ROHININ COLLEGE OF ENGINEERING AND TECHNOLOGY
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DEPARTMENT OF MECHANICAL ENGINEERING

NAME OF THE SUBJECT: ENGINEERING   MECHANICS

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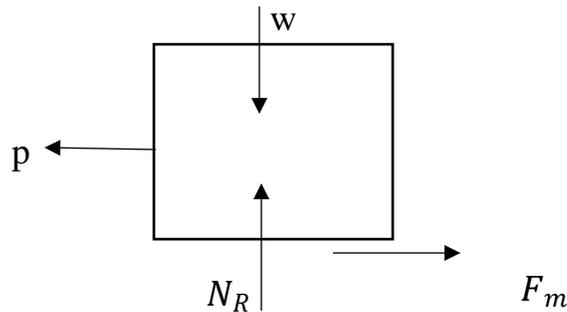REGULATION   2021

UNIT V: FRICTION

Unit –V

FRICTION

Friction:

　　When the two surface contact with each other and one surface tense to move with respect to another surface.

　　The tangent force developed in the contact6 surface and in the opposite reaction.

Types of Friction:

- Dry Friction or coulomb friction
- Fluid friction

Dry friction:

　　It is referred to the friction which is developed b/w two dry surface

Dry friction types

1. Static friction
2. Dynamic friction

Static friction:

　　It is the friction which experience by object when it is rest.

Dynamic friction:

　　It is the friction which experience by object in moving condition.

Dynamic friction further classified by two types

1. Sliding friction
2. Rolling friction

Coefficient of Friction:

It is the ratio b/w limiting friction and the normal reaction [normal friction] is called coefficient of friction.it is denoted by letter μ

$$\mu = \frac{F_N}{R}$$

Coulomb Law of Friction [Dry Law]

1. Law of static friction
2. Law of dynamic friction

Law of static friction:

* The frictional force is always act opposite direction to be movement of the object or body
* The frictional force does not depends upon the size and shape of the object
* The frictional force depends the degree of roughness of the contact surface b/w the two object
* The frictional force is equal to force applied to the body or object
* Limiting friction is directly propositional to the normal friction
$$F_N \alpha N_R$$

Coulomb Law of Dynamic Friction:

* The frictional force is always opposite to the movement of the object.
* The magnitude of the dynamic friction the contact ratio to normal reaction b/w two system
* The coefficient of kinetic friction less then coefficient of static friction

Angle of friction:

Angle of friction is Angle made by the resultant with the normal reaction and frictional force.

$$tan\emptyset = \frac{F_N}{N_R}$$

$$\emptyset = tan^{-1} \left[\frac{F_N}{N_R} \right]$$