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XQB-229

Reg.No.:								

VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN
[AUTONOMOUS INSTITUTION AFFILIATED TO ANNA UNIVERSITY, CHENNAI]
Elayampalayam – 637 205, Tiruchengode, Namakkal Dt., Tamil Nadu.

Question Paper Code: 3002

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – AUG. / SEP. 2023

First Semester

Biotechnology

U19PH102 – PHYSICS FOR BIOTECHNOLOGY

(Regulation 2019)

Time: Three Hours | Maximum: 100 Marks

Answer ALL the questions

Knowledge Levels (KL)	K1 – Remembering	K3 – Applying	K5 - Evaluating
	K2 – Understanding	K4 – Analyzing	K6 - Creating

PART – A

(10 x 2 = 20 Marks)

Q.No.	Questions	Marks	KL	CO
1.	Write the applications of optical fibres	2	K1	CO1
2.	Define: Superposition Principle	2	K1	CO1
3.	What is diffraction?	2	K2	CO2
4.	State Malus law.	2	K2	CO2
5.	Define: Crystal defect	2	K1	CO3
6.	What are Miller indices?	2	K2	CO3
7.	What is nano materials?	2	K2	CO4
8.	Write the applications of nano materials.	2	K1	CO4
9.	What is thermal analysis?	2	K2	CO5
10.	Mention the uses of scanning electron microscope (SEM).	2	K3	CO5

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PART – B

(5 x 16 = 80 Marks)

Q.No.			Questions	Marks	KL	CO
11.	a)		Explain the principle, construction and working of Michelson interferometer.	16	K2	CO1
			(OR)			
	b)	i.	Describe the propagation of light through an optical fibre and derive an expression for acceptance angle and numerical aperture.	10	K2	CO1
		ii.	Write a short note on Temperature sensor.	6	K2	
12.	a)		Discuss in detail the Fraunhoffer diffraction for single slit and double slit method.	16	K2	CO2
			(OR)			
	b)		Explain the propagation of electromagnetic waves and its representation.	16	K1	CO2
13.	a)		Describe a HCP structure. Show that for an HCP structure c/a = 1.633 and hence calculate the packing factor for the HCP structure.	16	K2	CO3
			(OR)			
	b)	i.	Give the procedure for finding Miller indices of crystal planes	8	K2	CO3
		ii.	Explain crystal defects in a detailed manner.	8		
14.	a)		Discuss in details the synthesis of nano materials – top down and bottom up approaches	16	K2	CO4
			(OR)			
	b)		Write a short note on			
		i.	Synthesis of carbon nano tubes by laser ablation method	8	K3	CO4
		ii.	Physical vapour deposition method.	8	K3	
15.	a)		Explain the principle, construction and working of Transmission Electron Microscope (TEM).	16	K2	CO5
			(OR)			
	b)		Describe the construction and working of Thermo Gravimetric Analysis (TGA) and applications	16	K1	CO5