

# Chapter 10: Work and Energy Quiz

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## Introduction to Work and Energy

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**1. What is needed for life processes?**

- ☐ Energy
- ☐ Sleep
- ☐ Darkness
- ☐ Stillness

**Answer: Energy**

**2. Where does energy for living beings come from?**

- ☐ Food
- ☐ Sun directly
- ☐ Soil
- ☐ Water only

**Answer: Food**

**3. Do machines need energy?**

- ☐ Yes
- ☐ No
- ☐ Only large ones
- ☐ Only small ones

**Answer: Yes**

**4. Which activity requires more energy?**

- ☐ Running
- ☐ Sleeping
- ☐ Reading
- ☐ Sitting

**Answer: Running**

**5. Engines often require fuel like?**

- ☐ Petrol and diesel
- ☐ Water
- ☐ Sand
- ☐ Stones

**Answer: Petrol and diesel**

# Scientific Conception of Work

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**1. Is reading a book considered work in science?**

- ☐ No
- ☐ Yes
- ☐ Sometimes
- ☐ Only if loud

**Answer: No**

**2. If you push a wall and it doesn't move, is work done?**

- ☐ No
- ☐ Yes
- ☐ A lot of work
- ☐ Negative work

**Answer: No**

**3. Work in science depends on?**

- ☐ Force and displacement
- ☐ Effort
- ☐ Time spent
- ☐ Sweat

**Answer: Force and displacement**

**4. Mental labor is considered work in science?**

- ☐ No
- ☐ Yes
- ☐ Depends on subject
- ☐ Only math

**Answer: No**

**5. Standing with a heavy load is?**

- ☐ No work
- ☐ Hard work
- ☐ Positive work
- ☐ Maximum work

**Answer: No work**

## Two Conditions for Work

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**1. What must act on an object for work to be done?**

- ☐ A force
- ☐ A thought
- ☐ A shadow
- ☐ A sound

**Answer: A force**

**2. What must happen to the object for work to be done?**

- ☐ It must be displaced
- ☐ It must stay still
- ☐ It must heat up
- ☐ It must change color

**Answer: It must be displaced**

**3. If a bullock pulls a cart and it moves, is work done?**

- ☐ Yes
- ☐ No
- ☐ Maybe
- ☐ Only if fast

**Answer: Yes**

**4. Is work done if displacement is zero?**

- ☐ No
- ☐ Yes
- ☐ Infinite
- ☐ Cannot say

**Answer: No**

**5. Lifting a book involves work because?**

- ☐ Force is applied and it moves
- ☐ Book is heavy
- ☐ Gravity exists
- ☐ It takes time

**Answer: Force is applied and it moves**

## Work Done by a Constant Force

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**1. Formula for work is?**

- ☐  $W = F \times s$
- ☐  $W = F / s$
- ☐  $W = s / F$
- ☐  $W = F + s$

**Answer:  $W = F \times s$**

**2. Work is a scalar or vector quantity?**

- ☐ Scalar
- ☐ Vector
- ☐ Neither
- ☐ Both

**Answer: Scalar**

**3. Unit of work is?**

- ☐ Joule
- ☐ Newton
- ☐ Watt
- ☐ Pascal

**Answer: Joule**

**4. 1 Joule is defined as?**

- ☐ 1 N force displacing by 1 m
- ☐ 1 kg mass moving 1 m
- ☐ 1 N force for 1 sec
- ☐ 1 Watt power

**Answer: 1 N force displacing by 1 m**

**5. If  $F=0$ , work done is?**

- ☐ Zero
- ☐ Infinite
- ☐ One
- ☐ Constant

**Answer: Zero**

## Positive and Negative Work

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**1. Work is positive when force acts in?**

- ☐ Direction of displacement
- ☐ Opposite direction
- ☐ Perpendicular direction
- ☐ Random direction

**Answer: Direction of displacement**

**2. Work is negative when force acts in?**

- ☐ Opposite direction to displacement
- ☐ Same direction
- ☐ Any direction
- ☐ Vertical direction

**Answer: Opposite direction to displacement**

**3. Gravity doing work on a ball thrown upwards is?**

- ☐ Negative
- ☐ Positive
- ☐ Zero
- ☐ Undefined

**Answer: Negative**

**4. Gravity doing work on a falling ball is?**

- ☐ Positive
- ☐ Negative
- ☐ Zero
- ☐ Variable

**Answer: Positive**

**5. Force of friction always does?**

- ☐ Negative work
- ☐ Positive work
- ☐ Zero work
- ☐ Maximum work

**Answer: Negative work**

## Energy

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**1. Energy is defined as?**

- ☐ Capacity to do work
- ☐ Rate of work
- ☐ Force applied
- ☐ Momentum

**Answer: Capacity to do work**

**2. Unit of energy is?**

- ☐ Joule
- ☐ Newton
- ☐ Watt
- ☐ Pascal

**Answer: Joule**

**3. Object doing work?**

- ☐ Loses energy
- ☐ Gains energy
- ☐ Keeps energy
- ☐ Destroys energy

**Answer: Loses energy**

**4. Object on which work is done?**

- ☐ Gains energy
- ☐ Loses energy
- ☐ Has no energy
- ☐ Stops moving

**Answer: Gains energy**

**5. Biggest natural source of energy is?**

- ☐ Sun
- ☐ Moon
- ☐ Earth
- ☐ Ocean

**Answer: Sun**

## Forms of Energy

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**1. Which is NOT a form of energy?**

- ☐ Force
- ☐ Heat
- ☐ Light
- ☐ Chemical

**Answer: Force**

**2. Mechanical energy is sum of?**

- ☐ Kinetic and Potential energy
- ☐ Heat and Light
- ☐ Chemical and Electrical
- ☐ Sound and Heat

**Answer: Kinetic and Potential energy**

**3. Energy stored in a battery is?**

- ☐ Chemical energy
- ☐ Kinetic energy
- ☐ Heat energy
- ☐ Mechanical energy

**Answer: Chemical energy**

**4. Energy from a bulb includes?**

- ☐ Light and heat
- ☐ Sound only
- ☐ Kinetic only
- ☐ Potential only

**Answer: Light and heat**

**5. Energy of a moving car is?**

- ☐ Kinetic energy
- ☐ Potential energy
- ☐ Chemical energy
- ☐ Nuclear energy

**Answer: Kinetic energy**

## Kinetic Energy

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**1. Kinetic energy is due to?**

- ☐ Motion
- ☐ Position
- ☐ Shape
- ☐ Temperature

**Answer: Motion**

**2. A faster moving object has?**

- ☐ More kinetic energy
- ☐ Less kinetic energy
- ☐ Zero kinetic energy
- ☐ Same energy

**Answer: More kinetic energy**

**3. Which possesses kinetic energy?**

- ☐ Blowing wind
- ☐ Stretched bow
- ☐ Water in dam
- ☐ Compressed spring

**Answer: Blowing wind**

**4. Kinetic energy depends on?**

- ☐ Mass and velocity
- ☐ Mass and height
- ☐ Weight and height
- ☐ Force and time

**Answer: Mass and velocity**

**5. Can kinetic energy be negative?**

- ☐ No
- ☐ Yes
- ☐ Sometimes
- ☐ Only in space

**Answer: No**

## Formula for Kinetic Energy

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**1. Formula for kinetic energy is?**

- ☐  $\frac{1}{2} mv^2$
- ☐  $mgh$
- ☐  $mv$
- ☐  $ma$

**Answer:  $\frac{1}{2} mv^2$**

**2. If mass doubles, kinetic energy?**

- ☐ Doubles
- ☐ Halves
- ☐ Quadruples
- ☐ Remains same

**Answer: Doubles**

**3. If velocity doubles, kinetic energy?**

- ☐ Quadruples
- ☐ Doubles
- ☐ Halves
- ☐ Triples

**Answer: Quadruples**

**4. Work done to stop a moving object equals?**

- ☐ Its kinetic energy
- ☐ Its potential energy
- ☐ Its mass
- ☐ Its weight

**Answer: Its kinetic energy**

**5. If velocity is zero, kinetic energy is?**

- ☐ Zero
- ☐ Infinite
- ☐ Equal to mass
- ☐ Maximum

**Answer: Zero**

## Potential Energy

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**1. Potential energy is due to?**

- ☐ Position or configuration
- ☐ Motion
- ☐ Speed
- ☐ Time

**Answer: Position or configuration**

**2. Energy in a stretched rubber band is?**

- ☐ Potential energy
- ☐ Kinetic energy
- ☐ Heat energy
- ☐ Sound energy

**Answer: Potential energy**

**3. Water stored in a dam has?**

- ☐ Potential energy
- ☐ Kinetic energy
- ☐ Electrical energy
- ☐ Solar energy

**Answer: Potential energy**

**4. Winding a toy car stores energy in its?**

- ☐ Spring
- ☐ Wheels
- ☐ Body
- ☐ Key

**Answer: Spring**

**5. Released arrow from a bow gets energy from?**

- ☐ Potential energy of bow
- ☐ Kinetic energy of hand
- ☐ Gravity
- ☐ Wind

**Answer: Potential energy of bow**

## Potential Energy of an Object at a Height

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**1. Formula for gravitational potential energy is?**

- ☐ mgh
- ☐  $\frac{1}{2} mv^2$
- ☐ ma
- ☐ mg

**Answer: mgh**

**2. Work done against gravity depends on?**

- ☐ Vertical height difference
- ☐ Path taken
- ☐ Time taken
- ☐ Speed of lifting

**Answer: Vertical height difference**

**3. If height doubles, potential energy?**

- ☐ Doubles
- ☐ Halves
- ☐ Quadruples
- ☐ Remains same

**Answer: Doubles**

**4. Energy is gained because work is done against?**

- ☐ Gravity
- ☐ Friction
- ☐ Air resistance
- ☐ Magnetism

**Answer: Gravity**

**5. The value of g is approximately?**

- ☐  $9.8 \text{ m/s}^2$
- ☐  $100 \text{ m/s}^2$
- ☐  $1 \text{ m/s}^2$
- ☐  $0.1 \text{ m/s}^2$

**Answer:  $9.8 \text{ m/s}^2$**

## Interconversion of Energy

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**1. Can energy change forms?**

- ☐ Yes
- ☐ No
- ☐ Only in machines
- ☐ Never

**Answer: Yes**

**2. Green plants convert solar energy to?**

- ☐ Chemical energy
- ☐ Kinetic energy
- ☐ Heat energy
- ☐ Nuclear energy

**Answer: Chemical energy**

**3. An electric iron converts electrical energy to?**

- ☐ Heat energy
- ☐ Sound energy
- ☐ Chemical energy
- ☐ Potential energy

**Answer: Heat energy**

**4. Hydroelectric plants convert potential energy of water to?**

- ☐ Electrical energy
- ☐ Chemical energy
- ☐ Nuclear energy
- ☐ Solar energy

**Answer: Electrical energy**

**5. Burning coal converts chemical energy to?**

- ☐ Heat and light
- ☐ Electricity only
- ☐ Sound
- ☐ Potential energy

**Answer: Heat and light**

## Law of Conservation of Energy

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**1. Law of Conservation of Energy states energy can?**

- ☐ Neither be created nor destroyed
- ☐ Be created
- ☐ Be destroyed
- ☐ Disappear

**Answer: Neither be created nor destroyed**

**2. Total energy during transformation?**

- ☐ Remains constant
- ☐ Increases
- ☐ Decreases
- ☐ Becomes zero

**Answer: Remains constant**

**3. During free fall, potential energy converts to?**

- ☐ Kinetic energy
- ☐ Heat energy
- ☐ Sound energy
- ☐ Chemical energy

**Answer: Kinetic energy**

**4. Sum of kinetic and potential energy is?**

- ☐ Mechanical energy
- ☐ Total energy
- ☐ Chemical energy
- ☐ Heat energy

**Answer: Mechanical energy**

**5. Just before hitting ground, a falling object has maximum?**

- ☐ Kinetic energy
- ☐ Potential energy
- ☐ Height
- ☐ Rest

**Answer: Kinetic energy**

## **Rate of Doing Work (Power)**

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**1. Power is defined as?**

- ☐ Rate of doing work
- ☐ Capacity to do work
- ☐ Total work done
- ☐ Force applied

**Answer: Rate of doing work**

**2. Formula for power is?**

- ☐ Work / Time
- ☐ Work x Time
- ☐ Force x Dist
- ☐ Mass x Vel

**Answer: Work / Time**

**3. SI unit of power is?**

- ☐ Watt
- ☐ Joule
- ☐ Newton
- ☐ Pascal

**Answer: Watt**

**4. 1 Watt equals?**

- ☐ 1 Joule/second
- ☐ 1 Joule/minute
- ☐ 1 Newton/meter
- ☐ 1 kg m/s

**Answer: 1 Joule/second**

**5. 1 kilowatt equals?**

- ☐ 1000 Watts
- ☐ 100 Watts
- ☐ 10 Watts
- ☐ 10000 Watts

**Answer: 1000 Watts**

## Commercial Unit of Energy

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**1. Commercial unit of energy is?**

- ☐ Kilowatt-hour (kWh)
- ☐ Joule
- ☐ Watt
- ☐ Newton

**Answer: Kilowatt-hour (kWh)**

**2. 1 kWh is commonly known as?**

- ☐ 1 unit
- ☐ 1 volt
- ☐ 1 amp
- ☐ 1 degree

**Answer: 1 unit**

**3. 1 kWh equals how many Joules?**

- ☐  $3.6 \times 10^6 \text{ J}$
- ☐ 1000 J
- ☐ 3600 J
- ☐  $10^6 \text{ J}$

**Answer:  $3.6 \times 10^6 \text{ J}$**

**4. Energy used by 1000W appliance in 1 hour is?**

- ☐ 1 kWh
- ☐ 100 kWh
- ☐ 0.1 kWh
- ☐ 10 kWh

**Answer: 1 kWh**

**5. Is kWh a unit of power or energy?**

- ☐ Energy
- ☐ Power
- ☐ Force
- ☐ Time

**Answer: Energy**