

**III B.Tech I Semester Supplementary Examinations, April/May 2005**

**POWDER METALLURGY**  
**(Metallurgy & Material Technology)**

**Time: 3 hours**

**Max Marks: 80**

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

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1. (a) Explain why powder Metallurgy is indispensable for the manufacture of certain components.  
(b) What are the important applications of powder metallurgy.  
(c) Explain the advantages and disadvantages of powder metallurgy.
2. (a) What is conditioning of metal powders? Why is it done? Explain  
(b) Explain the various parameters to be considered in obtaining good quality of powders in milling operation.
3. What are the, various powder making techniques available? Explain in detail the principles of operation and production process for the following methods.  
(a) Reduction method of powder production  
(b) Atomization method  
(c) Electronic deposition method.
4. (a) Giving reasons describe the treatment given to metal powders before compaction.  
(b) Explain the compaction of powders by
  - i. Hydraulic pressing
  - ii. High energy rate method.
5. (a) Differentiate between compactibility and compressibility.  
(b) Distinguish between single action and double action compaction.  
(c) Write a note on the manufacture of alloy powders.
6. (a) Define sintering. Discuss various mechanisms of sintering.  
(b) Why is it necessary to have a controlled atmosphere during sintering? Give typical atmospheres used in practice for sintering of different kinds of powders.
7. (a) Distinguish the process of impregnation from infiltration.  
(b) On what factors does choice of a furnace atmosphere depend for sintering operation. Describe the Exothermic and Endothermic atmospheres.
8. Write short notes on the following:
  - (a) Activated sintering

- (b) Continuous compaction
- (c) Sedimentation method.

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