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Set A Time: 40 Minutes	**PHY 101: Mechanics** Class Test 1 | 15 Marks	Spring 2026 Batch 70 (L1T2)

1 **A footballer kicks a ball into the air, and it appears to follow a curved (conical) path.**
a) What will this path be called if the motion is considered projectile motion? (1) (CO1)
b) Show mathematically that the path followed by the ball is parabolic. (4) (CO2)

2 **Two molecules in an isolated jar collide with each other, and an action–reaction force acts between them.**
a) Which law of motion describes this type of interaction? State the law. (1) (CO1)
b) Show mathematically that the linear momentum of the system remains conserved. (3) (CO2)

3 A golf ball is hit from the ground at 35 m/s at an angle of 55°. The ground is level.
a) How long is the ball in the air? (2) b) What is the maximum height of the ball? (2)
c) A cyclist starts from the rest and accelerates uniformly to a speed of 10 cm/sec over a distance of 400 cm. Calculate the acceleration of the cyclist and determine the total time it takes for the cyclist to reach the final speed. (2) (CO3)