



**DPP-2946**

**B. Sc. (Sem. II) Examination**

**March / April - 2016**

**Applied Physics : Paper - I**

*(For Electronics Special Course)*

Time : 2 Hours]

[Total Marks : 50

**Instructions :**

(1)

नीचे दशांशों के निशानोंवाली विंगतों उत्तरवही पर अवश्य लिखनी. Fillup strictly the details of signs on your answer book.		Seat No. :	
Name of the Examination :		□ □ □ □ □ □	
☛ B. Sc. (Sem. II)		Student's Signature	
Name of the Subject :			
☛ Applied Physics : Paper - I			
☛ Subject Code No. :	2 9 4 6	☛ Section No. (1, 2,.....) :	NIL

- (2) Draw neat and clean diagram wherever necessary.  
(3) Symbols used in the paper have their usual meaning.  
(4) Numbers to right indicate full marks of the question.

**Constants :**

- (1) Speed of light (in vacuum)  $c = 3 \times 10^8$  m/s  
(2) Planck's constant  $h = 6.62 \times 10^{-34}$  js  
(3) Mass of electron  $M_e = 9.1 \times 10^{-31}$  kg  
(4) Charge on electron  $e = 1.6 \times 10^{-19}$  c  
(5) Avogadro number  $N_A = 6.02 \times 10^{23}$

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

- (a) Write uses of study of physics of fluids.  
(b) Explain Pascal and atm. related to the pressure.  
(c) What is Bragg's theory of reflection of x-rays from atomic planes in a crystal ?  
(d) Define Gauge pressure.  
(e) State the law of floatation.  
(f) Define stimulated emission.  
(g) What is an apparent weight ?

- 2 (a) State Pascal's principle and how it can be applied to a hydraulic lever ? 8

OR

- (a) Derive the equation of continuity for an incompressible fluid. 8
- (b) A living room has floor dimensions of 3.5 m, 4.2 m and height of 2.4 m, then what does the air in the room weigh when the air pressure is 1 atm ? 4

OR

- (b) The diameter of one end of a tube is 2 cm and that of another end is 3 cm. Velocity and pressure of water at narrow end are 2 m/s and  $1.5 \times 10^5 \text{ N/m}^2$  respectively. If the height difference between narrow and broad ends is 2.5 m, find the velocity and the pressure at the broad end. (Density of water is  $1 \times 10^3 \text{ kg/m}^3$ , the narrow end is higher). 4

- 3 (a) Describe the essential feature of an x-ray tube and explain its mode of action. Describe the method of production and the properties of x-rays. 8

OR

- (a) Describe an experimental outfit for producing X Rays. Mention some of their uses. 8
- (b) Find the critical voltage that must be applied to an x-ray tube to excite the K-series of Copper. Given that the K-absorption limit is 1.380 Å. 4

OR

- (b) An x-ray tube operates at 30 KV. Calculate the shortest wavelength of the emitted x-rays and corresponding frequency. 4

- 4 Write short note on any two : 12
- (i) Characteristics of fluid flow.
- (ii) Properties of x-rays.
- (iii) He-Ne Laser
- (iv) How LASER work.