



**LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034**

**B.Sc. DEGREE EXAMINATION – ADVANCED ZOOLOGY AND PLANT BIOLOGY**

THIRD SEMESTER – APRIL 2018

**PH 3206- PHYSICS FOR BIOLOGY**

Date: 04-05-2018  
Time: 01:00-04:00

Dept. No.

Max. : 100 Marks

**PART - A**

Answer **ALL** the Questions:

(10 × 2 = 20)

1. Write the significance of viscosity in view of biology.
2. Arrange the following liquids in the order of increasing coefficient of viscosity: coconut oil, water, castor oil, honey.
3. What is stimulated emission?
4. Write any two applications of laser.
5. The refractive index of a medium is 1.5 and a light ray passes from air into this medium. What will be the speed of light in the medium? (Speed of light in air is  $3 \times 10^8$  m/s.)
6. Write few uses of fluorescent microscope.
7. Define curie.
8. Write any two uses of radio isotopes.
9. What is a transducer?
10. What is a needle electrode?

**PART - B**

Answer any **FOUR** questions

(4 × 7.5 = 30)

11. Define surface tension. Explain molecular theory of surface tension.
12. Explain briefly the construction and working of He-Ne laser with neat schematic and energy level diagrams.
13. Describe the optical principle and working of ultra violet microscope.
14. Describe the construction and working of Ruby laser with necessary diagrams.
15. Explain the construction and working of GM counter.
16. Write a note about various forms of surface electrodes.

**PART - C**

Answer any **FOUR** questions

(4 × 12.5 = 50)

17. Write Stoke's formula for viscous force. Explain with necessary theory, the Stokes method to find the coefficient of viscosity of a liquid.
18. Explain the principle of operation of Nd-YAG laser with help of neat schematic and energy level diagrams.
19. Describe the optical principle, construction and working of a compound microscope.

20. Draw the schematic diagram and describe the optical principle of (i) Transmission Electron Microscope (TEM) and (ii) Scanning Electron Microscope (SEM).
21. Using the law of radioactive disintegration, derive expressions for half-life and mean-life of a radioactive element.
22. Describe the working of a pressure transducer.

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