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

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–VI (NEW) - EXAMINATION – SUMMER 2016

Subject Code:2162103 **Date:06/05/2016**

Subject Name: Powder Metallurgy

Time: 10:30 AM to 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)**	Write the advantages, limitations and applications of Powder Metallurgy.	**07**
	(b)	Define sintering. Describe various stages of sintering.	**07**
Q.2	**(a)**	Explain atomization method for powder production.	**07**
	(b)	Differentiate in apparent density and tap density of powders.	**07**
		OR	
	(b)	Explain effect of particle size, shape and size distribution on the properties of P/M Products.	**07**
Q.3	**(a)**	Describe mechanical alloying method of powder production.	**07**
	(b)	Explain carbonyl process for production of powders. Mention factors affecting process.	**07**
		OR	
Q.3	**(a)**	Write a note on density distribution in green compacts.	**07**
	(b)	With the help of suitable examples explain the function of different sintering atmospheres.	**07**
Q.4	**(a)**	Describe the hot isostatic pressing method for powder compaction.	**07**
	(b)	Describe types of compaction presses and role of lubricants in the die compaction of powders.	**07**
		OR	
Q.4	**(a)**	Explain the die compaction process. Enlist the factors to be considered for die design.	**07**
	(b)	Discuss various steps of powder rolling.	**07**
Q.5	**(a)**	Discuss about common defects in Powder metallurgy processed materials. Explain how they can minimize by Friction stir processing.	**07**
	(b)	Explain production method of metallic filters. Give their applications.	**07**
		OR	
Q.5	**(a)**	What are the anti-friction materials / parts? Explain different steps of their production. Write their applications.	**07**
	(b)	Explain the mechanism of liquid-phase sintering. Give advantages of this process.	**07**

****