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: 30003

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – JAN. / FEB. 2025
First Semester
Computer Science and Engineering
U19PH105 – ENGINEERING PHYSICS
(Common to IT, BT & CST)
(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.	State Hooke's law.	2	K1	CO1
2.	List out any two applications of viscosity.	2	K1	CO1
3.	Give any two postulates of classical free electron theory.	2	K1	CO2
4.	Mention any two important features of quantum free electron theory of metals.	2	K2	CO2
5.	Name the seven crystal systems.	2	K2	CO3
6.	Mention some of the engineering and Industrial applications of ultrasonics.	2	K2	CO3
7.	What are the differences between n – type and p – type semiconductor?	2	K2	CO4
8.	Distinguish between one way and two-way shape memory alloy.	2	K3	CO4
9.	What is stimulated emission?	2	K2	CO5
10.	Give the applications of the fibre optical system.	2	K1	CO5

PART – B

(5 x 16 = 80 Marks)

Q.No.		Questions	Marks	KL	CO
11.	a)	Deduce an expression for the couple to produce a unit twist in a long cylindrical wire fixed at one end. How is it used in the determination of modulus of rigidity of a wire.	16	K3	CO1
		(OR)			
	b)	i. Derive an Poiseuille's expression for the volume of the liquid.	10	K3	CO1
		ii. Explain experimental method used to find the viscosity of a liquid.	6	K3	
12.	a)	Obtain an expression for the electrical conductivity and thermal conductivity on the basis of the classical free electron theory.	16	K3	CO2
		(OR)			
	b)	Derive an expression for energy levels of a particle enclosed in one – dimensional potential box of width 'a' and infinite height.	16	K3	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)	With a neat diagram, explain the construction and working of a Magnetostriction oscillator.	16	K2	CO3
14.	a)	Obtain an expression for intrinsic carrier concentration in an intrinsic semiconductor.	16	K3	CO4
		(OR)			
	b)	Give a detailed account of metallic glasses, their method of production, properties and applications.	16	K1	CO4
15.	a)	Explain the principle, construction and working of a Nd:YAG laser.	16	K4	CO5
		(OR)			
	b)	i. Derive an expression for acceptance angle and numerical aperture of an optical fiber. Bring out the differences between step index and graded index fiber.	10	K4	CO5
		ii. Write a short note on medical endoscope.	6	K2	