LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

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

SECOND SEMESTER – **APRIL 2022**

UCH 2303 – CHEMISTRY FOR PHYSICS

(2019,2020 – BATCH ONLY)

Date: 27-06-2022 Dept. No. Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

Part-A

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

1. What do you mean by end-point in a titration?
2. Find the molarity of 0.156 N H_3PO_4 solution.
3. Mention the differences between a double salt and a coordination compound.
4. What is chelate effect?
5. State the Lewis concept of acids and bases.
6. Write the expression for ionic product of water and pK_a.
7. State Grotthuss-Draper law.
8. Differentiate electrolytic cell from electrochemical cell.
9. Define hardness of water.
10. Define a polymer.

Part-B

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

11. Write the prerequisites for a primary standard.
12. Illustrate the principles of volumetric analysis.
13. Find the molar concentration of HCl when 25 mL of the solution is titrated with 28 mL of 0.152 N NaOH solution.
14. Discuss the steps involved in the nomenclature of coordination compounds.
15. Explain the valence bond theory of coordination compounds.
16. Describe the impact of common ion effect in the dissociation of a weak acids and bases.
17. Compare and contrast primary and secondary batteries.
18. Derive the Beer-Lambert law.
19. Distinguish between thermo- and thermosetting plastics.
20. Discuss the factors affecting the rate of a reaction.
21. Write the preparation, properties and structure of polytetrafluoroethylene.
22. Explain the process and reactions involved in the demineralization of water.

Part-C

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

23. Explain the safety rules to be followed in storing chemicals and while doing experiments in the chemistry laboratory.
24. Discuss the Werner's theory of coordination compounds and its limitations.
25. Describe the working principle and cell reactions of Leclanché cell and Lithium ion battery with suitable diagrams.

26a. Derive the expression for rate constant of a first-order reaction.

b. Illustrate the photophysical processes using Jablonski diagram. (5+5)

27. Explain the different types of hardness of water and how they are estimated quantitatively.

28a. Write a note on importance of photosensitization in photosynthesis.

b. Mention the BIS specifications of drinking water. (5+5)

########