ST. XAVIER'S SENIOR SECONDARY SCHOOL, DELHI – 110 054

Std. 11 Time : 1 hr.

28-11-2014 Second Unit Test in PHYSICS M. Marks: 20

1. It is necessary that center of mass of a body always lies at its geometrical center. Justify your answer. (1)

2. Distinguish an inelastic collision from perfectly inelastic collision. (1)

3. Considering sun to be a uniform sphere, the rotation around itself takes 27 days. What will be the period of rotation, if sun were to expand to 8 times of its original? (2)

4. Show that torque acting on a particle is equal to rate of change of angular momentum of a particle. (2)

5. A spring is slowly compressed by 3cm from its mean position. A work of 3J is expended in the process of compression. Calculate the value of spring constant (2)

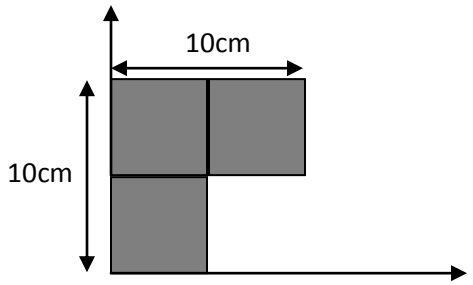
6. A flywheel of mass 1000kg and radius 1m is rotating at the rate of 420rpm. Find the constant retarding torque required to stop the wheel in 14 rotations. Assume that fly wheel in the shape of uniform ring. (2)

7. Explain the role played weight of an object in a vertical circular motion. Show that maximum difference in tension in a vertical circular motion is 6 times the weight of the object. (2)

8. A sphere is rolling down on a rough inclined plane of inclination 'θ'. Obtain an expression for the velocity of the object when it reaches the bottom. (2)

9. What do you mean by banking of roads? Why it is required? Derive the relation for maximum velocity with which a vehicle can negotiate on a rough banked road. (3)

10. A thin plate is placed as shown the figure. Calculate the position vector of center of mass. (3)

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