**ST.THERESA’S ARTS AND SCIENCE COLLEGE FOR WOMEN, THARANGAMBADI**

**MODEL QUESTION PAPER - MECHANICS**

**CODE: 16SCCPH2 MAX MARKS: 75 Marks**

**CLASS: I – B.Sc PHYSICS TIME: 3 Hrs**

 **SECTION – A (Answer all questions) (10X2=20)**

1. Define projectile.
2. Define impulse of a force.
3. Write a short note on centrifugal force.
4. What is hodograph?
5. State Newton’s law of gravitation.
6. Define equipotential surface.
7. Write a short note on moment of inertia.
8. State friction.
9. Define centre of pressure.
10. What is metacentre?

 **SECTION – B (Answer all questions) (5X5=25)**

1. (a) Explain the oblique impact between two smooth spheres. (OR)

(b) Describe a loss of KE due to direct impact.

 12. (a) Explain why a cyclist bends while negotiating a curve road. (OR)

(b) Explain the variation of ‘g’ with depth.

1. (a) Derive the Kepler’s laws of planetary motion. (OR)

(b) Describe orbital velocity.

1. (a) State and prove perpendicular axis theorem. (OR)

(b) State laws of friction.

1. (a) Describe a centre of gravity of a solid hemisphere. (OR)

(b) Explain Fortin’s barometer.

 **SECTION – C (Answer any THREE questions) (3X10=30)**

1. Explain the range of a projectile on plane inclined to the horizontal.
2. Derive an expression for normal acceleration.
3. Explain a gravitational potential and field due to a spherical shell.
4. Discuss the compound pendulum in detail.
5. Describe a stability of equilibrium of a floating body.