

III B.Tech I Semester Supplementary Examinations, May 2005
HEAT TREATMENT TECHNOLOGY
(Metallurgy & Material Technology)

Time: 3 hours

Max Marks: 70

Answer any FIVE Questions
All Questions carry equal marks

1. (a) Explain the effect of Austenite grains size on the mechanical properties of steel?
(b) Discuss the methods for determination of Austenitic grain size?
2. (a) What is hardenability? What is the difference between hardenability and hardness.
(b) What is the significance of hardenability? Explain the relation of hardenability with transformation rates.
3. Explain the following case hardening methods
(a) Cyaniding
(b) Carbonitriding
4. (a) Discuss the heat treatment of Austenitic stainless steels with suitable heat treatment cycle?
(b) What is sensitisation? Mention the various remedial measures to avoid sensitisation?
5. Explain the effects of 'P', 'S' and Mn on the properties, Microstructures and applications of cast irons.
6. (a) What are ferritic - pearlitic malleable cast irons? Explain.
(b) What are black heart malleable cast irons? Explain
(c) What are white heart malleable cast irons? Explain
7. (a) What are the main industrial applications of Al-Mg and Al-Zn alloys.
(b) Write short notes on the following.
 - i. Aluminum-silicon alloys
 - ii. Duralumin.
8. (a) Write short notes on
 - i. Babbits
 - ii. Pb-Sn alloys.
(b) How tin base alloys are classified. Give the composition; properties and applications of any two types of tin base alloys.
