

CLASS X (ICSE)
Subject: Physics
Topic- WORK, ENERGY AND POWER

Summary

Work, Energy, Power and their relation with force, Definitions & Units

Different types of energy, Mechanical energy, Kinetic energy, Potential Energy

Section 1 - Objective

- Q1. The work done by all the forces (external & internal) on a system equals to change in
- Total Energy
 - kinetic energy
 - Potential Energy
 - Not
- Q2. Work done on a body is a quantity
- Scalar
 - Vector
 - Both a & b
 - Not
- Q3. If the angle between force and displacement is 0° , then work done is
- 0
 - F.s
 - F/s
 - Not
- Q4. The work done is said to be negative if force and displacement are in _____ direction A
- same
 - opposite
 - neither a nor b
 - Not
- Q5. A ball of mass 200g falls from a height of 5m. What will be its kinetic energy when it just reaches the ground?
- 100 J
 - 10 J
 - 9.8 J
 - 98 J
- Q6. A body of mass 50kg has a momentum of 3000 Kg.m/s. Calculate its Kinetic energy and velocity.
- 90000J & 60m/s
 - 900J & 60m/s
 - 90000J & 6m/s
 - 6000J & 630m/s
- Q7. An electric heater of power 3 kw is used for 10 h, how much energy does it consume?
- 300 KWh
 - 1.08×10^8 J
 - both a & b
 - 30 erg
- Q8. 6.4kJ of energy causes a displacement of 64m in a body in the direction of force in 2.5sec. Calculate its power
- 100Hp
 - 123Hp
 - 8.6 Hp
 - 3.4 Hp

Q9. A block of mass 5 Kg slides down on an incline of inclination 30° & length 10 m. Find the work done by the force of gravity

- a. 245
- b. 490 J
- c. 0 J
- d. 300 J

Q10. When mass and velocity of the body are doubled then its K.E will

- a. increase by 8 times
- b. decrease by 8times
- c. Increase by 4 times
- d. remain same

Section- II Subjective

Q1. Define the following

- a. 1 Joule
- b. Power
- c. Gravitational Potential energy
- d. Mechanical energy

Q2. State the units of the following

- a. Work
- b. Energy
- c. Power

Q3. Calculate the K.E of mass 0.1 Kg and momentum 20 Kg.m/s

Q4. A porter lifts a suitcase weighting 20 Kg from the platform and puts it on his head 2 m above the platform. Calculate the work done by the porter on the suitcase.

Q5. An elevator weighting 500 Kg is to be lifted up at a constant velocity of 0.2 m/s. What will be the minimum horsepower of the motor to be used?

Q6. What is the main energy transformation that occurs in:

- a. Photosynthesis in green leaves
- b. Charging of a battery

Q7. (i) Define one kilowatt hour. How is it related to joule?

(ii) How can the work done be measured if the force is applied at an angle to the direction of displacement?

Q8. An object of mass 'm' is allowed to fall freely from point A. at a height h above the ground

Calculate the total mechanical energy of the object at

point A (topmost point)

point C (lowest point)

point B(between A and C)

State the law which is verified by your calculations in parts (i), (ii), and (iii).

*****All the best*****

Solutions

Objective Problems

2, 1, 2, 2, 3, 1, 2, 4, 1



WINEducate

7267871837, 7905199925