

GUJARAT TECHNOLOGICAL UNIVERSITY
BE - SEMESTER-IV(New) EXAMINATION – SUMMER 2016

Subject Code:2143905**Date:08/06/2016****Subject Name:Characterization of Nanomaterials-II****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	Short Questions	14
	1 Write two conditions of IR absorption in the material.	
	2 Write classification of infrared band.	
	3 Define Tc in a superconducting material.	
	4 Types of SQUID.	
	5 Write the wavelength of UV light.	
	6 Write the full name of SQUID.	
	7 In which mathematical mechanism used in FTIR.	
	8 Write full form of AFM and MFM.	
	9 Write principle of VSM.	
	10 What kind of information we get in SQUID.	
	11 Write the difference between AFM and MFM.	
	12 What do you mean by atomic force?	
	13 Write the wavelength of infrared light.	
	14 Write the full form of FTIR.	
Q.2	(a) Construct the diagram of SQUID and explain in short.	03
	(b) Draw the schematic diagram of UV/Visible spectroscopy.	04
	(c) Explain characterization of a magnetic material using SQUID instrument.	07
	OR	
	(c) Explain Impedance Spectroscopy.	07
Q.3	(a) Explain the construction of UV/Visible spectroscopy.	03
	(b) Explain the working of UV/Visible spectroscopy.	04
	(c) Write a short note on working of VSM.	07
	OR	
Q.3	(a) Explain the sample preparation for FTIR instrument.	03
	(b) Explain working principle of FTIR instrument.	04
	(c) Explain Magnetic Force Microscopy (MFM).	07
Q.4	(a) Write different application of Impedance Spectroscopy.	03
	(b) Explain the Impedance Spectroscopy.	04
	(c) Explain few applications of UV/Visible Spectroscopy in the field of nanotechnology.	07
	OR	
Q.4	(a) Write down different applications of MFM.	03
	(b) Write down advantage and disadvantage of non-contact mode Spectroscopy.	04
	(c) Explain Atomic Force Microscopy (AFM).	07

- Q.5** (a) Write down different applications of AFM. **03**
(b) Write down advantage and disadvantage of contact mode spectroscopy. **04**
(c) Write down different applications of SQUID instrument. **07**
- OR**
- Q.5** (a) Write the applications of Vibrating Sample Magnetometer (VSM). **03**
(b) Draw the layout of Vibrating Sample Magnetometer (VSM). **04**
(c) Give the application of FTIR in various fields of science, medical and engineering. **07**
