PHYSICS

BOOKS - VGS PUBLICATION-BRILLIANT

WORK AND ENERGY

Worked Out Examples

1. A boy pushes a book kept on a table by applying a force of 4.5 N. Find the work done

by the force if the book is displaced through 30 cm along the direction of push.

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2. Calculate the work done by a student in lifting a 0.5 kg book from the ground and keeping it on a shelf of 1.5 m height. (g = 9.8 m/s^2)

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3. A box is pushed through a distance of 4 m across a floor offering 100n resistance. How much work is done by the resisting force ?

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4. A ball of mass 0.3 kg thrown upwards reaches a maximum height of 5 m. Calculate the work done by the force of gravity during this vertical displacement considering the value of g = 10 m / s^2.

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5. Find the kinetic energy of a ball of 250 g mass, moving at a velocity of 40 cm /s.

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6. The mass of a cyclist together with the bicycle is 90 kg. Calculate the work done by cyclist if the speed increase from 6 km/h to 12 km/h.

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7. The block of 2 kg is lifted up through 2 m from the ground. Calculate the potential energy of the block at that point. [Take g = 9.8 m/s^2]

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8. A book of mass 1 kg is raised through a height 'h'. If the potential energy increased by 49 J, find the height raised.

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9. A person performs 420 J of work in 5 minutes. Calculate the power delivered by him.

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10. A woman does 250 J of work in 10 seconds and a boy does 100 J of work in 4 seconds. Who delivers more power ?

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Improve Your Learning Conceptual Understanding

1. Define work and write its units.

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2. Give few examples where displacement of an object is in the direction opposite to the force acting on the object.

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3. What is mechanical energy ?

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4. State the principle of conservation of energy.

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5. What is potential energy ? Derive an expression for the gravitational potential

energy .

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6. A free-fall object eventually stops on reaching the ground. What happens to its kinetic energy ?

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Try These

1. A cycle together with its rider weighs 100 kg. How much work is needed work to set it moving at 3 m/s.

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Activities

1. List the energy sources.

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2. What do you say about total energy of system of freely falling body ?

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Think Discuss

1. Why is it easier to stop a lightly loaded truck than heavier one that has equal speed ?

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2. Does the kinetic energy of a car change more when it goes from 10 m/s to 20 m/s or when it goes from 20 m/s to 30 m/s ?

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Essential Material For Examination Purpose

1. When a ball is moving up with an initial velocity, what will be its speed at its maximum height ?

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2. Define energy.

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3. What is kinetic energy ?

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4. Write a formula to measure kinetic energy.

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