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DEPARTMENT: MECHANICAL ENGINEERING

MEE 312

ASSIGNMENT 2:

QUESTION 1

DRY FRICTION:

Dry friction is the force that opposes the relative lateral motion of two solid surfaces (that are mainly unlubricated) in contact. Dry friction is always in opposition to the surfaces sliding relative to one another and can have the effect of either opposing or causing motion in bodies and surfaces.

Practical examples:

- Dry friction is present between a wedge and logs when the wedge is used to split the logs.
- Dry friction can also be experienced when a sled is ridden on top the ground.
- Self oscillation of the strings in bowed instruments such as Violins is caused by dry friction

FLUID FRICTION:

Fluid friction (sometimes referred to as viscosity) occurs between fluid layers that are moving relative to each other. Fluid friction is the force that resists motion either within the fluid itself or of another medium moving through the fluid. It is important to note that there is an internal friction which is a result of the interaction between molecules of the fluid, and there is external friction which refers to how a fluid interacts with other matter.

Practical examples:

- Fluid friction is highly present during the levitation of a jet or aerofoil and only by the overcoming of this fluid friction can a Jet really take off and lift into the air.
- In the automatic transmission in a car, the torque converter works based on the concept of fluid friction.

QUESTION 2:

WEDGES.

A wedge is a thin simple mechanical device that is used to force two objects apart or to force one object away from a close surface. Wedges have the effect of allowing users to create very large normal force to move objects with relatively small input forces. The friction forces in wedge systems also tend to be very large though, and can reduce the effectiveness of wedges.

SQUARE-THREADED SCREWS.

A square-threaded screw is a common screw thread form, used in high load applications such as leadscrews and jackscrews. It gets its name from the square cross-section of the thread. It is the lowest friction and most efficient thread form, but it is difficult to fabricate. These are difficult to cut with Tap and dies and are usually cut on a lathe with a single point cutting tool, making it expensive.

JOURNAL BEARINGS.

A journal bearing is essentially a cylindrical shaft in a cylindrical cavity of larger diameter and the space between them contains a liquid lubricant. Journal bearings are one of the most common types of hydrodynamic bearings.