

IV B.Tech I Semester Supplementary Examinations, April/May 2005
ADVANCED METAL CASTING
(Production Engineering)

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

Answer any FIVE Questions
All Questions carry equal marks

1. What is a hot blast cupola? With a neat sketch describe the construction and operation of hot blast cupola. Explain the reactions those take place in the above one.
2. (a) How are furnaces classified? Explain with the help a neat sketch the construction and operation of a 'open-hearth furnace'.
(b) What is coke-bed height? What is its importance in cupola operation and on the quality of cast iron produced?
3. Explain with a neat sketch the working principle of induction furnace melting. What are the major advantages and limitations? What are the important fields of application of induction melting furnaces?
4. (a) Explain the precautions to be taken in the manufacture of aluminium castings.
(b) What is a gating system? State the requirements for an ideal gating system.
(c) What type of gating system is adopted for casting magnesium? Alloys? Why?
5. (a) Discuss the use of chills, exothermic materials and padding in making castings. Illustrate your answer with suitable examples.
(b) Describe the type of furnace used for obtaining high purity copper as electrical conductance.
6. (a) Explain the relative merits and demerits of pressure die casting process over gravity die casting process?
(b) Discuss the factors to be considered in designing blind risers.
7. (a) Differentiate between centrifugal casting and centrifuging.
(b) Explain the various precautions to be taken to obtain defect free casting.
8. Write short notes on any 4 of the following:
 - (a) CO₂ process
 - (b) Pencil gates
 - (c) Plaster moulds
 - (d) Sand recantation
 - (e) Dye penetrate test method.
