LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

B.Sc. DEGREE EXAMINATION – **PHYSICS**

SECOND SEMESTER – **NOVEMBER 2015**

PH 2503 - MECHANICS

Date : 28/09/2015 Dept. No. Max. : 100 Marks
Time : 09:00-12:00

PART – A

Answer ALL questions: (10 x 2 = 20)

1. Write down the statement of conservation linear and angular momentum.
2. What is meant by centre of mass?
3. Write down Fick's law.
4. Give the statement of Toricelli's theorem.
5. What are concurrent forces and parallel forces?
6. Write down the statement of principle of virtual work.
7. What is meant by centre of pressure? Give its expression for rectangle.
8. Write a short note on kepler laws.
9. What is meant by generalized coordinates?
10. Explain the concept of "Weightlessness".

PART – B

Answer any FOUR questions: (4 x 7.5 = 30)

11. Explain the Torsional pendulum.
12. Explain meta centric height and its determination.
13. Derive the equation of motion for simple pendulum using Lagrange's equation.
14. Explain the venturimeter.
15. Explain the concept of "parking orbits".
16. Explain Bifilar pendulum with parallel threads.

PART – C

Answer any FOUR questions: (4 x 12.5 = 50)

17. Explain in detail rocket motion using newton's second law.
18. Calculate the centre of gravity of a) solid cone b) hollow cone c) solid hemisphere.
19. Derive Lagrange's equation from D'Alemberts equation.
20. Explain in detail the Bernoulli's theorem and mention its applications.
21. Write a short note on: a) Mass of the sun b) Satellite kinetic & potential energy c) Velocity of escape.
22. Explain in detail the compound pendulum. How to determine g and k?

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