Seat No.: _____ **Enrolment No._____**

GUJARAT TECHNOLOGICAL UNIVERSITY
BE SEM-VI Examination-Nov/Dec-2011

Subject code: 162103 **Date: 25/11/2011**

Subject Name: Powder Metallurgy

Time: 10.30 am -1.00 pm **Total marks: 70**

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	What is the scope of Powder Metallurgy? Justify the suitability of P/M as a manufacturing process.	**07**
	(b)	What are the various methods of manufacture of metal powders? Explain in detail the atomization process.	**07**
Q.2	**(a)**	What is the purpose of mixing? Describe different types of mills used for mixing.	**07**
	(b)	What is the role of lubrication in die compaction?	**07**
		OR	
	(b)	Write short notes on (i) Atmosphere & its control in sintering (ii) Requirement of presintering.	**07**
Q.3	**(a)**	Compare and contrast Hot Isostatic Pressing and Cold Isostatic Pressing. Explain in brief the single acting and double acting compaction.	**07**
	(b)	Explain the term : - (i) Tap Density (ii) Flowability (iii) Apparent Density	**07**
		OR	
Q.3	**(a)**	What is meant by impregnation? Discuss its importance in the field of parts produced by Powder Metallurgy techniques.	**07**
	(b)	Explain the term :- (i) Green Spring (ii) Green Strength (iii) Powder Extrusion	**07**
Q.4	**(a)**	What is mean by Activated Sintering & Liquid Phase Sintering? Explain clearly the difference between them.	**07**
	(b)	Write short notes on (i) Sintered carbide tools (ii) Self Lubricated Bearings.	**07**
		OR	
Q.4	**(a)**	What is infiltration and how is it accomplished? Explain advantages, disadvantages and stages that occur in the process of infiltration.	**07**
	(b)	Write short notes on (i) Slip Casting (ii) Dispersion strengthened materials	**07**
Q.5	**(a)**	What do you mean by characterization of metal powders? Discuss the tool(s) & techniques used for the characterization of metal powders with respect to their purity, shape, size and green strength.	**07**
	(b)	Explain the reduction method of metal powder production.	**07**
		OR	
Q.5	**(a)**	What is double-sintering process?	**07**
	(b)	Write a note on recent developments in powder metallurgy.	**07**

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