

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE, APRIL - 2024**

APPLIED PHYSICS II

[Maximum Marks:75]

[Time: 3 Hours]

PART - A

I. Answer all the following questions in one word or one sentence. Each question carries 'one' marks.

(9 x 1 = 9 Marks)

Module Outcome Cognitive level

1	S.H.M may be considered as the projection of on the diameter of the circle.	M1.01	R
2	SONAR stands for	M1.03	R
3	Out of the given materials, which is the optically transparent medium? (wood, wax paper, stained glass, water)	M2.01	R
4	The angle of incidence is always the angle of reflection. (equal to, greater than, less than)	M2.01	R
5	Which type of spherical mirror is used as shaving mirror?	M2.01	R
6	State Ohm's law.	M3.02	R
7	Out of the following colour bands of resistances, which colour represents the tolerance value? Orange, Yellow and Yellow with Gold	M3.02	U
8	The process of adding impurity to a semiconductor is called	M4.01	R
9	Give an application of solar cell.	M4.02	R

PART - B

II. Answer any eight questions from the following. Each question carries 'Three' marks.

(8 x 3 = 24 Marks)

Module Outcome Cognitive level

1	Distinguish between transverse waves and longitudinal waves.	M1.02	U
2	Suggest any three methods to control the reverberation time.	M1.04	R
3	What is the refraction of light? State the laws of refraction.	M2.01	R
4	An object is placed at a distance of 10 cm from a convex lens of focal length 12 cm. Find the position of the image.	M2.02	A
5	Define total internal reflection. What are the conditions of total internal reflection?	M2.04	R

6	State Coulomb's law. Write its mathematical expression.	M3.01	R
7	State Faraday's law of electromagnetic induction.	M3.04	R
8	Briefly describe the factors affecting the resistance of a conducting wire.	M3.02	U
9	Explain the laws of photoelectric effect.	M4.02	U
10	Distinguishing the properties of Nanomaterials form that of bulk materials.	M4.04	U

PART - C

Answer all the questions from the following. Each question carries 'seven' marks.

(6 x 7 = 42 Marks)

Module Outcome Cognitive level

III.	The displacement of a particle executing S.H.M. is $y = a \sin \omega t$. Derive the expressions for its velocity, and acceleration OR	M1.01	U
IV.	A station broadcasts a wavelength of 2 m. What is the frequency of the wave if the velocity of the radio wave is 3×10^8 m/s? OR	M1.02	A
V.	a) Define the terms wavelength(λ), frequency (f), period (T) and velocity (v) of a wave. (4 marks) b) Write a short note on the phenomenon of beats. (3 marks) OR	M1.02	R
VI.	Sketch the image formation of a convex lens when (a) Object is placed at 2F and (b) Object is between 2F and F from the lens. Also give the nature of images.	M2.01	U
VII.	With the help of a diagram explain the working of a simple microscope. OR	M2.03	U
VIII.	A convex lens of focal length 20 cm is placed in contact with a concave lens of focal length 15 cm. Find out the effective focal length and power of the combination?	M2.02	A
IX.	Obtain expression for the effective resistance of a series combination and parallel combination of two resistors. OR	M3.02	U
X.	A galvanometer of resistance 50Ω gives full scale deflection for 5 mA. How it can be converted into an ammeter of range 0 to 5 A?	M3.04	A
XI.	Explain the construction and working of a moving coil galvanometer. OR	M3.04	U
XII.	a) List the applications of diodes and transistors. (4 marks) b) Give the three applications of photoelectric effect. (3 marks) OR	M4.01 M4.02	R
XIII.	a) Discuss the band theory in solids. (4 marks) b) Distinguish between conductors, insulators and semiconductors on the basis of band theory. (3 marks) OR	M4.01	U
XIV.	Describe with necessary theory, the working of He-Ne gas LASER?	M4.03	U
