Reg. No. : | | | | | | | | | | | | |

Question Paper Code: U1P06

Ph.D COURSE WORK EXAMINATION, APRIL 2024

First Semester

21PPH106-IMAGING TECHNIQUES FOR NANOTECHNOLOGY

(Regulations 2021)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART - A (5 x 20 = 100 Marks)

1.	(a)	Explain the principle and construction of optical microscopy	CO1- U	(20)
		Or		
	(b)	Explain in detail about the surface morphology of the optical microscopy with suitable example.	CO1- U	(20)
2.	(a)	(i) Discuss the types of electron microscopy.	CO2- U	(10)
		(ii) Explain the various applications of SEM.	CO2- U	(10)
		Or		
	(b)	Briefly explain the resolution and contrast of Scanning electron microscopy.	CO2- U	(20)
3.	(a)	Explain in detail about the construction and working of transmission electron microscopy.	CO3- U	(20)
		Or		
	(b)	(i) Explain high resolution transmission electron microscopy and use in nanostructures.	CO3- U	(10)
		(ii) Explain the diffraction in imperfect Crystals.	CO3- U	(10)
4.	(a)	Explain the construction and working of AFM.	CO4- U	(20)
		Or		
	(b)	(i) Explain the working of shear force microscopy.	CO4- U	(10)
		(ii) Briefly explain the magnetic force microscopy	CO4- U	(10)

5.	(a)	Explain the working principle of scanning tunnelling microscopy(STM).	CO5- U	(20)
		Or		
	(b)	(i) Discuss the surface and molecular manipulation using scanning tunnelling microscopy.	CO5- U	(10)
		(ii) Discuss in detail the three dimensional map of electronic structure in STM?	CO5- U	(10)