

iGCSE Physics: Energy Test

Priority Learning

Test

Name: _____ Date: _____

Question:	1	2	3	Total
Marks:	14	26	20	60
Score:				

Aims of this worksheet:

- Practicing tests.
- Practicing exam style questions.
- Practicing answering questions in a time limit.
- Consolidating knowledge learned in the energy section of the specification.

Use $g = 9.8\text{ms}^{-2}$ for this paper.

Include units in your answers.

TIME ALLOWED 60 MINUTES

1. (a) What is the definition of gravitational potential energy? (1 mark)

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(b) Describe all the energy transfers taking place when you jump in the air. (3 marks)

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(c) David jumps 1.8m into the air, his mass is 40kg. What is his maximum gravitational potential energy? (2 marks)

(d) Using your answer from (c) calculate David's speed as he hits the ground after his jump. (2 marks)

- (e) By using the equations for GPE and KE, show that the velocity at which an object falls is independent of the mass of the object. (4 marks)

- (f) Explain why the hammer and feather experiment works on the moon but not on the earth. (2 marks)

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2. (a) Define power. (1 mark)

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- (b) State the definition of specific heat capacity. (2 marks)

(f) Suppose the power on the kettle was 1.8kW, the mass of water used was 450g, the specific heat capacity of water is 4.2kJ/mol°C, the temperature of the water before you switched the kettle on was 15°C and the water took 1 minute and 50 seconds to boil.

i. Calculate the energy supplied by the mains to the kettle. (2 marks)

ii. Calculate the efficiency of the kettle. (3 marks)

iii. Explain why the kettle is not 100% efficient. Discuss at least 2 reasons why energy is lost. (3 marks)

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(e) In nuclear fission reactors, free neutrons are fired at Uranium-235 nuclei, splitting them into 2 smaller, daughter nuclei and releasing energy. 71.6% of France's energy comes from nuclear power.

i. State and explain 2 reasons why nuclear power is so popular. (4 marks)

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ii. There are environmental groups that campaign against the use of nuclear power. State and explain 2 reasons why some groups are against the use of nuclear power. (4 marks)

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(f) The combustion of oil, gas and coal all produce a chemical that causes global warming.

i. Name this chemical. (1 mark)

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ii. This chemical cause the _____ effect. (1 mark)

END OF EXAM

