

A1-2

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

CYCLE TEST - I

Subject code & Title : 15PY102L - MATERIALS SCIENCE

Time : 50 minutes

Date : 17.08.15

Max. Marks: 25

PART - A (3 x4 = 12)

(Answer All the Questions)

1. Differentiate between N-type and P-type semiconductor.
2. What is meant by Hall Effect? Mention any three applications of same.
3. What is Dilute Magnetic Semiconductor? Explain materials used for DMS.

PART - B (1 x13 = 13)

4. a) With neat sketch explain the High Temperature Superconductor and explain the importance of YBCO. (9 Marks)
b) The Hall coefficient of certain silicon specimen was found to be $-7.35 \times 10^{-5} \text{ m}^3\text{C}^{-1}$ from 100 to 400 K. Determine the nature of the semiconductor. If the conductivity was found to be $200 \text{ m}^{-1} \text{ ohm}^{-1}$, calculate the density and mobility of the charge carrier. (4 Marks)