



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – CHEMISTRY

SIXTH SEMESTER – APRIL 2015

CH 6614 - CHEMISTRY OF MATERIALS

Date : 20/04/2015
Time : 09:00-12:00

Dept. No.

Max. : 100 Marks

PART-A

Answer **ALL** Questions:

(10x2=20 marks)

1. Define the term 'unit cell'.
2. Draw the structure of CsCl.
3. Write the essential differences between TGA and DTA.
4. What is SEM? Mention its uses.
5. What are point defects?
6. What are organic semiconductors? Give an example.
7. What is magnetic permeability?
8. Define Neel temperature.
9. Define the term superconductivity.
10. What are liquid crystals? Give its types.

PART-B

Answer any **EIGHT** Questions:

(8x5=40 marks)

11. What are radius ratio rules? Explain them briefly.
12. a) List out the differences between amorphous and crystalline substances.
b) Define the term Bravais lattice.
13. Write a note on spinels.
14. Explain the basic principle and procedure involved in zone refining method.
15. Explain how DTA is useful in crystallographic studies?
16. Explain the variation of conductivity with respect to temperature?
17. Write a note on solar energy conversion.
18. What are ferroelectric materials? Mention their applications.
19. How will you determine the magnetic susceptibility of a substance using Guoy method?
20. What are permanent and temporary magnets? Write the differences between them.
21. What are high energy batteries? Give their advantages over other batteries.
22. Write the various applications of semiconducting materials.

PART-C

Answer any **FOUR** Questions:

(4x10=40 marks)

23. a) Explain how X-rays are useful in the determination of structure of NaCl?
b) Write the Bragg's equation and explain the various terms involved in it.
24. a) Draw and explain the structure of Zinc blende.
b) Write a note on photoluminescence.
25. Explain the basic principle, working procedure and the applications of the TGA.
26. Write notes on intrinsic and extrinsic semi conduction.
27. What are magnetic properties? Explain their classification with suitable examples.
28. Write short notes on the following:
a) Cooper pairs b) Chevrel phase.

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