Name of the Student:_____
Max. Marks : 22 Marks **Time : 22 Minutes**

Mark Schemes

Q1.

(a) gravitational potential

1

kinetic

1

chemical

1

(b) flying drones may damage aircraft
or
falling drones may injure people
or
damage buildings / vehicles

allow any sensible suggestion of a hazard caused by a flying / falling drone

1

(c) energy transferred = power × time

allow E = Pt

1

(d) t = 25 × 60 = 1500 (s)

1

E = 65 × 1500

1

E = 97 500 (J)

an answer of 97 500 (J) scores 3 marks
allow 2 marks for an answer of 1625 (J)

1

[8]

Q2.

(a) V = 0.10 × 45

1

4.5 (V)

1

(b) R = 12 / 0.10

1

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total resistance = 120 (Ω)

1

R = 120 – 105 = 15 (Ω)

1

(c) (total) resistance decreases

1

(so) current increases

1

[7]

Q3.

(a) any **one** from:

- high cost of installing overhead power lines or underground cables or pylons
- high cost as (very) long cables needed
- amount of electricity required is too low

allow not enough (surplus) electricity would be generated

1

(b) Marks awarded for this answer will be determined by the Quality of Written Communication (QWC) as well as the standard of the scientific response. Examiners should apply a 'best-fit' approach to the marking.

Level 3 (5 – 6 marks):
clear comparison of advantages **and** disadvantages of **each** method

Level 2 (3 – 4 marks):
at least **one** advantage **and one** disadvantage is stated for **one** method **and** a different advantage **or** disadvantage is stated for the other method

Level 1 (1 – 2 marks):
at least **one** advantage **or one** disadvantage of either method

Level 0 (0 marks):
No relevant information

examples of physics points made in the response

Advantages of both methods:
- both renewable sources of energy
- both have no fuel (cost)
- both have very small (allow 'no') running costs
- no carbon dioxide produced

accept carbon neutral

accept no greenhouse gases

accept doesn't contribute to global warming

Advantages of wind:
- higher average power output

produces more energy is insufficient

Advantages of hydroelectric:
- constant / reliable power (output)
- lower (installation) cost

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Disadvantages of wind:
- higher (installation) cost
- variable / unreliable power output
- (may) kill birds / bats

Disadvantages of hydroelectric:
- lower power output
- (may) kill fish or (may) damage habitats
- more difficult to set up (within river)

Disadvantages of both methods:
- (may be) noisy
- visual pollution

ignore payback time unless no other relevant points made

ignore time to build for both

6

[7]

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