LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034
B.Sc. DEGREE EXAMINATION – MATHS / CHEMISTRY
II SEMESTER – NOVEMBER 2003
PH 203 / 205 / 403 – GENERAL PHYSICS II

08.11.2003 100 Marks
1.00 – 4.00

PART – A

*Answer **All** questions* (10 x 2 = 20 marks)

01. What is a Zone plate?
02. Give the geometry of a Nicol prism
03. Define specific rotatory power of an optically active substance
04. State Gauss's law in differential form
05. Three capacitors of capacitance values 1 μF, 2 μF and 3 μF are arranged in series. What is the effective capacitance?
06. Define the ampere, the unit of current.
07. Distinguish between amplitude and frequency modulations.
08. What are the charge carriers in semiconductor devices?
09. Give the truth table of the NAND gate
10. List any four properties of X-rays.

PART – B

*Answer any **FOUR** questions* (4 x 7 ½ = 30 marks)

11. Prove the rectilinear propagation of light by Fresnel's theory of half-period zones
12. Derive an expression for the loss of energy on sharing of charges between two capacitors.
13. Find the magnetic field at any point due to an infinitely long wire carrying current.
14. State and prove De Morgan's theorems.
15. Discuss the theory and production of X-rays with a neat diagram.

PART – C

*Answer any **FOUR** questions* (4 x 12 ½ = 50 marks)

16. Explain the theory of production and of analysis of different types of polarized beams.
17. Using Gauss's law, determine the intensity of electric field due to (i) a charged sphere and (ii) a line charge.
18. Derive an expression for the intensity of magnetic field along the axis of a current carrying circular coil.
19. Explain the working of a two-stage RC coupled amplifier with a circuit diagram. Also explain the frequency response of the amplifiers.
20. Discuss with necessary theory the working of Bragg spectrometer.

# # # # #