



LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – MATHEMATICS

THIRD SEMESTER – NOVEMBER 2017

PH 3104 - PHYSICS FOR MATHEMATICS - I

Date: 11-09-2017
Time: 09:00-12:00

Dept. No.

Max. : 100 Marks

PART A

Answer **ALL** questions:

10 x 2 = 20 marks

1. Distinguish between distance and displacement.
2. What do mean by generalized coordinates?
3. Define gravitational potential.
4. Define escape velocity of a planet.
5. State Hooke's law of elasticity.
6. Define viscosity of a liquid.
7. Draw the circuit diagram of two input summing Operational amplifier.
8. What do you mean common mode rejection ratio (CMRR)?
9. State the postulates of special theory of relativity.
10. Define Inertial and Non Inertial Frames of reference.

PART B

Answer any **FOUR** questions:

4 x 7.5 = 30 marks

11. Obtain an expression for the range of a projectile.
12. a) State the three kepler's laws of planetary motion. (6)
b) Define parking orbit of a satellite. (1.5)
13. Describe the molecular theory of surface tension with suitable diagram.
14. Explain Op-amp as i) Inverting amplifier and ii) Non-Inverting amplifier.
15. Derive Einstein's mass energy relation.

PART C

Answer any **FOUR** questions:

4 x 12.5 = 50 marks

16. Derive Lagrange's equation of motion using D'Alembert's principle.
17. Describe Boy's experiment to determine Universal gravitational constant G with a neat diagram.
18. Explain the determination of surface tension of a given liquid by capillary rise method
19. Explain the working of i)Half adder and ii)Full adder with necessary circuit diagram and truth table.(6+6.5)
20. Describe Michelson-Morley experiment. Discuss the results obtained.

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