

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/  
COMMERCIAL PRACTICE, APRIL - 2022**

**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 1 mark**

**(9 x 1 = 9 Marks)**

		Module outcome	Cognitive level
1	SI unit of frequency is.....	M1.01	R
2	State the following statement is true or false. The heat waves are longitudinal waves.	M1.02	R
3	Sun is visible before sunrise and after sunset because of .....	M2.01	U
4	SI unit of power of a lens is ... ..	M2.02	R
5	Name the principle behind the phenomenon of mirage?	M2.04	R
6	.....is the ratio of magnitude of charge 'Q' on either plates and potential difference across the plate.	M3.01	R
7	Ohm's law states a relation between the potential difference and the .....	M3.02	R
8	Give the names of two dopants for making n-type semiconductors.	M4.01	R
9	Nanoparticles have relatively..... surface area when compared to the same volume of the bulk material. (smaller/larger)	M4.04	R

**PART B**

**II. Answer any eight questions from the following. Each question carries 3 marks.**

**(8 x 3 = 24 Marks)**

		Module outcome	Cognitive level
1	Give three applications of ultrasonic waves	M1.03	R
2	Distinguish between echo and reverberation.	M1.04	U
3	What is reflection of light? State the laws of reflection	M2.01	R
4	What is spherical aberration? How it can be eliminated?	M2.02	R
5	Sketch the image formation by a convex lens when object is placed between focus and optic centre of lens.	M2.01	U
6	State Coulomb's law. Write its mathematical expression.	M3.01	R
7	Explain the term specific resistance of a material? Write its expression	M3.02	U
8	State Faraday's law of electromagnetic induction	M3.04	R
9	Explain the population inversion.	M4.03	U
10	Differentiate the emitter, base and collector based on their size and doping?	M4.01	U

**PART C**

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

**(6 x 7 = 42 Marks)**

		<b>Module outcome</b>	<b>Cognitive level</b>
1.	Show that simple harmonic motion is the projection of a uniform circular motion along a diameter of the circle	M1.01	U
	<b>OR</b>		
2.	The wavelength of sound waves of frequency 210 Hz is 7m in water. What is the speed of sound in water?	M1.02	A
3.	(a) What are the characteristics of a wave? (4marks) (b) Write a short note on sound waves. (3 marks)	M1.02 M1.02	R
	<b>OR</b>		
4.	(a) Write any four applications of optical fibres. (4 marks) (b) What are the advantages of using optical fibres in the telecommunication field? (3 Marks)	M2.04	R
5.	With the help of a diagram, explain the principle of a simple microscope. Write the expression for magnification of the image when it is formed at least distance of distinct vision.	M2.03	U
	<b>OR</b>		
6.	A concave lens of focal length 20cm is placed at a distance of 35cm from an object. Find the position of the image and its magnification.	M2.02	A
7.	Explain the working of a Meter bridge with a diagram.	M3.03	U
	<b>OR</b>		
8	Design a voltmeter of range 0 to 10 V. Given a galvanometer of resistance 50Ω which shows full scale deflection for 10mA.	M3.04	A
9.	Two resistors 24Ω are connected in parallel and the combination is then connected in series with 8Ω. Find the effective resistance.	M3.02	A
	<b>OR</b>		
10	Describe with necessary theory, the working of He-Ne gas LASER.	M4.03	U
11	What is a p-n junction diode? Discuss the forward biasing of a p-n junction diode by drawing I-V characteristic curve?	M4.01	U
	<b>OR</b>		
12	(a) Discuss the laws of Photoelectric effect and write Einstein's photoelectric equation. (4 marks) (b) Give any three applications of solar cells. (3 marks)	M4.02	U

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