St. Joseph's College of Arts & Science (Autonomous)

St. Joseph's College Road, Cuddalore – 607001

Basics of Newtonian & Classical Mechanics

SUBJECT CODE:PH303

Two Marks:

1. Define Centre of pressure.

2. Define Centre of Gravity.

3. State Bernoulli's Theorem.

4. Define Radius of Gyration.

5. Define Moment of Inertia.

6. Define Range of Projectile.

7. What is Cone of Friction?

8. What is Rolling Friction?

9. Define Co-efficient of Friction.

10. Define Escape Velocity.

11. Define Orbital velocity.

12. Define Virtual Work.

13. What is Generalised coordinates?

14. Write down the Transformation Equation (Vector Form).

15. Write down the Types of satellites.

16. What is Rigid Body?

17. Expression for Atwoods machine.

18. Write down the Laws of Flotation.

19. Write down the Equation of continuity

20. State Bernoulli's Theorem.

21. State Radius of Gyration.

22. What is Projectile motion?

23. State Laws of Friction.

24. Define Angle of Friction.

25. State D'Alembert's Priciple.

26. Define Configuration space.

Five Marks:

1.Write down the Expression for Centre of Gravity of Cone.

2. Write down the Expression for Centre of Gravity of Hemisphere.

3. Write down the Expression for Moment of Inertia of Solid Cylinder.

4. Write down the Expression for Moment of Inertia of cylindrical shell.

5. Write down the Expression for Moment of Inertia of Spherical Shell.

6. Write down the Expression for Moment of Inertia of Solid Sphere.

7. Derive Rocket Equation.

8. Explain about the propellants of a Rocket.

9. State and Explain D'Alemberts principle.

10.How will you determine the g and k for compound pendulum.

11. How will you determine the g and k for bifilar pendulum.

12. Explain the Types of Satellite orbits.

13.Write down the Mechanics of system of particles.

14. Derive the Expression for Atwoods machine using Lagrangian Equation.

Ten Marks:

1. State and Explain Bernoulli's theorem.

2. Determine the acceleration due to gravity using a Bifilar pendulum.

3. (a) Explain projectile on an Inclined plane.

   (b)Discuss the rolling friction and stability.

4. Discuss the Different types of Propellant Rockets.

5. Derive the Langrange's equation from D'Alembert's principle.

6. Derive the Expression for Range and Time of flight of a projectile on an Inclined plane.

7. Describe the Principle and theory of Rocket motion.

8. State and explain laws of flotation. Derive an expression for centre of pressure of a rectangular lamina.

9. How will you determine the g and k for compound pendulum.

10. How will you determine the g and k for bifilar pendulum.