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Reg. No……
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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, APRIL – 2023

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'* mark.

(9 x 1 = 9 Marks)

		Module Outcome	Cognitive level
1.	Write one example for simple harmonic motion	M1.01	R
2.	Explain the term reverberation.	M1.04	R
3.	The twinkling of stars is due to.....	M2.01	U
4.	What is the SI unit for power of a lens?	M2.02	R
5.	State Ohm's law.	M3.02	R
6.	To convert a galvanometer into an ammeter, a low resistance is connected in .... with the galvanometer (series/parallel)	M3.04	U
7.	How a diode is connected to a battery in forward bias?	M4.01	R
8.	State whether the following statement is true or false. The band gap of semiconductor is less than that of insulators.	M4.01	U
9.	Give one application of carbon nanotubes.	M4.04	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.	Match the following Column A: Displacement of a particle executing simple harmonic motion. — Column B: $\frac{2\pi}{\omega}$ Column A: Period of simple harmonic motion — Column B: $\frac{1}{T}$ Column A: Frequency of simple harmonic motion — Column B: $y=a\sin\omega t$	M1.01	U
2.	Distinguish between longitudinal and transverse waves.	M1.02	U
3.	Explain the phenomenon of beats.	M1.02	U
4.	List any three applications of ultrasonic waves.	M1.03	R
5.	What do you mean by total internal reflection? What are the conditions for total internal reflection?	M2.04	U

6.	A wire of length 2 m and radius 0.1 mm has a resistance of 200 Ω .Find the specific resistance of the material of the wire.	M3.02	A
7.	Mention any three characteristics of Nano materials.	M4.04	R
8.	Distinguish between spontaneous emission and stimulated emission.	M4.03	U
9.	How transistor works as an amplifier?	M4.01	R
10.	Describe the formation of P-type and n-type semiconductor.	M4.01	U

PART-C

Answer all questions. Each question carries *'seven'* marks

(6 x 7 = 42 Marks)

		Module Outcome	Cognitive level
III.	What are the characteristics of a wave? Derive the relation between wavelength, frequency and velocity of a wave.	M1.02	U
	OR		
IV.	A tuning fork makes one complete vibration in 1/200 second. If the velocity of sound in air is 340 m/s, find the wavelength of the sound waves produced by the tuning fork.	M1.02	A
V.	Explain the working of astronomical telescope. Discuss the resolving power of astronomical telescope.	M2.03	R
	OR		
VI.	A converging lens forms a real image. If the image is twice the size of the object and 72 cm from the lens, calculate the focal length and power of the lens.	M2.02	A
VII.	Sketch the ray diagram for the image formation by a convex lens, when the object is placed (i) beyond 2F (ii) between F and 2F. Discuss the nature of the images.	M2.01	U
	OR		
VIII.	Outline the structure of an optical fiber. List any three applications of optical fibers.	M2.04	R
IX.	Discuss the working of meter bridge with a neat diagram.	M3.03	U
	OR		
X.	Write a note on (i) Coulomb's law (ii) Electric field (iii) Electric potential.	M3.01	R

XI.	Explain the construction and working of a moving coil Galvanometer?	M3.04	U
	OR		
XII.	Two resistaces 12 Ω and 6 Ω are connected in parallel and the combination is connected in series with an 8 Ω resistance. Find the effective resistance.	M3.02	A
XIII.	Discuss the working of He-Ne gas laser with a neat diagram.	M4.03	U
	OR		
XIV.	Explain Einstein's photoelectric equation and the laws of photoelectric effect.	M4.02	U

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