

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



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

**THIRD SEMESTER – NOVEMBER 2013**

**PH 3202 - PHYSICS FOR CHEMISTRY - II**

Date : 13/11/2013  
Time : 9:00 - 12:00

Dept. No.

Max. : 100 Marks

**PART-A**

**Answer all the questions**

**(10 x 2 = 20)**

1. Convert the given decimal number 56.42 into binary number.
2. State Demorgan's theorem.
3. What is photoelectric effect?
4. State Pauli's exclusion principle.
5. Write any two general properties of nucleus.
6. What are elementary particles?
7. Define absorption coefficient of material.
8. What are the two types of sound waves?
9. State Heisenberg's uncertainty principle.
10. What is box normalization of wave system?

**PART-B**

**Answer any four questions**

**(4 x 7.5 = 30)**

11. Simplify the given Boolean function using K-map  $F(A,B,C,D)=\sum(0,2,5,7,8,10,13,15)$
12. Discuss about different types of photoelectric cells.
13. Explain nuclear fission reaction by using liquid drop model.
14. Describe the production of ultrasonic sound waves by Piezo-electric method.
15. Derive Schrödinger time dependent wave equation from the fundamental wave equation.

**PART-C**

**Answer any four questions**

**(4 x 12.5 = 50)**

16. With a logic circuit and truth table describe the working of a JK flip-flop.
17. a) State the postulates of Bohr atom model **(2.5)**  
b) Obtain the expression for the radius and electron energy of the  $n^{\text{th}}$  orbit. **(10)**
18. a) Write the semi-empirical mass formula to calculate the binding energy of the nucleus and explain each term in it. **(10)**  
b) Draw a graph of binding energy per nucleon versus mass number. **(2.5)**
19. Derive an expression for reverberation time from Sabine's law.
20. a) Find the de-Broglie wave length associated with a 46gm golf ball with velocity 36m/s. **(2.5)**  
b) Describe Davisson and Germer experiment for the study of electron diffraction. **(10)**

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