

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

**Time: 3 hours****Max Marks: 80**

**Answer any FIVE Questions**  
**All Questions carry equal marks**

\*\*\*\*\*

1. (a) What is Iso-Thermal transformation curve? Explain the construction of I-T Curve for an eutectoid steel.  
(b) Explain why the shape of TTT curve is like 'C'?
2. (a) Describe the hardening of steels.  
(b) Explain the factors affecting the hardening process.
3. (a) Describe pack carburising method?  
(b) What are the effects of temperature, carburising medium and time on case depth?
4. (a) Give the composition of HSS.  
(b) Discuss composition, typical heat treatment cycle and microstructure of high-speed steels.
5. (a) With the help of Iron-Iron carbide diagram explain the cooling behavior of Hypo eutectic cast irons with 3% carbon from liquid state to room temperature.  
(b) Explain the cooling behavior of eutectic cast iron with the help of iron-ironcarbide diagram?
6. (a) Explain the properties and microstructure of spheroidal graphite cast irons.  
(b) What are the nodulizing elements added to the ladle to get S.G.Iron? Explain its importance?  
(c) Give the process sheet for the heat treatment of white cast Irons to produce malleable cast Irons.
7. Write short notes on the following with respect the composition, properties; microstructures and applications of
  - (a) Cartridge brass
  - (b) Admiralty brass
8. (a) Draw lead-tin equilibrium phase diagram and label all phases in it.  
(b) Explain the various physical and mechanical properties of lead?  
(c) What are the important lead alloys. Explain any Two of them in detail.

\*\*\*\*\*