

M.Phil/Pre Ph.D Regular & Supplementary Examinations – OCTOBER, 2023
R211102
Paper –II: METHODS IN PHYSICS.
Physics

Time : 3 hrs

Maximum Marks : 100

Answer One Question from Each Unit
All Questions Carry Equal Marks

			Marks
UNIT - I			
1	(a)	Explain Laplace Transform of derivative of a function.	10 M
	(b)	Write in detail the first shifting theorem of Laplace Transform	10 M
OR			
2	(a)	State and prove Convolution theorem of Laplace Transforms.	10 M
	(b)	Evaluate the inverse Laplace Transform of $\left\{\frac{1}{s^2(s^2 + a^2)}\right\}$	10 M
UNIT - II			
3	(a)	Describe the principle and working of Raman spectrometer	10 M
	(b)	Explain how Raman Spectroscopy is applied in structure determination.	10 M
OR			
4	(a)	Explain the principle and working of NMR Spectrometer.	10 M
	(b)	Write the differences between NMR and ESR Spectroscopy.	10 M
UNIT - III			
5	(a)	Draw the block diagram of a typical operational Amplifier.	10 M
	(b)	Explain the applications of operational amplifier as Integrator and differentiator.	10 M
OR			
6	(a)	Explain the functional description of 8085 microprocessor with a block diagram.	10 M
	(b)	With suitable examples explain the 8085 microprocessor Instruction set.	10 M
UNIT - IV			
7	(a)	With a neat block diagram describe the principle and working of Transmission Electron Microscope (TEM).	10 M
	(b)	Describe how TEM is used in the study of crystal structure	10 M
OR			
8	(a)	Describe the principle and working of Scanning Electron Microscope (SEM). With a neat block diagram.	10 M
	(b)	Discuss the microstructure determination using SEM.	10 M
UNIT - V			
9	(a)	Explain the following terms in C-Programming;	10 M
	(i)	Variables and Data types	
	(ii)	Operators and Expressions	
	(iii)	IF Statement	
	(iv)	IF..... ELSE Statement	
	(b)	Explain Formatted input and Formatted output, SWITCH Statement and conditional operator in C-Programming.	10 M
OR			
10	(a)	Discuss the WHILE, DO.....WHILE Statements in C-Programming.	10 M
	(b)	Explain FOR Statement and Arrays in C-Programming.	10 M
