A ring of mass 1kg radius 1 m is moving with velocity of 1 m /s by rolling on frictionless inclined plane. Total kinetic energy of the ring is?

The total kinetic energy of an extended object can be expressed as the sum of the translational kinetic energy of the center of mass and the rotational kinetic energy about the center of mass:

$$T_t = \frac{mv^2}{2} + \frac{I\omega^2}{2}$$

For the ring of mass 1kg (m) radius 1 m (r) moment of inertia equals:

$$I = mr^2$$

For rolling without slipping, the linear velocity of the center of mass is equal to the angular velocity times the radius:

$$\omega = \frac{v}{r}$$

Therefore, the total kinetic energy equals:

$$T_t = \frac{mv^2}{2} + \frac{mr^2\left(\frac{v}{r}\right)^2}{2} = mv^2 = 1kg * \left(1\frac{m}{s}\right)^2 = 1\,J$$

Answer: $1\,J$