

ENERGY

1. Define energy and give its SI unit.
2. List all the forms of energy and define each one.
3. Differentiate between:
 - a. Potential energy and kinetic energy.
 - b. Gravitational potential energy and elastic potential energy.
4. A brick of mass 0.5 kg is lifted through a distance of 100 m to the top of a building. Calculate the potential energy attained by the brick.
5. Explain what is meant by gravitational potential energy.
6. A force of 8.5 N stretches a certain spring by 6 cm. How much work is done in stretching the spring by 10 cm.
7. What are the two kinds (types) sources of energy?
8. List the energy from each kind of source mentioned above.
9. Mention the environmental effects of the use of energy sources.
10. State the law of conservation of energy.
11. State the law of conservation of mechanical energy.
12. A motor raised a block of mass 72 kg through a vertical height of 2.5 m in 28 s. Calculate the:
 - a. work done on the block.
 - b. useful power supplied by the motor.
13. A person of mass 40 kg runs up a flight of 50 stairs each of height 20 cm in 5 s. Calculate:
 - a. the work done.
 - b. the average power of the person.
 - c. explain why the energy the person uses to climb up is greater than the calculated work done.
14. A runner of mass 65 kg runs up a steep slope rising through a vertical height of 40 m in 65 s. Find the power that his muscles must develop in order to do so.
15. A fork-lift truck raises a 400 kg box through a height of 2.3 m. The case is then moved horizontally by the truck at 3.0 m/s onto the loading platform of a lorry.
 - a. What minimum upward force should the truck exert on the box?
 - b. How much P.E. is gained by the box?
 - c. Calculate the K.E of the box while being moved horizontally.
 - d. What happens to the K.E once the truck stops?
16. A stone falls vertically through a distance of 20 m. If the mass of the stone is 3.0 kg,
 - a. Sketch a graph of work done by the gravity against distance.
 - b. Find the power of the gravitational pull.