

Physics XI _ Motion_ Theory Questions from Past Papers

Q. It is observed that all bodies sliding down a frictionless inclined plane have the same acceleration. How does it happen? Explain. **(Year 2010)**

Q. Define elastic collision? Two spherical bodies of masses m_1 & m_2 moving with the initial velocity u_1 & u_2 collide elastically in one dimension. Derive the expression for their final velocities. **(Year 2010)**

Q. Two unequal masses connected by a string passing over a frictionless pulley moving vertically. Find the expressions for the tension 'T' in the string & the acceleration 'a' of the system. **(Year 2009)**

Q. It is observed that all bodies' slides down a frictionless inclined plane have the same acceleration. How does it's happen? Explain **(Year 2009)**

Q. State & prove the law of conservation of linear momentum. **(Year 2007)**

Q. Derive an expression for the acceleration of a body of mass 'm' moving down a plane of inclination " θ " having the friction "f". **(Year 2006)**

Q. Give the difference between elastic collision & inelastic collision. Two spheres of unequal masses A & B moving with the initial velocities u_1 & u_2 in the same direction collide elastically. Derive the relation of final velocity V_2 of the body. **(Year 2006, 2004)**

Q. Two unequal masses are suspended from the two ends of a string passing over a frictionless pulley in such a way that both the bodies hang vertically. Derive the relation for the acceleration produced in the bodies & the tension produced. **(Year 2005)**

Q. Prove that all bodies with the same acceleration on a frictionless plane. **(Year 2004)**

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Q. Give the difference between elastic collision & inelastic collision. Two spheres of unequal masses A & B moving with the initial velocities u_1 & u_2 in the same direction collide elastically. Derive the relation of final velocity V_2 of the body. **(Year 2006, 2004)**

Q. State & prove the law of conservation of momentum.

(Year 2003 Pre Med, 2002 Pre-Eng 2001)

Q. Two unequal masses are suspended from the two ends of a string passing over a frictionless pulley in such a way that both the bodies hang vertically. Derive the relation for the acceleration produced in the bodies. **(Year 2003 Pre-Eng. 2003 Pre- Med)**

Q. A body is placed on an inclined plane. Find out the expression for its downward acceleration both in the presence & absence of friction. **(Year 2003 Pre-Eng)**

Q. Give the definition of force on the basis of Newton's First law of Motion Starting with $F=ma$, prove that force is also given by the rate of change of momentum. **(Year 2003 Pre-Med)**

Q. Two bodies of unequal masses (M & m) connected to the ends of a string passing over a frictionless pulley, move vertically. Derive an expression to show that acceleration is half of acceleration due to gravity if $M=3m$ **(Year 2003 Pre-Med)**

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Q. A block of mass " m " is pulled up on a smooth inclined plane with a constant force " F " obtains an expression for the acceleration of the block if the force of friction between the block is " f ". **(Year 2002 Pre-Eng)**

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Q. A body is placed on an inclined plane. Find out the expression for its downward acceleration both in the presence & absence of friction.

(Year 2002 Pre-Eng)

Q. Two masses m_1 & m_2 are attached with the ends of a string which passes over a frictionless pulley such that the mass m_2 is placed on a smooth horizontal surface & the masses m_1 moves vertically downwards. Calculate the acceleration of the system.

(Year 2001)

Q. Two spherical bodies of different masses moving with different velocities along same line collide elastically with one another. Find expression for the final velocity of only one of the bodies after collision.

(Year 2000)

Q. Derive an expression for acceleration of a body of mass “m” moving down with a plane inclination having friction “f”.

(Year 2000)

Q. Define linear & angular momentum. Also state & prove law of conservation of linear momentum. Give its unit in M.K.S. system.

(Year 1999, 1990)

Q. Two bodies of unequal masses attached to the ends of string pass over a frictionless pulley such that the bodies move vertically. Find the acceleration of the system & tension in the string.

(Year 1998)

Q. Explain displacement, velocity & acceleration showing the difference between a uniform & a non-uniform velocity & acceleration by graphical method

(Year 1994)

Q. Write down the equations of uniformly accelerated rectilinear motion. Which is the most common example of a uniformly accelerated motion? What is the free fall method?

(Year 1994)

Q. Two bodies having different masses & moving with different velocities have an elastic collision in one dimension. Calculate their final velocities after collision. What will happen if? (i) The masses of two bodies are equal (ii). The masses of two bodies are equal one of them is at rest?

(Year 1994)

Q. Two masses M & m are attached to the two ends of a string passing over a frictionless pulley, such that they move vertically, supposing $M > m$ find the acceleration of the system & tension in the string.

(Year 1993)

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Q. Define momentum & give its S.I. unit. "The momentum of a moving body is the quantity of a motion present in it". Comment (Year 1992)

Q. Two bodies A & B of unequal masses m_1 & m_2 collide elastically in one dimension. If U_1 & U_2 , V_1 & V_2 are the velocities of the body before & after collision. Derive the expression for their final. (Year 1991)

Q. Which of Newton's Laws is involved in rocket propulsion? (Year 1990)

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