

Annexure - IV

Directed Study Courses

MATERIAL SCIENCE

Classes of engineering materials - engineering requirement of materials - selection of materials - structure of atoms and molecules - Bonding in solids - types of bonds and comparison of bonds.

Structure and Imperfections in Crystals: Crystal structure Crystal geometry, structure of solids, methods of determining structures. Imperfection in crystals - types of imperfection. Point imperfection, diffusion in solids - self diffusion Fick's law, self diffusion. Applications of diffusion.

Properties and Corrosion of Material: Mechanical, Electrical and magnetic properties of materials - Deformation of materials - Heat Treatment techniques - corrosion, theories of corrosion - control and prevention of corrosion.

Metals: Engineering materials - ferrous metals - Iron and their alloys Iron and steel Iron carbon equilibrium diagram. Non ferrous metals and alloys - Aluminum, copper, Zinc, lead, Nickel and their alloys with reference to the application in chemical industries.

TEXT BOOKS:

1. Lawrence H. Van Vlack, "Elements of Material Science and Engineering", 1971.
2. S. K. Hajra Choudhury, "Material Science and processes", 1st Edn. , 1977. Indian Book Distribution Co., Calcutta.

Senate
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