

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: 30001**

B.E. / B.Tech. DEGREE END-SEMESTER EXAMINATIONS – JAN. / FEB. 2025

Second Semester

Electrical and Electronics Engineering  
 U19PH207 – ENGINEERING PHYSICS

(Common to ECE & BME)

(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.	Distinguish the difference between uniform bending and non - uniform bending.	2	K1	CO1
2.	List out any two applications of viscosity.	2	K1	CO1
3.	Define electrical conductivity and give its unit.	2	K1	CO2
4.	Mention any two important features of quantum free electron theory of metals.	2	K2	CO2
5.	What are Miller indices?	2	K2	CO3
6.	What is Sonogram?	2	K2	CO3
7.	What are the properties of semiconductor?	2	K2	CO4
8.	Distinguish the difference between one way and two-way shape memory alloy.	2	K3	CO4
9.	Interpret Einstein's coefficients.	2	K2	CO5
10.	Define: Acceptance angle and Numerical aperture.	2	K1	CO5

PART – B

(5 x 16 = 80 Marks)

Q.No.	Questions	Marks	KL	CO
11. a)	Describe an experiment to determine Young's modulus of a beam by non-uniform bending.	16	K3	CO1
	(OR)			
b) i.	Derive Poiseuille's expression for the volume of the liquid.	8	K3	CO1
ii.	Explain experimental method used to find the viscosity of a liquid.	8	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)	Explain de-Broglie's hypothesis and derive the de-Broglie's wavelength in terms of energy and accelerated potential associated with electrons.	16	K2	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 method.	16	K2	CO3
14. a) i.	Mention the variation of fermi level with temperature in an intrinsic semiconductor.	8	K3	CO4
ii.	Explain the variation of Fermi level with temperature and impurity concentration in n type semiconductor.	8	K2	
	(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 homojunction semiconductor laser.	16	K2	CO5
	(OR)			
b)	Describe the propagation of light through an optical fibre. Bring out the differences between step index and graded index fibre.	16	K2	CO5