

Reg.No.:

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

Question Paper Code: 30004

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

First Semester

Computer Science and Engineering

U23PH101 – ENGINEERING PHYSICS

(Common to IT, BT, CST and AI & DS)

(Regulation 2023)

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 Hook's Law.	2	K2	CO1
2.	What is the use of viscosity?	2	K3	CO1
3.	Mention any two merits of classical free electron theory.	2	K2	CO2
4.	An electron is accelerated by a potential difference of 150 V. What is the wavelength of that electron wave?	2	K3	CO2
5.	Define space lattice.	2	K2	CO3
6.	What is Magnetostriction effect?	2	K1	CO3
7.	Distinguish between intrinsic and extrinsic semiconductor.	2	K3	CO4
8.	List out any two applications of Ni-Ti alloy.	2	K1	CO4
9.	What conditions are required for laser action to take place?	2	K2	CO5
10.	Calculate the numerical aperture of an optical fiber, whose core refractive index is 1.55 and the cladding refractive index is 1.5.	2	K3	CO5

PART – B

(5 x 16 = 80 Marks)

Q.No.	Questions	Marks	KL	CO
11.	a) What is meant by uniform bending? Discuss in detail the experimental methods used to determine Young's modulus by non-uniform bending. (OR)	16	K2	CO1
	b) Define surface tension. Explain briefly how to determine the coefficient of viscosity by Poiseuille's flow experiment.	16	K2	CO1
12.	a) Deduce the mathematical expression for electrical conductivity and thermal conductivity of a conducting material and hence obtain Wiedmann-Franz Law. (OR)	16	K2	CO2
	b) Deduce the Schrodinger's time dependent and time independent equations.	16	K2	CO2
13.	a) What are Miller indices? Derive an expression for the interplanar spacing for (hkl) planes of a cubic structure. Sketch any two planes of a cubic structure. (OR)	16	K3	CO3
	b) What is Piezo electric effect? Explain how ultrasonic waves can be produced by using Piezo electric oscillator method.	16	K2	CO3
14.	a) i. How does the electrical conductivity of intrinsic conductor vary with temperature? ii. Explain the construction and working of a LED with neat diagram. (OR)	8 8	K2 K2	CO4 CO4
	b) Describe the method used for the preparation of metallic glasses with neat sketch and list out the properties of metallic glasses.	16	K1	CO4
15.	a) Explain the principle, construction and working of semiconductor diode laser with necessary diagrams. (OR)	16	K2	CO5
	b) i. Distinguish between the step index and graded index fiber. ii. Explain fiber optic communication system with a neat black diagram.	8 8	K2 K3	CO5 CO5