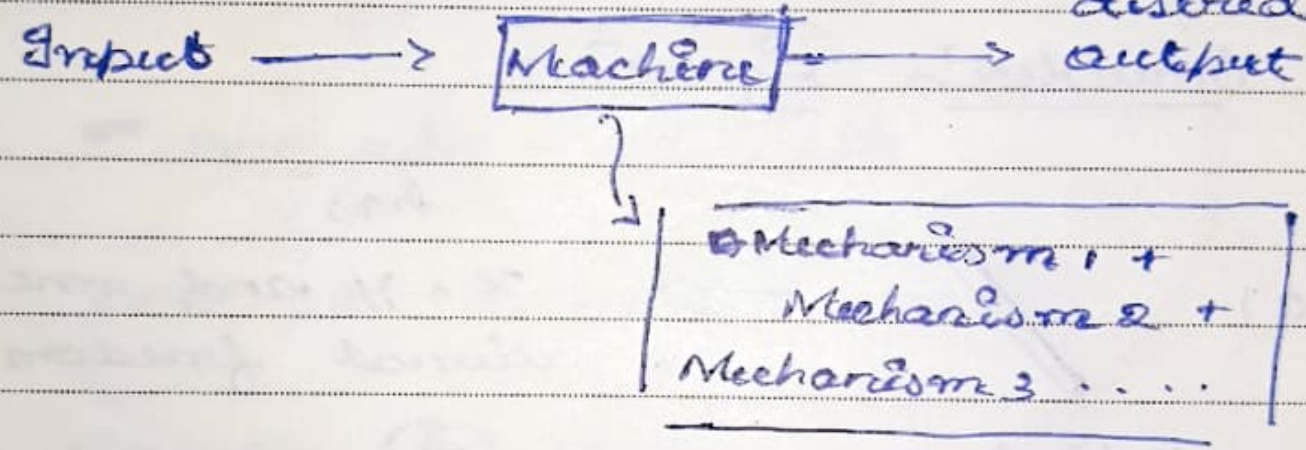
1) Mechanism



System of parts that works together to perform specific function

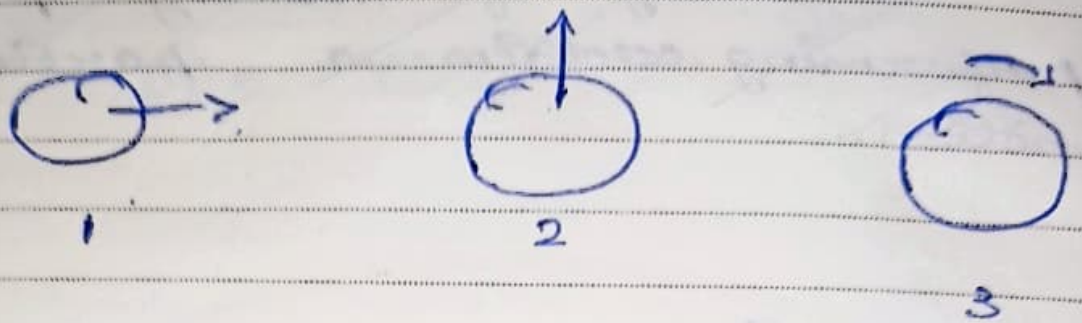
DoF

No of independent variables to describe the state of a system.

Date :

Notes

Ice Hockey Puck

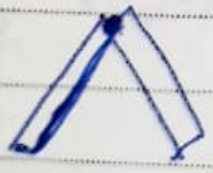


DOF = 3

Grubler's Equation

a)  ⟶ has x, y and one rotational freedom.

1 Link (3)

b)  ⟶ has x, y, 2 Rotational freedom

2 Link 1 joint (4)

But 2 Links have total DOF = 6

So 1 joint causes loss of 2 DOF

c)  → if Link is grounded it can't rotate nor translate

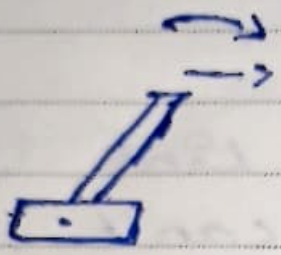
Loss of DOF = 3

∴ $DOE = 3N - 2J - 3G$

$DOE = 3(N - G) - 2J$

N = No of Links
G = No of Ground Links
J = No of Joints

b) if there are higher order joints



· x, rotational freedom

Loss of Freedom = 1

Final Formula

$$DOF = 3(N-G) - 2J_L - J_H$$

J_L = Lower order joints

J_H = Higher order joints