (iii) PVC

Part-C

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

23a. Discuss the general properties of transition elements.

b. Explain the geometrical isomerism exhibited by square planar complexes. (5+5)

24a. Discuss the optical isomerism exhibited by lactic acid.

b. Explain S_N1 reaction mechanism with an example. (5+5)

25. Distinguish between the following with suitable examples.

(i) Homogeneous and heterogeneous catalysis

(ii) Thermal and photochemical reactions (5+5)

26a. State Raoult's law. Discuss the positive deviations of real solutions from their ideal behaviour.

b. Explain phenol-water system in detail. (6+4)

27. Discuss the structure of DNA on the basis of Watson - Crick Model.

28 a. Explain the classification of high polymers with relevant examples.

b. What is corrosion? How can it be prevented? (5+5)

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