



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – MATHEMATICS

FOURTH SEMESTER – APRIL 2016

PH 4206 - PHYSICS FOR MATHEMATICS - II

Date: 27-04-2016
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

PART - A

Answer **all** questions:

(10×2=20marks)

1. Convert the decimal number 84 to its hexadecimal equivalent.
2. Draw the circuit symbol and truth table of NAND gate.
3. State Pauli's exclusion principle.
4. Write any two industrial applications of X -rays.
5. What is nuclear binding energy?
6. Give a note on nuclear forces.
7. What is the effect of pressure and humidity on velocity of sound?
8. Mention any two conditions for good acoustical design of rooms.
9. State Heisenberg's uncertainty principle.
10. What are matter waves?

PART - B

Answer any **FOUR** questions:

(4×7.5 = 30marks)

11. Simplify using K – map.
 $Y = F(A,B,C,D) = \Sigma(1,5,6,7,11,12,13,15)$
12. Derive expression for the energy of an electron in n^{th} orbit of an atom.
13. Briefly explain the classification of elementary particles.
14. What is piezo – electric effect? How ultrasonic waves are produced using piezo – electric crystal?
15. Derive time dependent Schrodinger equation.

PART - C

Answer any **FOUR** questions:

(4×12.5 = 50marks)

16. With neat circuit diagrams, explain the function of full and half binary adders.
17. Explain Millikan's experiment with the help of a diagram and prove Einstein's photoelectric equation.
18. Write the semi – empirical mass formula for a nucleus and explain all the terms.
19. (a) Derive expression for the velocity of a transverse wave along a stretched string. **(8.5)**
(b) Write any four applications of ultrasonic waves. **(4)**
20. With a neat diagram, explain Davission and Germer experiment.
