

Name of the Student: _____

Max. Marks : 22 Marks

Time : 22 Minutes

Mark Schemes

Q1.

(a) 1 080 000

allow 1 mark for correct substitution

ie $\frac{1}{2} \times 15\,000 \times 12 \times 12$

2

(b) any **one** from:

- KE (of wind) more than doubles
- mass of air (hitting blades) more than doubles
- area swept out by blades more than doubles
*do **not** accept blades are larger / have a bigger area*
- area swept out by blades increases x 4

1

[3]

Q2.

(a) (i) kinetic

accept KE

*do **not** accept movement*

1

(ii) 0.75

$$\frac{60\,000}{80\,000}$$

allow 1 mark for correct substitution ie

or
75 %

*an answer 0.75 % **or** 0.75 with a unit gains 1 mark only*

an answer 75 with or without a unit gains 1 mark only

2

(b) any **one** from:

- large areas of land are flooded
uses large areas of land / takes up large areas of land is insufficient
- people's homes may be destroyed
- habitat (of animals and plants) lost / damaged

construct is neutral
very noisy is neutral

1

- (c) (i) system of cables and transformers
both required for the mark
accept power lines / wires for cables
ignore reference to pylons
inclusions of power stations / consumers negates answer

1

- (ii) less energy loss / wasted (in the cables)
accept heat for energy
*do **not** accept no energy loss*
*do **not** accept electricity for energy*

1

as the cables are shorter

1

[7]

Q3.

- (a) (i) 7.6
allow 1 mark for correct substitution and / or transformation

$$\text{ie } 0.95 = \frac{x}{8}$$
$$95 \times 8.0$$

2

- (ii) 25 (hours)
allow 1 mark for obtaining number of kWh = 200
an answer of 26(.3) gains both marks

2

- (b) any **two** from

- transferred to the surroundings / air / atmosphere
- becomes spread out
- shared between (many) molecules
- (wasted as) heat / sound

2

[6]

Q4.

- (a) (i) 4
allow 1 mark for correct transformation and substitution

$$\text{ie } \frac{0.6}{0.15}$$

substitution only scores if no subsequent steps are shown

2

(ii) diagram showing two output arrows with one arrow wider than the other with the narrower arrow labelled electrical / electricity / useful

1

(b) any **one** from:

- to check reliability / validity / accuracy
- to avoid bias

1

(c) any **two** from:

- produce no / less (air) pollution
accept named pollutant
accept produces no waste (gases)
- energy is free
accept it is a free resource
*do **not** accept it is free*
- (energy) is renewable
- conserves fossil fuel stocks
- can be used in remote areas
- do not need to connect to the National Grid

2

[6]