



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

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

THIRD SEMESTER – APRIL 2017

**PH 3104- PHYSICS FOR MATHEMATICS - I**

Date: 02-05-2017  
01:00-04:00

Dept. No.

Max. : 100 Marks

**Part A**

Answer **all** the questions (10X2=20)

1. Define Velocity. Give its unit.
2. What are degrees of freedom?
3. State Newton's law of gravitation.
4. What is gravitational red shift?
5. Define Poisson ratio. Give its limiting values.
6. Enumerate two applications of surface tension.
7. What do you mean by slew rate?
8. Draw the circuit diagram of mod 4 counter.
9. Distinguish between inertial and non-inertial frames.
10. State the postulates of special theory of relativity.

**Part B**

Answer any four questions

(4X7.5=30)

11. What are constraints? Explain its types with an example.
12. Obtain the expression for gravitational potential at a point on the earth surface.
13. Explain the Molecular theory of surface tension.
14. Deduce the expression for work done in stretching a wire.
15. Discuss the working of Half adder.
16. Obtain Einstein's mass energy relation.

**Part C**

Answer any four questions

(4X12.5=50)

17. Set up lagrangian and obtain the equation of motion of
  - A) Simple pendulum
  - B) Atwood's machine
18. Discuss the Boy's method of determining gravitational constant G.
19. Obtain the relation connecting three moduli of elasticity.
20. Explain the working of Operational amplifier as
  - A) Inverting amplifier
  - B) Difference amplifier
21. Explain the construction and working of Michelson and Morley experiment. Discuss the results.
22. With a neat diagram, explain the working of JK flip flop.

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