Physics 0 **Homework** **Week 8**

Teacher: Sayan Chakraborti Student:

Newton’s Third Law of Motion

Problem 1: Conceptual Understanding of Newton's Third Law (No Calculations Required)

Rocket Propulsion: Explain how a rocket is able to move forward in space where there is no air for it to push against. Use Newton's Third Law of Motion in your explanation. Remember, Newton's Third Law states that for every action, there is an equal and opposite reaction.

Problem 2: Applying Newton's Second and Third Law (Numerical Problem)

Skateboard Dynamics: Imagine two friends, Alex and Bella, are standing on skateboards facing each other. Alex's mass is 40 kg and Bella’s mass is 60 kg. Alex pushes Bella and moves her backward with an acceleration of 2 m/s^2.

a) Using Newton's Second Law ($F = m \times a$), calculate the force on Bella.

b) According to Newton's Third Law, what force will Bella push Alex back with? If Bella moves backward with the given acceleration (2 m/s^2), what acceleration will Alex have?