

Yogesh

VEER SURENDRA SAI UNIVERSITY OF TECHNOLOGY, BURLA

MID SEMESTER EXAMINATION-2015

5th Sem B.Tech.(Production Engg.)

Sub: Metallurgy & Mat.Sc.

Time:-2Hrs

F.M.:20

Answer any FOUR questions including Q.No.1

1. Answer in brief:

[1x5]

- a. What is Bauschinger effect?
- b. What do you mean by coring?
- c. What are the differences between eutectic and peritectic reaction?
- d. Write down the phase rule for metallurgical system. Explain the terms
- e. What do you mean by supercooling?

2. Discuss about various defects found in solids [5]

3. What is homogeneous nucleation? Derive the expression for free energy change accompanying the formation of spherical particle.

[5]

4. a. Differentiate between hot and cold working

b. Differentiate between substitutional and interstitial solid solution [3+2]

5. Two metal A & B form an eutectic at 60%B. The eutectic temp is 1200°C. The maxm solubility of B in A is 20% and that of A in B is 15% at the eutectic. The respective room temp solubilities are 10% and 5%. M.P. of A is 1500°C and that of B is 1350°C. Draw and label the phase diagram. Find out the percentage of phases at 1201°C and 1199°C for a 40%B alloy. Draw the microstructures for the alloy. [5]

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