**FIDE-AKWUOBI ANTHONY CHIZALU**

**17/ENG06/037**

**MEE 312**

**MECHANICAL ENGINEERING 300 LVL**

1. **Explain Dry and Fluid friction**

Fluid friction is the friction which exists between two fluid surfaces moving relative to each other or a solid and a fluid surface. It could also be known as Drag when it is between a solid and fluid.

Fluid friction is dependent on some factors which are:

**Nature of the fluid (thickness):** The thicker the fluid the higher its viscosity (resistance to flow), the lighter the fluid, the lower its viscosity.

**Velocity:** The velocity of the bodies moving through the fluid determines the friction. The higher the velocity, the higher the drag.

**Shape of the object:** When an object moves through a fluid, its shape determines the friction (form drag). The more streamlined it is, the less drag**.**

**Practical Examples:**

* **On some aircraft engines, drag is employed as a form of braking which uses reverse thrust doors to channel exhaust air in the opposite direction to help slow it down.**
* **When there is a layer of fluid between two thin sheets of glass, the bottom layer does not fall off when picked up from the top.**
* **Drag is used in parachutes to reduce speed of objects in freefall.**
* **Water at high pressure is used in water-jet cutters to cut a wide-variety of materials in the industries.**

**Dry friction exists between solid surfaces in contact or relative motion with one another. It opposes the motion. It can be divided into Static friction which exists between non-moving surfaces and Kinetic friction which exists between moving surfaces.**

**Practical examples:**

* **Rubbing of stones to start a fire.**
* **Striking of a match against the matchbox.**
* **Sanding process during spray painting with sandpapers uses friction.**
* **Grip between our shoes and the ground is possible because of friction.**
* **It is used in braking in vehicles.**

1. **Explain Wedges, Square-threaded screws and Journal bearings**

**Wedges:** A wedge is a simple machine used to separate two objects, or portions of objects, through the application of force. It takes the force applied to its flat vertical edge and transfers it to a perpendicular force at its inclined edge. Examples are knives, axes, nails, chisels, e.t.c. The ideal mechanical advantage (IMA) of a wedge is the ratio of the distance the wedge penetrates into the material it's splitting (D) to the width of the split (W). Friction is also taken into consideration as it tends to offset the driving force of the wedge depending on the material.

**Square-threaded screws:** It is a screw used for power applications and fastening. The friction in the thread determines the action of the screw. It is used in vices and screw-jacks for lifting operations.

**Journal-Bearing:** The purpose of a journal bearing is to support a rotating shaft and it does so by tending to oppose the motion of the shaft at the point of contact between the shaft and the bearing.