Worksheet: Work, Energy and Power

NIOS · Class 11 · Physics · 10 questions · 25 marks

Name: _____ Date: _____ Score: _____ / 25

Q1. A force F = (2i + 3j) N displaces a particle by d = (4i - j) m. Find the work done. *[2 marks]*

Q2. A spring (k = 200 N/m) is compressed by 5 cm. Find the energy stored. *[2 marks]*

Q3. Can kinetic energy be negative? Can potential energy be negative? *[2 marks]*

Q4. A 2 kg block slides from rest down a frictionless incline of height 5 m. Find its speed at the bottom using energy conservation. *[2 marks]*

Q5. Two identical balls of mass m collide head-on; one moves at 5 m/s, the other is at rest. The coefficient of restitution is 0.8. Find their velocities after collision. *[2 marks]*

Q6. A 1000 kg car accelerates from rest to 20 m/s in 10 s. Find the average power. *[3 marks]*

Q7. A force varies with position as F(x) = (2x + 3) N, x in metres. Find the work done in moving a particle from x = 0 to x = 4 m. *[3 marks]*

Q8. A particle of mass 0.5 kg moves under a potential V(x) = 2x^2 (SI units) with total energy 18 J. Find the turning points, and the maximum speed of the particle and where it occurs. *[3 marks]*

Q9. In an elastic collision a 2 kg ball at 4 m/s hits a 4 kg ball at rest. Find the final velocities. *[3 marks]*

Q10. A 3 kg ball moving at 6 m/s collides perfectly inelastically with a stationary 2 kg ball. Find their common velocity after collision and the kinetic energy lost. *[3 marks]*