

Name of the Student: \_\_\_\_\_

Max. Marks : 20 Marks

Time : 20 Minutes

Mark Schemes

**Q1.**

- (a) (i) changing the distance may / will affect / change the voltmeter reading  
*accept so only one independent variable*  
*accept distance affects speed of wind (turbine)*  
*accept it is a control variable*  
*accept to give valid results*  
*fair test is insufficient*  
*to make the results accurate is insufficient*

1

- (ii) any sensible practical suggestions, eg
- so fan reaches a steady / full speed  
*accept power for speed*
  - so wind (turbine) reaches a steady / full speed
  - so voltmeter reaches / gives a steady reading  
*accept accurate or valid reading a correct reading is insufficient*  
*do **not** accept precise reading*

1

- (iii) as the number of blades increases so does the (voltmeter) reading / output / voltage  
*number of blades affects the reading / output is insufficient*

1

further relevant detail, eg

- voltmeter increase is greatest up to 3 blades
- voltmeter reading hardly changes with 4, 5 or 6 blades  
*accept does not change between 4 and 6 blades*
- increase is directly proportional up to 3 blades
- it reaches a limit  
*accept does not change after 4 / 5 blades*
- a numerical example giving two pairs of numbers, eg 2 blades = 0.6V, 4 blades = 1V

1

- (b) C

reason scores only if C is chosen

1

wind speed / strength varies

accept wind is **not** constant / reliable

1

[6]

## Q2.

(a) potential

1

(b) (i) 13 200

allow 1 mark for correct substitution, ie  $660 \times 20$  provided no subsequent step shown

2

(ii) 16.5

allow 1 mark for correct

or

their (b)(i)

800

correctly calculated

13 200

their (b)(i)

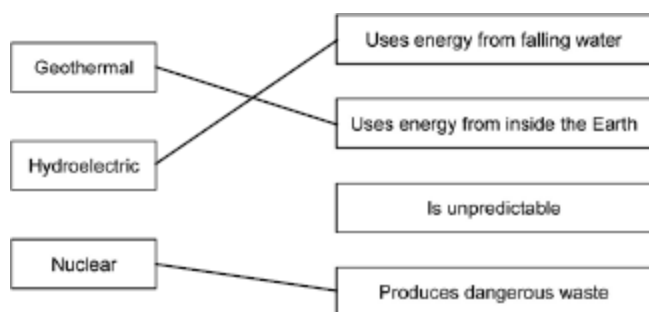
substitution, ie 800 or 800

provided no subsequent step shown

2

[5]

## Q3.



allow 1 mark for each correct line

if more than one line goes from an energy source then all lines from that energy source are wrong

[3]

## Q4.

(a) electrical

1

chemical

1

light

1

(b) 25% **or** 0.25

*allow 1 mark for correct substitution, ie  $50 \div 200$  provided no subsequent step shown*

**or**

*answers of 25 with a unit **or** 0.25 with a unit gain 1 mark*

*answers of 25 without a unit **or** 0.25% gain 1 mark*

2

(c) the information board can be used anywhere it is needed

1

**[6]**