Seat No.: _____ *Enrolment No._____*

GUJARAT TECHNOLOGICAL UNIVERSITY

B E Sem-VI Examination May 2011

Subject code: 162103

Subject Name: Powder Metallurgy

Date:19/05/2011 **Time: 10.30 am – 01.00 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 powder metallurgy? List advantages, limitations and applications of powder metallurgy.	**07**
	(b)	Discuss about particle size, shape and size distribution and its effect on the properties of the final sintered compact.	**07**
Q.2	**(a)**	Write methods of powder production. What is atomization process? Explain.	**07**
	(b)	Discuss briefly production of iron powders by reduction process.	**07**
		OR	
	(b)	How powders are produced by mechanical methods? Why critical speed is maintained in ball mill?	**07**
Q.3	**(a)**	Define blending or mixing in powder metallurgy and discuss its importance.	**07**
	(b)	What is compaction? List the defects of the compact and their remedies.	**07**
		OR	
Q.3	**(a)**	Discuss critically the factors to be considered for die design.	**07**
	(b)	Which are the lubricants used in the die compaction of powders? Why?	**07**
Q.4	**(a)**	Explain briefly hot isostatic pressing.	**07**
	(b)	Discuss powder rolling process.	**07**
		OR	
Q.4	**(a)**	Write short note on powder extrusion technique.	**07**
	(b)	What is single and double die compaction? Explain.	**07**
Q.5	**(a)**	Define sintering. Explain stages of sintering.	**07**
	(b)	Discuss about sintering furnace and furnace atmospheres.	**07**
		OR	
Q.5	**(a)**	How self-lubricated bearings are produced by powder metallurgy technique?	**07**
	(b)	Using flow sheet explain manufacturing of cemented carbide tools by powder metallurgy.	**07**

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