

Mid-semester Examination-1

Course: PHY105B (Physics for Biologist) for BMB,

(Session: 2010-2011), 2nd Semester,

Time: 50 min., Full Marks: 20,

Date: 18/ 09 / 2011

[Answer the following questions]

1. What is a projectile? Show that the trajectory of a projectile is parabolic 2+6
2. A bullet is fired with initial speed 110 m/s and initial angle (with the horizontal) 55° . Calculate the time at which it reaches the maximum height, h . Also calculate h . [Given, $g = 9.8 \text{ m/s}^2$] 4
3. State the principle of conservation of momentum. 2
4. For a head-on elastic collision between two bodies A and B , what are their velocities after collision? Their velocities before collision are $v_{A1} = 2 \text{ m/s}$ and $v_{B1} = -3 \text{ m/s}$, and masses are $m_A = 6 \text{ kg}$ and $m_B = 4 \text{ kg}$. 4
5. What is meant by the moment of inertia of a body? 2