



ANURAG GROUP OF INSTITUTIONS

(Formerly CVSR College of Engineering)

An Autonomous Institution

Venkatapur (V), Ghatkesar (M), Medchal (Dist.), Telangana State

DEPARTMENT OF MECHANICAL ENGINEERING

II Year B.Tech I Semester

Assignment Questions

Metallurgy and Material Science

1. Describe the Defects in Crystals in detail. (Level – 2) (CO – 1)
2. Explain the necessity of alloying. (Level – 2) (CO – 1)
3. Classify the types of Solid Solutions. (Level – 2) (CO – 1)
4. Discuss Hume Rothery's Rules of Solid Solubility. (Level – 2) (CO – 1)
5. From the given data given below for Bi-Cd System, plot the equilibrium diagram to scale and find (i) the amount of Eutectic in 35% Cd alloy (ii) the amount of Free Cd in 85% Cd alloy.

Given data:

Melting Point of Bi = 271°C

Melting Point of Cd = 321°C

Eutectic temperature = 144°C

Eutectic composition = 39.7% Cd (Level – 3) (CO – 2)

6. From the given data given below for Ag-Cu System, plot the equilibrium diagram to scale and find (i) the amount of Eutectic in 25% Cu alloy (ii) the amount of β in 75% Cu alloy.

Given data:

Melting Point of Ag = 961°C

Melting Point of Cu = 1083°C

Eutectic temperature = 780°C

Eutectic composition = 28.1% Cu

Maximum solubility of Cu in Ag (α) is at 780 °C for 8.8% Cu

Maximum solubility of Ag in Cu (β) is at 780 °C for 92.1% Cu

The solubilities of both Cu in Ag & Ag in Cu decrease with decreasing temperature

& are around 2% at room temperature. (Level – 3) (CO – 2)