

DEPARTMENT OF PHYSICS AND NANOTECHNOLOGY
FACULTY OF ENGINEERING AND TECHNOLOGY
SRM UNIVERSITY, KATTANKULATHUR

CYCLE TEST - II

Subject code & Title : 15PY102L – MATERIALS SCIENCE Date : 22.09.15
Time : 100 min Max. Marks: 40

PART – A (8 x 1 = 8 marks)

1. The molecules of a liquid crystal compound are in the form of long _____ shaped rods.
a) Shell b) Round c) Cigar d) Wedge
2. The _____ is the result of carrier excitation due to light absorption and figure of merit depends on the light absorption efficiency.
a) Light Emitting Diode b) Photoconductivity c) Photo detectors d) Charge coupled device
3. The physical properties of optical materials depend on the intensity of light is called _____ materials.
a) Electronic b) Photonic c) Linear d) Non-linear
4. The materials which are very difficult to magnetize, are said to be _____ magnetic materials.
a) Soft b) Dia c) Para d) Hard
5. In pyralspite garnet, Aluminium in the _____ site
a) Y b) X c) XY d) YX
6. Magneto resistance is the property of a material to change the value of _____
a) Electrical resistance b) magnetic moment c) mobility d) magnetism
7. Magnetoplumbites are hexagonal ferrites having the general formula _____
a) $M_{12}Fe_{12}O_{12}$ b) $MFe_{12}O_{19}$ c) $M_{12}FeO_{19}$ d) $MFeO_{21}$
8. Orientation polarization arises due to the presence of _____
a) Superconductor b) Semiconductor c) Polar molecule d) Conductor

PART – B (2 x 4 = 8 marks)

(Answer any TWO of the following questions)

9. Explain the working concept of Liquid crystal Display with necessary diagram. (4 marks)
10. Explain the higher harmonic generation phenomena of Non-Linear optical material. (4 marks)
11. With neat sketch explain the Barium Ferrite hexagonal structure of magnetoplumbite. (4 marks)

PART – C (2 x 12 = 24 marks)

(Answer all the questions)

12. a) State the principle of Light Emitting Diode and describe the construction and working of same with neat diagrams. (8 marks)
- b) With neat sketch explain the inverse spinel structure of ferrites. (4 marks)
13. a) Describe the four type of polarization mechanism in dielectrics with relevant diagrams. (8 marks)
- b). Write a note on Tunnel Magnetoresistance. (4 marks)