Scoring Indicators

Question Paper Set

APPLIED PHYSICS I

COURSE NAME: APPLIED PHYSICS II **QID: 2106220110**
COURSE CODE: 2003

Q No	Scoring Indicators	Split score	Sub Total	Total score
	PART A			**9**
I. 1	Any one example like rotation of earth	1	1	
I. 2	Ultrasonic waves	1	1	
I. 3	Any one example like: Reflection takes place from mirrors	1	1	
I. 4	Any one example like: Spherical abberation	1	1	
I. 5	Coulomb	1	1	
I. 6	Statement or I proportional to V	1	1	
I. 7	1. Resistivity is a constant of a metal.	1	1	
I. 8	Electrons	1	1	
I. 9	Any one method like: Electrical pumping	1	1	
	PART B			24
II. 1	Transverse wave: The vibration of the particles of the medium is at right angles to the direction of propagation of the wave. A transverse wave consists of a series of crusts and troughs. Longitudinal wave: The vibration of the particles of the medium is along or parallel to the direction of propagation of the wave. A longitudinal wave consists of a series of compressions and rarefactions. OR any appropriate explanation	1.5 1.5	3	

II. 2	Concept of superposition of waves Explanation like: crest +crest-Maximum displacement crest+ trough – minimum displacement	1.5 1.5	3	
II. 3	Ray diagram Explanation	1 2	3	
II. 4	a) **Convex mirrors** are used in vehicles to see the rear side b) The angle between the incident ray and **normal** is called angle of incidence c) The geometric centre of lens is called **optic centre**.	1 1 1	3	
II. 5	Two conditions	1.5 each	3	
II. 6	Diagram Total voltage $V= V_1 + V_2+ ....$ $R = R_1 + R_2 + ...$	1 1 1	3	
II. 7	Brown-1, Yellow-4, Red -2 (multiplier), Silver - 10 (tolerance) Value: 1400 ohm ± 10	1 2	3	
II. 8	Silver - conductor Addition of impurities - doping Reasonably small band gap - semiconductor Voltage regulator - diode Amplifier - transistor Photovoltaic effect – solar cell	½ ½ ½ ½ ½ ½	3	
II.9	Any three applications	1 each	3	
II.10	Appropriate note with three sentences	3	3	
III	**PART C**			42
1	$v = f\lambda$ $\lambda = v / f$ $= 330/484$ $= 0.68$ m	2 2 1 2	7	7

2	The displacement of a particle executing simple harmonic motion is given by $y = a \sin\omega t$ The velocity of the particle executing SHM is $\frac{dy}{dt} = a\omega \cos\omega t$ The acceleration of the particle executing SHM is $\frac{d^2y}{dt^2} = -a\omega^2 \sin\omega t$ $\frac{d^2y}{dt^2} = -\omega^2 y$ $\frac{d^2y}{dt^2} + \omega^2 y = 0$ This is the differential equation for SHM.	 1 2 2 2	7	7
3	About acoustics of building Factors like: Reverbration , reverberation time etc. Factors like: echo, noise	2 3 2	7	7
4	Ray diagram Nature of image	2.5 each 1 each	7	7
5	$m = \frac{v}{u} = -2$ $\therefore v = -2u$ We have, -u + v =117 -u - 2u =117 -3u =117 u= - 39 cm v= -2u =78 cm From the lens formula, $\frac{1}{f} = \frac{1}{v} - \frac{1}{u}$	 1 2 1	7	7

	f= 26 cm The power of the convex lens is Power = 1/f = 1/0.26 = 3.8 D	 2 1		
6	f = -20 cm and u = -30 cm From lens formula, $\frac{1}{v} - \frac{1}{u} = \frac{1}{f}$ $\frac{1}{v} = \frac{1}{f} + \frac{1}{u}$ v= f x u/f +v = -20x-30/-50 = -12 cm m= v/u = -12/-30 = 0.4	 2 3 1 1	7	7
7	First law: statement Illustration Second law Illustration	2 1 2 2	7	7
8	Diagram Derivation of balancing condition	2 5	7	7
9	Diagram Principle Working Equation for current	2 1 3 1		
10	Forward Characteristic Reverse Characteristic	3.5 each	7	7
11	a) Stimulated emission, Pumping, Population inversion b) Three applications	 4 3	7	7

12	Diagram Workin Description.	2 3 2	7	7