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Set A Time: 45 Minutes	**PHY 101: Mechanics** Class Test 1 | 15 Marks	Fall 2025 Batch 69 (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 1500 kg car is combined with another car with a mass of 1000 kg by colliding with it at a velocity of 3 cm/sec. Find the velocity of the cars just after their collision. (2) (CO3)