

Questions.

Q.1. What do you mean by non-inertial frame of reference?

Q.2. What do you mean by fictitious forces? Discuss centrifugal force.

Q.3. What is Coriolis force?

Q.4. Differentiate between real and fictitious force.

Q.5. Prove that the observed acceleration due to gravity g_{ϕ} at the latitude ϕ is related to its value g by the relation.

$$g_{\phi}^2 = (g \cos \phi - \omega^2 R \cos \phi)^2 + (g \sin \phi)^2$$

Q.6. A bullet is fired horizontally in the north direction with a velocity of 500 m/sec at 30° N latitude. Calculate the horizontal component of Coriolis acceleration and the consequent deflection of the bullet as it hits a target 250 metres away. Also determine ~~the~~ the vertical displacement of the bullet due to gravity. If the mass of the bullet is 10 gm. Find the Coriolis force.