

Internal Assessment
Bsc Physical Science-VI SEM
Solid-State Physics
2023-24

Teacher's Name: Dr. Neeti Goel

M.M- 20 marks

Date: 29.04.24

Time: 1hr

Note: Attempt any 2 questions.

Q.1(a) Distinguish between normal and anomalous dispersion. (4)

(b) Derive Clausius-Mosotti relation between polarizability and dielectric constant of a solid. Explain the result. (6)

Q.2(a) Explain with the help of diagrams how the concept of effective mass is inherent to band theory. If energy of an electron in a crystal is given by $E = \frac{\hbar^2 k^2}{m}$. Calculate its effective mass. (6)

(b) Distinguish between conductors, semiconductors and insulators on the basis of E-K curve. (4)

Q.3(a) What is Hall Effect. Discuss its significance. (3)

(b) What will be the mobility of electrons in copper if it has 9×10^{28} valence electrons per cubic meter and its conductivity is $6 \times 10^7 \text{ ohm}^{-1} \text{ meter}^{-1}$. (3)

(c) Describe in detail n-type and p-type of semiconductors. (4)

