

MINISTRY OF EDUCATION
SECONDARY ENGAGEMENT PROGRAMME
GRADE 10
PHYSICS

WEEK 13: Energy

WORKSHEET 1

Choose the letter that corresponds to the correct answer.

1. An electricity power station burns diesel so that it can boil water and produce steam to turn the turbine of a generator. Which of the following BEST gives the sequence of energy transfers that occur during the process?
 - a) Thermal → Chemical → Kinetic → Electrical
 - b) Chemical → Thermal → Kinetic → Electrical
 - c) Chemical → Gravitational → Kinetic → Electrical
 - d) Chemical → Thermal → Electric

2. Which of the following BEST gives the sequence of energy transfers that occur at a hydroelectric power station?
 - a) Gravitational potential → Electromagnetic → Kinetic → Electrical
 - b) Chemical potential → Kinetic → Electrical
 - c) Gravitational potential → Heat and Sound → Electrical
 - d) Gravitational potential → Kinetic → Electrical

3. Which of the following groups contains an example of non-renewable energy?
 - a) Wind/solar
 - b) Geothermal/energy from crude oil
 - c) Energy from biogas/tidal
 - d) Hydro energy of a waterfall/wave

Items 4 – 6 refer to the following situation. Kimran pushes horizontally on a block with a force of 800N, moving it through a distance of 5m across a level floor in a time of 20s. Due to a frictional force, the block moves at constant velocity.

4. What work is done by Kimran in pushing the block?
 - a) 40J
 - b) 160J
 - c) 4000J
 - d) 16 000J

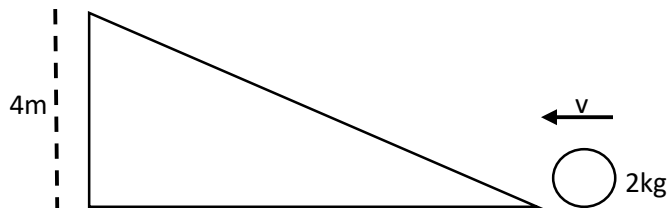
5. What part of this work is done against friction?
 - a) 40J
 - b) 160J
 - c) 4000J
 - d) 16 000J

6. What is the power used by Kimran?
 - a) 200W
 - b) 80W
 - c) 800W
 - d) 2W

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7. Which of the following is NOT an example of potential energy?
- a) Energy released from a stretched elastic band
 - b) Energy released on digesting a slice of bread
 - c) Energy of a bullet due to its high speed
 - d) Energy of a mango hanging from a tree
8. What is the maximum kinetic energy that can be acquired by a coconut of weight 32N as it falls through a distance of 20m?
- a) 1.6J
 - b) 1600J
 - c) 6400J
 - d) 640J
9. Balls A and B of identical mass are rolling across a level surface at speeds v and $2v$ respectively. If the kinetic energy of A is 200J, what is the kinetic energy of B?
- a) 800J
 - b) 400J
 - c) 200J
 - d) 100J
10. A river meets the edge of a cliff and the water falls through a distance h . What is the value of h if the maximum speed of the water in its drop is 20ms^{-1} ?
- a) 10m
 - b) 20m
 - c) 30m
 - d) 40m
11. A machine raises an object of weight 1200N through a distance of 5m. What is its efficiency if the energy input is 8000J?
- a) 75%
 - b) 80%
 - c) 60%
 - d) 25%

Items 12 and 13 refer to the following diagram, which shows a ball of mass 2.0kg and speed v approaching an incline of height 4.0m.



12. If the ball just makes it to the top of the incline, and no energy is lost to the surroundings, what is the value of v ?
- a) 8.9ms^{-1}
 - b) 80ms^{-1}
 - c) 4.2ms^{-1}
 - d) 100ms^{-1}

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13. What is the gravitational potential energy of the ball at the top of the incline?
a) 0.5J b) 80J c) 2J d) 8J
14. Which of the following is NOT a means to determine the efficiency of a machine?
a) $\frac{\text{useful work output}}{\text{work input}}$
b) $\frac{\text{useful power output}}{\text{power input}}$
c) $\frac{\text{effort} \times \text{distance moved by effort}}{\text{load} \times \text{distance moved by load}}$
d) $\frac{\text{load} \times \text{distance moved by load}}{\text{effort} \times \text{distance moved by effort}}$
15. Batteries are stores of _____ energy.
a) Nuclear b) Chemical c) Light d) Electrical

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Worksheet - Answer Sheet

1. B

2. D

3. B

4. C

5. C

6. A

7. C

8. D

9. A

10. B

11. A

12. A

13. B

14. C

15. B