Chapter 10: Work and Energy Quiz

Introduction to Work and Energy

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

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

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

1. Formula for work is?

○ W = F x s
○ W = F / s
○ W = s / F
○ W = F + s

Answer: W = F x 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

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

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

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

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

1. Formula for kinetic energy is?

○ 1/2 mv^2
○ mgh
○ mv
○ ma

Answer: 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

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

1. Formula for gravitational potential energy is?

○ mgh
○ 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 m/s^2
○ 100 m/s^2
○ 1 m/s^2
○ 0.1 m/s^2

Answer: 9.8 m/s^2

Interconversion of Energy

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

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)

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

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 x 10^6 J
○ 1000 J
○ 3600 J
○ 10^6 J

Answer: 3.6 x 10^6 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