## Sixth Semester B.E. Degree Examination, June/July 2016

## **Characterization Techniques**

Time: 3 hrs. Max. Marks:100

Note: Answer FIVE full questions, selecting at least TWO questions from each part.

P	A	T	- A	A

1	a.	Write the principles and applications of x-ray diffraction.	(10.35
	b.	Write about y-ray photoelectron enectrons and the different file.	(10 Marks)

b. Write about x-ray photoelectron spectroscopy and energy dispersive x-ray analysis. (10 Marks)

2	a.	Explain hot stage microscopy and phase contrast microscopy.	(10.14 . 1 . )
	L	With the carge interescopy and phase contrast microscopy.	(10 Marks)

4	a.	Explain not stage microscopy and phase contrast microscopy.	(10 Marks)
	b	Write a brief note on phase contrast minus in	(10 Marks)
	٠.	Write a brief note on phase contrast microscopy with a neat diagram.	(10 Marks)

3	a.	Write a note on FTIR and its principle of operation with applications.	(10 M1)
	h	Explain in brief on Domes and the state of t	(10 Marks)
	U.	Explain in brief on Raman spectroscopy and it principle of operation.	(10 Marks)

4	a.	Explain working of transmission electron microscopy with a neat diagram.	(10 Marks)
	b.	Give a note on atomic force microscopy.	(10 Marks)
	٥.	Give a note on atomic force inicroscopy.	(10 Marks)

## PART - B

5	a.	Write about nano indentation data analysis and draw load-depth plot for nano	indentation
		experiment.	
	b.	Explain any four models for nano indentation with equations.	(10 Marks)
		Explain any loar models for hand indentation with equations	(10 Mayles)

(10 Marks)

6	a.	Write a note on Nuclear Magnetic Resonance and give any five applications.	(10 Marles)
	b.	Explain:	(10 Marks)

Electron spin resonance

ii) Mossbauer spectroscopy (10 Marks)

What is surface characterization? Write principle and name its different techniques.

h Write a note on August aleaters	(10 Marks)
b. Write a note on Auger electron spectroscopy with a neat diagram.	(10 Marks)

Explain: a.

i)	Differential	thermal analysis
	D:00	

ii) Differential scanning calorimetry.	(10 Mordes)
	(10 Marks)
Give a brief note on importance of thermal analysis for nanostructures.	(10 Marks)

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