LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **MATHEMATICS**

FOURTH SEMESTER – **NOVEMBER 2016**

PH 4206 – PHYSICS FOR MATHEMATICS - II

Date: 11-11-2016 Dept. No. Max. : 100 Marks

Time: 01:00-04:00

PART A

Answer **ALL** questions: 10 x 2 = 20 marks

1. Find the Binary equivalent of 45_{10}.
2. What do you mean Decade counter?
3. State Pauli's exclusion principle
4. Define Photo electric effect.
5. What is known as nuclear isotope?
6. Define Nuclear Fission reaction.
7. What do you mean Piezo electric effect?
8. How does temperature affect the velocity of sound?
9. State Heisenberg's uncertainty principle.
10. Calculate the de Broglie wavelength of a matter moving with 0.9 times the velocity of light.

PART B

Answer **ANY FOUR** questions: 4 x 7.5 = 30 marks

11. Explain the Full Binary adder with suitable diagram.
12. Explain the Laws of Photoelectric effect.
13. Describe the B.E/A versus A curve of nuclei.
14. Explain the experiment to obtain Velocity of a transverse wave along a stretched string.
15. Derive the Schrodinger time independent wave equation.

PART C

Answer **ANY FOUR** questions: 4 x 12.5 = 50 marks

16. Obtain the sum-of-products expression for the given function using Karnaugh map. $F(A,B,C,D) = \sum (0,3,4,7,8) + \sum(10, 12,13,14,15)$.
17. Derive Einstein's photo electric equation and verify it experimentally.
18. Derive Semi empirical mass formula for nuclear energy.
19. Derive Sabine's Formula for Reverberation time of an Auditorium.
20. Explain Plank's quantum theory of black body radiation.

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