



AD-2947
First Year B. Sc. (Sem. II) Examination
March/April – 2015
Applied Physics : Paper - II

Time : 2 Hours]

[Total Marks : 50

Instructions :

(1)

<p>नीचे दृशावेक निशानीवाणी विगतो उत्तरवही पर अवश्य कपवी. Fillup strictly the details of signs on your answer book.</p> <p>Name of the Examination : FIRST YEAR B. SC. (SEM. II)</p> <p>Name of the Subject : APPLIED PHYSICS : PAPER - II</p> <p>Subject Code No. : 2 9 4 7 Section No. (1, 2,.....): Nil</p>	<p>Seat No. : □ □ □ □ □ □</p> <p style="text-align: center; border: 1px solid black; border-radius: 15px; padding: 10px;">Student's Signature</p>
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- (2) Draw neat diagrams wherever necessary.
(3) Symbols used in question paper have their conventional meanings.
(4) Numbers on right indicate full marks of the question.

- Constants**
- (1) speed of light (in vacuum) $C = 3 \times 10^8$ m/sec
 - (2) Planck's constant $h = 6.626 \times 10^{-34}$ JS
 - (3) Mass of the electron $m_e = 9.1 \times 10^{-31}$ Kg
 - (4) Charge of the electron $e = 1.6 \times 10^{-19}$ C
 - (5) Boltzmann constant $k = 1.38 \times 10^{-23}$ eV/K

- 1 Answer the following questions in short 14
- (i) What is the difference between photography and holography?
 - (ii) Define ampere.
 - (iii) What is neutral temperature?
 - (iv) Define ampere.
 - (v) Why center is dark in the case of Newton's rings obtained by reflected light.
 - (vi) Write equation for the fringe width in the case of light reflected by wedge shaped film.
 - (vii) Write the unit of magnetic induction B.

- 2 (a) Obtain the equation for refractive index of liquid using Newton's rings. 8

OR

- (a) Explain recording of hologram and reconstruction of image. 8
(b) A glass wedge of angle 0.01 radian is illuminated by monochromatic light of wavelength 6000 \AA falling normally on it. At what distance from the edge of the wedge will the 8th fringe be observed by reflected light? 4

OR

- (b) Newton's rings are observed in refracted light of $\lambda = 6000 \text{ \AA}$. The diameter of the 8th dark ring is 0.47 cm. Find the radius of curvature of the lens and the thickness of the air film. 4

- 3 (a) Explain detail some properties of the magnetic induction B. 8

OR

- (a) Describe the construction and working of moving coil galvanometer. Show that with the additional resistance it can be used as an ammeter and voltmeter. 8
(b) A uniform surface charge density σ exist on a sphere of radius "a". Calculate the equivalent dipole moment if the sphere is rotating with angular velocity ω about the diameter. 4

OR

- (b) A particle having charge $8.5 \mu\text{C}$ enter perpendicular with velocity of 4750 m/s into the magnetic field of 1.25 Tesla. Calculate the force on the particle. 4

- 4 Write short notes (any two) 12

- (a) Seebeck effect (b) Thomson effect
(c) Thermocouple (d) Newton's ring with reflected light.