

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-VI(NEW) – EXAMINATION – SUMMER 2019
Subject Code:2163906
Date:27/05/2019
Subject Name:Nanomagnetism and NanoFluids
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.

			MARKS	
Q.1	(a)	Define : Nano fluids with suitable example.	03	
	(b)	Give comparison between Paramagnetic and Ferromagnetic materials.	04	
	(c)	Explain effect of temperature on Diamagnetic, Paramagnetic and Ferromagnetic materials.	07	
Q.2	(a)	What is Super- Para magnetism?	03	
	(b)	Explain magnetic hysteresis loop with necessary sketch.	04	
	(c)	Write a short note on Ferro fluid.	07	
OR				
Q.3	(c)	Write a short note on applications of Nano fluids.	07	
	(a)	Explain origin of magnetism.	03	
	(b)	Explain properties of Ferro fluids.	04	
Q.3	(c)	Explain effect of reducing size on coercivity leading to super-paramagnetic effect.	07	
	OR			
	(a)	Describe Ferromagnetic materials.	03	
Q.4	(b)	Define bottom up and top down approach to prepare Nano fluid.	04	
	(c)	Write note on applications of Super-paramagnetic clusters or Ferro fluids.	07	
	(a)	Describe Paramagnetic materials.	03	
Q.4	(b)	Explain Electro discharge technique to prepare nano fluid.	04	
	(c)	Write note on smart cooling using Nano fluid	07	
	OR			
Q.4	(a)	Define: Coercivity, Retentivity and Saturation Magnetization.	03	
	(b)	Explain sol –gel technique to synthesize Nano fluid.	04	
	(c)	Describe applications of magnetic materials as memory storage device.	07	
Q.5	(a)	What are soft Ferro- magnets? Write their applications.	03	
	(b)	Give comparison between Diamagnetic and Paramagnetic materials.	04	
	(c)	Explain cause behind domain wall formation in terms of magnetostatic, anisotropy and exchange energies.	07	
OR				
Q.5	(a)	What are hard ferromagnets? Write their applications.	03	

(b)	Give comparison between Diamagnetic and Ferromagnetic materials.	04
(c)	Explain domain wall. Which parameters affect the thickness of the domain wall?	07

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