LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

**B.Sc.** DEGREE EXAMINATION –  **CHEMISTRY**

THIRD SEMESTER – NOVEMBER 2010

# PH 3202 - PHYSICS FOR CHEMISTRY - II

Date : 12-11-10 Dept. No. Max. : 100 Marks

Time : 9:00 - 12:00

**PART-A**

**Answer all the questions. 10x2=20**

1. Subtract the given binary numbers by 2’s complement method, 10001 - 01110
2. State De-Morgan’s law.
3. What is photoelectric effect?
4. State Pauli’s exclusion principle.
5. What is mass defect?
6. What is inverse Piezo-electric effect.
7. What are elementary particles?
8. A microscope, using photons, is employed to locate an electron in an atom to within a distance of 0.2Ǻ. What is the uncertainty in the momentum of the electron located in this way?
9. Mention any two factors that affect the acoustics of a building.
10. What are matter waves?

**PART-B**

**Answer any four questions. 4x7.5=30**

1. With a neat circuit diagram and truth table explain full binary adder.
2. Describe Millikan’s experiment to verify the Einstein’s photo electric equation.
3. Obtain the Newton’s formula of velocity of sound.
4. Describe the liquid drop model of the nucleus.
5. Derive Schrodienger time dependent wave equation from the fundamental wave equation.

**PART-C**

**Answer any four questions 4 x12.5=50**

1. a) What is Karnaugh map (K map) method? **(2)**

b) Simplify the Boolean function F(A,B,C,D) = ∑(0,1,2,4,5,10,11,14,15) using K-map. Design a logic circuit of the simplified equation. **(7.5+3)**

1. a) State the postulates of Bohr’s atom model. **(2.5)**

b) Obtain expressions for the radius and electron energy of the nth orbit. **(10)**

1. a) State Sabine’s law **(2.5)**

b) Derive the expression for reverberation time from Sabine’s law **(10)**

1. Describe the Davisson and Germer experiment for the study of electron diffraction.
2. Give a detailed account of the general properties of a nucleus.