



DPP-2947

B. Sc. (Sem. II) Examination

March/April – 2016

Applied Physics : Paper - II

(For Electronics Special Course)

Time : 2 Hours]

[Total Marks : 50

Instructions :

(1)

नीचे दशांशवैध निशानीवाणी विगतो उत्तरवही पर अवश्य लખवी. Fillup strictly the details of signs on your answer book.	Seat No. :
Name of the Examination :	<input type="text"/>
<input type="text" value="B. Sc. (Sem. II)"/>	<input type="text"/>
Name of the Subject :	<input type="text"/>
<input type="text" value="Applied Physics : Paper - II"/>	<input type="text"/>
Subject Code No. : <input type="text" value="2"/> <input type="text" value="9"/> <input type="text" value="4"/> <input type="text" value="7"/>	<input type="text"/>
Section No. (1, 2,.....): <input type="text" value="Nil"/>	
Student's Signature	

- (2) Draw neat and clean diagram wherever necessary.
- (3) Symbols used in the paper have their usual meaning.
- (4) Figures to right indicate full marks.
- (5) 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 $m_e = 6.1 \times 10^{-31}$ kg.
 - (4) Charge of the electron $e = 1.6 \times 10^{-19}$ C.
 - (5) Boltzmann constant = 8.6×10^{-5} eV/K.

1 Answer the following ques. in short, each carries **two** marks. **14**

- (a) What is wedge ?
- (b) What do you mean by Holography ?
- (c) Define Ampere.
- (d) Define sensitivity of Galvanometer.
- (e) Define Thomson coefficient.
- (f) What is difference between photography and Holography ?
- (g) What is neutral temperature ?

- 2 (a) Derive the equation for optical path difference between the waves transmitted through a thin film. 8

OR

- (a) State important properties of Hologram and explain different type of Holography. 8
- (b) A beam of monochromatic light of wavelength 5.82×10^{-7} m falls normally on a glass wedge with the wedge angle 20 seconds of an arc. If the refractive index of glass is 1.5, find the number of dark fringes per cm of the wedge length ? 4

OR

- (b) Newton's ring are observed in reflected 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 in detail some properties of the magnetic induction B. 8

OR

- (a) Describe the principle, construction and working of D'Arsonval moving coil galvanometer. Show that for such instrument the current passing through coil is directly proportional to the deflection produced. 8
- (b) A uniform surface charge density σ exist on a sphere of radius, a. Calculate the equivalent magnetic dipole moment if the sphere is rotating with angular velocity ω about a diameter ? 4

OR

- (b) The coil of a tangent galvanometer has 50 turns of diameter 140 mm. Calculate the reduction factor of galvanometer. $B_E = 0.19 \times 10^{-5} \text{ wb/m}^2$. 4

- 4 (a) Explain Peltier effect in detail. Give explanation of Peltier effect and prove $V_{AB} = (\Phi_y - \Phi_x)/e$. 8

OR

- (a) Discuss and explain Thomson effect. 8
- (b) Explain variation of the Seebeck electromotive force with temperature. 4

OR

- (b) an emf of 1 V is generated when the temperature difference between the hot and cold junctions of a thermocouple is 100 °K. Assuming that the cold junction is heated by 20 °K, determine the percentage change in thermo emf ? 4