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B.E. (FULL-TIME) DEGREE SEMESTER EXAMINATION - NOVEMBER / DECEMBER 2013
ARREAR
MATERIALS SCIENCE AND ENGINEERING BRANCH
IV SEMESTER
ML 9254 POWDER METALLURGY
(REGULATIONS 2008)

Time : 3 Hours

Max. Marks : 100

Answer ALL Questions
PART-A (10 x 2 = 20 Marks)

26

1. List the important sampling techniques for metal powders.
2. How do particle size and shape influences angle of response?
3. How the major powder production methods are grouped?
4. What is the principle of electrolytic deposition of metal powder production?
5. What is the importance of compaction in powder metallurgy processing?
6. What is high-temperature compaction in powder metallurgy processing?
7. What do you mean by sintering in powder metallurgy processing?
8. What do you understand by the various major sintering variables?
9. List the important requirements of powder metallurgy bearing material.
10. What are sintered carbides?

PART-B (5 X 16 = 80 Marks)

- 11.(i) Define specific surface area of metal powders. (2)
(ii) Describe the principle and operation of gas adsorption method to determine the surface area of metal powders. (14)
- 12.(a) i) Explain the principle of sedimentation analysis of particle sizing. (8)
ii) Describe with a neat sketch the turbidimetric method of particle size determination. (8)
(OR)
- (b) i) Explain the principle of metal powder production by chemical methods. (6)
ii) Describe the production of iron powder by thermal decomposition with the help of a flow chart. (10)
- 13.(a) i) Explain powder shaping and compaction. (4)
ii) Describe the slip casting of metal powder with neat sketches. (12)
(OR)
- (b) i) Describe the tooling used and tool design for die compaction. (12)
ii) Discuss the powder characteristics that affect tooling design in die compaction. (4)
- 14.(a) Explain the principle of various types of sintering. (OR)
- (b) i) Discuss the various stages in solid state sintering. (8)
ii) Discuss the structure and property changes during sintering. (8)
- 15.(a) Discuss the various steps involved in the production of copper base self-lubricating bearings. (OR)
- (b) Discuss the various production techniques used for porous powder metallurgy filters.
