LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **PLANT BIOLOGY & BIO TECH.**

THIRD SEMESTER – **APRIL 2014**

PH 3206 - PHYSICS FOR BIOLOGY

Date : 10/04/2014   Dept. No.   Max. : 100 Marks
Time : 09:00-12:00

PART - A

Answer **ALL** questions   (10 x 2 = 20)

1. Define Viscosity of liquid and give its unit.

2. Give any two biological significance of surface tension.

3. Differentiate spontaneous emission and stimulated emission in Laser action.

4. What is population inversion in Laser action?

5. Define Amplitude, wavelength and frequency of light wave.

6. Define Resolving power of a microscope.

7. What are half life and mean life time of a radioactive substance?

8. State any four uses of radioisotopes.

9. Define electrode and classify it.

10. In a non-inverting bio amplifier V_{in} =1V, R_{in} =1kΩ and R_f =2 kΩ. What is the output voltage?

PART - B

Answer any **FOUR** questions   (4 x 7.5 = 30)

11. Describe kinetic theory of surface tension of a liquid with diagram.

12. Explain Ruby laser with neat diagram.

13. Draw the optical principle of interference microscope and explain its operation.

14. What is the principle of Geiger-Muller counter? Explain its working with suitable diagram.

15. Describe the working of pulse sensor.

PART - C

Answer any **FOUR** questions   (4 x 12.5 = 50)

16. i) Describe Stoke's method of determining viscosity of a liquid. (6.5)

    ii) List the biological significance of viscosity.   (3)

    iii) Enumerate the factors affecting viscosity.   (3)

17. Explain construction and working of CO_2 laser with energy level diagram.

18. With a neat sketch explain the principle and working of compound microscope.

19. i) Explain the working of a) proportional counter and b) Scintillation counter with suitable diagram.   (4.5+3)

    ii) List any five uses of radio isotopes.   (5)

20. i) Explain the operation of pressure transducer, temperature transducer and physiological transducer. (3+3+3)

ii) Describe the working of a respiration sensor. (3.5)