LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **CHEMISTRY**

SIXTH SEMESTER – **APRIL 2019**

CH 6614– CHEMISTRY OF MATERIALS

Date: 08-04-2019 Dept. No. Max. : 100 Marks

Time: 09:00-12:00

PART -A

Answer ALL the questions **(10 x 2 =20 marks)**

1. Define Body centered cubic unit cell
2. What are the applications of ferroelectric materials?
3. What is the coordination number of Zn in Zinc blende and Wurtzitestructure.
4. What is Zone refining?
5. Give the uses of VSM analysis
6. Explain P type Semiconductor with an example.
7. What is Curie temperature?
8. Comment on the magnetic property of $[Cu(NH_3)_4]^{2+}$
9. What are Lithium cells?
10. What is Meissner effect?

PART–B

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

11. Explain the Limiting radius rules? How is it used to determine the geometry of a crystal? Give examples.
12. Discuss the spinel and inverse spinel structure of ferrites
13. Explain n and p type semiconductors with a suitable example each.
14. Explain the sol-gel and CVD method of nanomaterial synthesis
15. With a neat diagram explain solar energy conversion
16. Explain the following (i) piezoelectric (ii) pyroelectric
17. Discuss Bardeu Cooper and Schuffer theory of super conductivity.
18. Enlist the application of superconducting materials.
19. Discuss the working of a Photogalvanic cell
20. Explain the working principle of DTA .Give its applications.
21. What is SEM analysis? How is it used to study the surface morphology of the given composite?
22. Distinguish between a permanent and temporary magnet with a suitable example.

PART– C

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

23. What are liquid crystals? Discuss the types and mention its applications.

24. Discuss the Schottky and Frenkel defects in crystals.

25. How is magnetic susceptibility of a substance determined by the Guoy's method?

26. a) Explain the principle and applications of TGA.

b) Explain the working of a lithium battery.

27. How is X-ray powder method useful in determining the structure of NaCl?

28. Write briefly on the following

a) organic semiconductors b) Meissner effect

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