

This question paper contains 2 printed pages]

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S. No. of Question Paper : 5800

Unique Paper Code : 6792012302

Name of the Paper : Physics for Biologists

Name of the Course : B.Sc. (Hons) Biological Sciences

Semester : III

Duration : 3 Hours

Maximum Marks : 60

(Write your Roll No. on the top immediately on receipt of this question paper.)

Attempt four questions in all.

All questions carry equal marks.

Question No. 1 is compulsory.

1. Attempt any five of the following :

- (a) Write the differences between polar and non-polar dielectrics. 3
- (b) Define viscosity and viscous force. 3
- (c) The critical angle for a certain material is 45° . What is its polarizing angle ? 3
- (d) Give the medical significance of dielectric properties in biological materials. 3
- (e) Why is spectroscopy important for biology ? 3
- (f) Write a short note on Doppler effect ? 3

P.T.O.

2. Define angular momentum and torque. Derive the work energy theorem. Outline the influence of mechanical forces on bone. 15
3. (a) Explain the concept of energy stored in dielectrics. 6
- (b) Derive Gauss's law in the presence of a dielectrics. 6
- (c) Determine the electric susceptibility for a gas whose dielectric constant is 1.000057. 3
4. (a) With the help of suitable diagram explain the principle, construction and working of He-Ne gas laser. 12
- (b) Evaluate the wavelength of radiation given out by a laser with $(E_2 - E_1) = 2.3 \text{ eV}$. 3
5. (a) Explain diffraction through a double slit and compare the pattern with interference. 11
- (b) Two coherent sources whose intensity ratio is 25 : 1 produce interference fringes. Deduce the ratio of maximum intensity to minimum intensity. 4
6. (a) Explain Beer-Lambert Law with example. 5
- (b) Explain Fluorescence spectroscopy with neat diagram. 7
- (c) Write any *three* applications of UV and visible spectrophotometry ? 3