Seat No.:	Enrolment No.

## **GUJARAT TECHNOLOGICAL UNIVERSITY**

	BE - SEMESTER-VIII • EXAMINATION – SUMMER • 2015 Subject Code: 182104 Date:05/05/2015 Subject Name: NANO- MATERIALS AND TECHNOLOGY			
Tin	ne: 10	0.30AM-01.00PM  ns: Attempt all questions. Make suitable assumptions wherever necessary.	70	
Q.1	(a) (b)	Compare bulk and nano properties of materials.  Discuss scope & applications of nanotechnology.	07 07	
Q.2	<ul><li>(a)</li><li>(b)</li></ul>	Give classification of nanomaterials and enlist basic building blocks for nano materials.  Differentiate between top down and bottom-up approach of synthesis.  OR	07 07	
	<b>(b)</b>	Explain physical vapor deposition technique for nano materials.	07	
Q.3	(a) (b)	Explain sol-gel method of nano material synthesis.  Explain the process of plasma deposition for nano material production.  OR	07 07	
Q.3	(a) (b)	Discuss effect of grain size on mechanical properties of nano structured materials.  Write short note on fullerenes and carbon nano tubes.	07 07	
Q.4	(a) (b)	List characterization techniques for nano materials and explain transmission electron microscopy (TEM).  Discuss the process of mechanical milling for nano material production and enlist process controlling factors.	07 07	
		OR		
Q.4	(a) (b)	Discuss sintering process for nano powders.  Discuss atomic force microscopy (AFM) for characterization of nano materials.	07 07	
Q.5	(a)	Explain the chemical vapour deposition technique for nano-material production. Give the advantages of this method.	07	
	<b>(b)</b>	Explain self-assembly as nanofabrication techniques.	07	
Q.5	(a) (b)	OR Write note on nano composite materials. Write shortnote on hot isostatic pressing (HIP) for nano powder consolidation.	07 07	

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