Practice Question Set For GCSE
Subject : Physics
Paper-1 Topic: Energy (High Demand)

Merit Minds
www.merit-minds.com
Exam Preparation and Free Resources

Name of the Student:_____
Max. Marks : 20 Marks **Time : 20 Minutes**

Mark Schemes

Q1.

(a) an energy resource that cannot be replenished as it is used

allow an energy resource that will run out

ignore cannot be re-used

1

(b)

*an answer of 30 (A) scores **4** marks*

6.9 k(W) = 6900 (W)

1

6900 = 230 × I

allow correct substitution of an incorrectly/not converted value for power

1

6900 = 230 × I

allow correct substitution of an incorrectly/not converted value for power

1

$I = \frac{6900}{230}$

allow a correct transformation using an incorrectly/not converted value for power

1

I = 30 (A)

allow a correct calculation using an incorrectly/not converted value for power

1

(c) direct potential difference is always in the same direction

allow direct current is always in the same direction

1

alternating potential difference changes direction

allow alternating current changes direction

1

(d) lower potential difference across the cable

allow lower power/energy dissipation

1

it is more efficient

allow it won't get as hot

OR

(lower resistance gives) a greater current (for the same potential difference) (1)

so the car battery can charge faster (1)

[9]

Q2.

(a) electrons collide with particles in the heating element

allow there is a current in the heating element

1

which increases the (kinetic) energy of the particles (in the heating element)

allow internal store of energy increases

allow the particles (in the heating element) vibrate more rapidly

1

(b) the starting temperature of the water

allow the starting temperature of the kettle

1

(c) (the heating element of) the kettle took time to heat up

1

(d) the (rate of) energy transfer (per kg of water) to the surroundings decreases as the mass of water increases

allow the efficiency of the kettle changes as the mass of water changes

or

the efficiency of the kettle increases as the mass of water increases

allow the (rate of) energy transfer (per kg of water) to the surroundings changes as the mass of water changes

1

(e)

*an answer of 4800 (J/kg °C) scores **6** marks*

*a correct answer given to more than 2 s.f. scores **5** marks*

E = 2600 × 120

allow a correct substitution of an incorrectly/not converted value of P and/or t.

1

E = 312 000 (J)

this answer only

the equation E = Pt must have been used to score subsequent marks.

1

312 000 = 0.80 × c × (100-18)

or

312 000 = 0.80 × c × (82)

allow use of their value of E calculated using E = Pt for this and subsequent steps

$$c = \frac{312\,000}{0.80 \times 82}$$

1

c = 4 756

1

c = 4 800 (J/kg °C) (2 s.f.)

this mark can only be scored for a correct rounding of a value of c calculated using correct equations

1

[11]