

Assignment # 5  
Applied Physics.

1. Differentiate between conservative and non-conservative fields in terms of mechanics / electrostatics. Give at least five examples.

In the context of mechanics and electrostatics, conservative & non-conservative fields refer to how the work done on an object depends on the path taken.

⇒ Conservative Fields:

1. Gravitational force: It is a conservative field. The work done in lifting an object from one point to another is the same, regardless of the path taken.

2. Electrostatic force: The electric field in electrostatics is conservative. The work done in moving a charged particle from one point to another is independent of the path taken.

3. Spring force: The force exerted by a spring is conservative. The work done in compressing or extending a spring depends only on the initial and final positions.

4. Magnetic force: In some situations, the magnetic field can be conservative.

⇒ Non-conservative Fields:

4. Frictional force: Friction is a non-conservative force. The work done against friction depends on the specific path taken.

5. Air resistance: The force due to air resistance is a non-conservative force. The work done against air resistance depends on the path and speed of the object.

6. Tension in a moving rope: The tension in a moving rope is a non-conservative force. The work done in pulling an object with a rope depends on the path the rope takes.

7. Viscous Drag in Fluids: The drag force experienced by an object moving through a fluid is non-conservative. The work done depends on the specific path taken.