Queen's University, Kingston.

SESSION 1863–64.

FACULTY OF ARTS.

CANDIDATES FOR B.A.

NATURAL PHILOSOPHY.

EXAMINER: PROFESSOR WILLIAMSON.

1. State the mechanical powers and the ratio of the weight to the power in each.

2. A beam 30 feet long balances itself on a point at one-third of its length from the thicker end; but when a weight of 10 ℔s. is suspended from the smaller end the prop must be moved 2 feet towards it in order to retain the equilibrium. Find the weight of the beam.

3. Find the velocity, after impact, of two non-elastic bodies whose masses as 5 : 7 and velocities before impact are 20 for the less and 10 for the greater mass.

4. Find the time of vibration of a cycloidal pendulum, and thence show that the squares of the numbers of oscillations in a given time are for the same pendulum vibrating in small circular arcs in different places, as the forces of gravity in these places respectively.

5. State the laws of the reflection and of the refraction of light. Explain what is meant by the dispersion of light.

6. Find the focus of the rays reflected from a spherical mirror of small aperture; of the rays refracted through a lens.

7. Define the terms in Astronomy, Right Ascension, Declination, Longitude, Latitude, Zenith, Perigee and Apogee, Perihelion and Aphelion.

8. Explain the methods of finding the distance of a Planet from the Sun.

9. If a body move in any orbit above a fixed centre of force, the areas described by lines drawn from the centre to the body lie in one plane, and are proportional to the times of describing them.

10. A body moves in an ellipse, find the law of force tending to one of the foci.