

LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034
B.Sc. DEGREE EXAMINATION – PHYSICS
FOURTH SEMESTER – NOVEMBER 2003
PH 4201 / PHY 201 PHYSICS FOR CHEMISTRY

08.11.2003
1.00 – 4.00

100 Marks

SECTION - A

Answer ALL questions

(2 x 10 = 20 marks)

01. What is a polarimeter?
02. What is diffraction?
03. Give expressions for the combined capacitance of three capacitors connected in (i) series (ii) parallel.
04. State Lenz's law.
05. Define half-life period of a radioactivity substance
06. State Pauli's exclusion principle.
07. List any four characteristics of an operational amplifier.
08. Sketch an half-adder.
09. What is Crystal lattice?
10. Define packing factor.

SECTION - B

Answer any FOUR questions

(7.5 x 4 = 30 marks)

11. Discuss in detail polarisation by reflection.
12. Derive an expression for the energy stored by a charged capacitor.
13. Explain the binding energy of a nucleus and derive an expression for the same.
14. With a neat sketch derive an expression for the gain of an inverting amplifier using an operational amplifiers.
15. Tabulate the main characteristics of the seven crystal systems.

SECTION - C

Answer any FOUR questions:

(12.5 x 4 = 50 marks)

16. Explain how a plane transmission grating can be used to determine the wave length of a spectral line.
17. Explain with necessary theory how a Carey-Foster bridge may be used to compare two nearly equal resistances.
18. State Bohr's postulates of hydrogen atom model. Obtain expressions for the radius and energy of the n^{th} orbit.
19. Realise operational amplifier as
(a) adder (b) differentiator (c) integrator
20. How are lattice parameter of a crystal found using Bragg's x-ray spectrometer?

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