

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



**U.G. DEGREE EXAMINATION – ALLIED**

**THIRD SEMESTER – APRIL 2022**

**UCH 3401 – APPLIED CHEMISTRY FOR PHYSICS**

Date: 21-06-2022

Dept. No.

Max. : 100 Marks

Time: 01:00 PM - 04:00 PM

**PART-A**

**Answer ALL the questions:**

**(10 x 2 = 20)**

1. State Meissner effect.
2. What are Cooper pairs?
3. Sketch the thermogram of  $\text{AgNO}_3$ .
4. Give the difference between thermo-analytical techniques and analytical techniques.
5. State Gibbs Phase rule.
6. Calculate the number of components of  $\text{NaCl(s)}$ ,  $\text{KCl(s)}$ ,  $\text{Na}^+(\text{aq})$ ,  $\text{Cl}^-(\text{aq})$ ,  $\text{H}_2\text{O(l)}$ ,  $\text{H}_2\text{O(g)}$ .
7. How will you modify corrosion environment?
8. What is corrosion? Cite examples.
9. Mention the different types of lipids.
10. Define Iodine value.

**PART-B**

**Answer ANY EIGHT questions:**

**(8 x 5 = 40)**

11. Enlist any five applications of superconducting materials.
12. Write a short note on Non-linear optics.
13. Give any five differences between nematic and smectic liquid crystals.
14. Sketch and explain the DTG curve of  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O}$ .
15. Discuss the factors influencing the thermogravimetric curve.
16. Derive Gibb's phase rule thermodynamically.
17. Explain the phase diagram of Water system with a neat sketch.
18. Compare cathodic and anodic protection of corrosion.
19. Discuss the various types of corrosion with suitable examples.
20. Differentiate reducing and non-reducing sugars.
21. What are essential and non-essential amino acids? Cite examples.
22. Define iodine value of oil. How is it determined?

**PART-C**

**Answer ANY FOUR questions:**

**(4 x 10 = 40)**

23. What are liquid crystals? Explain about the classification of liquid crystals with suitable examples.
24. Define superconductivity? Explain about the BCS theory of superconductivity in detail.
25. Explain briefly the principle and instrumentation of TGA.
26. What is eutectic mixture? Sketch and explain the phase diagram of lead-silver system.
27. Elaborate the various types of conditioning the corrosive environment.
28. Describe any three tests with relevant equations to identify the presence of carbohydrates.

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