Total No. of Questions : 12]

SEAT No. :

P1072

[Total No. of Pages : 3

[4659]-135

B.E. (Production Engg.)

c - POWDER METALLURGY

(2008 Course) (Elective - I) (Semester - I)

Time : 3Hours] *[Max. Marks :100*

Instructions to the candidates:

1) ***Answer Q.1 or Q.2, Q.3 or Q.4, Q.5 or Q.6 from Section I and Q.7 or Q.8, Q.9 or Q.10, Q.11 or Q.12 from Section II.***
2) ***Answers to the two sections should be written in separate books.***
3) ***Neat diagrams must be drawn wherever necessary.***
4) ***Figures to the right indicate full marks.***

SECTION-I

Q1) a) Explain the Rotating Electrode process of powder production with a neat diagram. **[6]**

b) Explain the commercial process for electrodeposition of iron powder production. **[6]**

c) How is green strength promoted? **[6]**

OR

Q2) a) Explain any one method to characterize the size of powders with a neat diagram. **[6]**

b) What are the factors which promote powdery deposits in electrolytic cell? **[6]**

c) Explain the factors which favor fine particle size in atomizing process. **[6]**

Q3) a) What are the problems with excessive blending or mixing? Write a short note on continuous twin screw mixer. **[8]**

b) Explain the phenomenon of compaction. **[8]**

OR

Q4) a) Compare the advantages of dry milling and wet milling. Explain the importance of lubrication. **[8]**

b) Compare hydraulic press with mechanical press and explain any two factors which affect the tool design. **[8]**

P.T.O.

Q5) a) Explain the plastic - flow theory and surface diffusion theory in Sintering with the help of a neat diagram. **[8]**

b) What are the advantages and limitations of Liquid phase sintering. **[8]**

OR

Q6) a) Write short notes on: **[8]**

i) Roller hearth furnaces

ii) Walking beam furnaces

b) How does particle size, particle shape, particle structure, particle composition and green density affect sintering. **[8]**

SECTION-II

Q7) a) Explain the CIP process with a neat diagram. **[8]**

b) Explain the benefits, limitations and applications of metal injection moulding. **[8]**

OR

Q8) a) Write short notes on: **[8]**

i) Powder rolling

ii) Powder forging

b) Explain slip casting with a neat diagram. **[8]**

Q9) a) Write short notes on: **[8]**

i) Thermal spraying

ii) Process variables in HIP

b) Explain the case hardening heat treatments given to P/M parts. **[8]**

OR

Q10)a) What are the advantages and limitations of the infiltration process. **[8]**

b) Explain the mercury porosimetry method and state the Washburn equation. **[8]**

Q11)Explain manufacturing of the following with the help of a neat flow chart:**[18]**

a) Friction materials

b) One Automotive application

c) One Aerospace application

OR

Q12)With the help of a neat flow chart explain production details of the following: **[18]**

a) Porous bearings

b) Refractory metal components

c) Cermets

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