

Energy Transfers in a System

Mark Scheme

Level	GCSE (9-1)
Subject	Combined Science: Trilogy - Physics
Exam Board	AQA
Topic	6.1 Energy
Sub-Topic	Energy Transfers in a system
Difficulty Level	Bronze Level
Booklet	Mark Scheme

Time Allowed: 20 minutes

Score: /20

Percentage: /100

Grade Boundaries:

- M1.** (a) fan 1
- drill 1
- washing machine
- four circled including correct three scores 1 mark*
- five circled scores zero* 1

- (b) Appliances only transfer part of the energy usefully 1
- The energy transferred by appliances makes the surroundings warmer 1

[5]

- M2.** (a) kinetic 1
- (b) (i) generates a lot more energy / electricity / power
- need fewer conventional large-scale hydroelectric power stations is neutral*
- or**
- can supply (energy / electricity / power) to more homes 1
- (ii) Large areas of land are flooded. 1

- (c) (i) National Grid

this answer only

1

- (ii) less energy / heat loss (from the cables)

accept wasted for loss

accept answers in terms of fewer transformers needed

*do **not** accept less electricity lost / wasted*

*do **not** accept no energy lost*

1

- (d) any **one** from:

- fewer rivers (suitable for generators)

- less mountainous (so rivers fall smaller distances)

accept answers in terms of difficulty linking villages and towns to grid (in Nepal)

accept answers in terms of more isolated communities

accept answers in terms of UK having more resources for large-scale power stations

1

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- M3. (a) heat / thermal

or / and

sound

*do **not** accept noise*

other forms of energy eg light negates answer

1

- (b) 0.4

or

40 %

allow 1 mark for $\frac{2000}{5000}$
or

equivalent fraction

an answer 0.4 % gains 1 mark

answers 0.4 or 40 given with any unit gains 1 mark

40 without % gains 1 mark

2

[3]

M4. (a) (i) 0.2 **or** 1/5

accept 20% for both marks

allow 1 mark for correct substitution answer of 0.2%

or 20 gains 1 mark

ignore units

2

(ii) wasted

accept transformed to heat / other forms

accept transferred to the air / surroundings sound = neutral

1

(b) (i) any **one** from:

- can fly at night
accept can fly when it is cloudy
accept as a back-up
- can stay in the air for longer
- can fly in the winter
- can fly faster
increases power is neutral

1

(ii) any **one** from:

- produces no (pollutant) gases
- or** no greenhouse gases
accept named gas

accept no air pollution
*do **not** accept no pollution*
accept less global warming
accept harmful for pollutant
accept produces no carbon
*do **not** accept environmentally friendly*

- produces no / less noise
 - less demand for fuels
- accept any other sensible environmental advantage*

1

- (iii) *accept any sensible suggestion eg, map the Earth's surface / weather forecasting / spying / monitoring changes to the Earth's atmosphere, etc*
*do **not** accept ideas in terms of transporting*
accept use as a satellite

1

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