



**Cambridge International Examinations**  
Cambridge International General Certificate of Secondary Education

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**GEOGRAPHY**

**0460/43**

Paper 4 Alternative to Coursework

**October/November 2016**

**MARK SCHEME**

Maximum Mark: 60

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**Published**

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- 1 (a) (i) In a Stevenson Screen: wet and dry bulb thermometer and maximum-minimum thermometer  
Outside a Stevenson Screen: wind vane and rain gauge  
All correct = 2 marks, 2 or 3 correct = 1 mark [2]
- (ii) Barometer [1]
- (b) (i) To get comparable / fair / consistent / reliable reading  
So results not affected by change in AP during the day / AP (or it) varies during the day / AP varies at different times [1]
- (ii) Millibar [1]
- (iii) 35° [1]
- (c) (i) Plot results: 1012 mb & 12° & 1019 mb & 9° 2 @ 1 [2]
- (ii) Hypothesis is **incorrect / false** – 1 mark reserve  
There is **no** relationship between AP and temperature / no increase or decrease in temperature as AP increases (No credit for negative relationship)  
Highest AP = lowest temperature  
  
Credit 2 marks maximum for data e.g.  
Highest AP = 4° and lowest AP = 8°  
1002 mb = 8° and 1022 mb = 4° (need 4 figures)  
1017 mb = temps of 5° 6° and 7°  
1008 mb 1015 mb and 1017 mb all = 5° [4]
- (d) (i) Diagram of traditional rain gauge:  
1 mark maximum for diagram which includes funnel, collecting jar and outer casing  
  
2 marks maximum for labels:  
Measuring jar / container / cylinder  
Funnel  
Outer casing  
Scale / measurement / mm  
If diagram is a 'home-made' gauge or pluviometer  
Credit 1 mark for diagram as appropriate and 2 marks for labels such as scale / ruler / bottle [3]
- (ii) Playground: so that rain gauge is not interfered with / kicked / played with  
OR rain may splash into gauge  
  
Trees: so that there is no interception of rainfall / prevents rain entering funnel / so trees don't block rain / so leaves don't block funnel / to avoid drips from leaves 2 @ 1 [2]

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- (iii) Take collecting jar / container out of casing  
 Record level of water in jar or container / measure amount of water in jar / pour water into measuring tube  
 Pour water from overflow container into measuring cylinder  
 Measure every day / daily / every 24 hours  
 Measure at same time  
 Empty jar after measuring [4]

- (iv) Plot AP = 1008 mb (need plot and line) and rainfall = 2.8 mm on 20th 2 @ 1 [2]

- (v) Hypothesis is **correct** / results **support** hypothesis – 1 mark reserve  
 Highest rainfall = lowest AP  
 No rainfall / 0 mm of rain = highest AP

Credit 1 reserve mark (maximum) for supporting data to show contrast e.g.  
 9.3 mm of rain = 1003 mb and 0 mm of rain = 1020 mb (need 4 figures)  
 4.1 mm of rain = 1007 mb and 2.5 mm of rain = 1012 mb

[3]

- (e) Sunshine recorder is placed south facing in northern hemisphere  
 Put sunshine recorder in open space / not affected by shade / exposed to sun's rays / top of building / on a pedestal or stand  
 Lens / glass ball focuses the sun's rays onto a piece of card / paper  
 Sun's rays scorch card (paper) / burns a line in the card (paper)  
 Measure length of burn line / length of (burn) line shows hours of sunlight / discontinuous or interrupted line if sun is obscured by cloud  
 Replace card (paper) each day / put card (paper) into sunshine recorder [4]

[Total: 30 marks]

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- 2 (a) (i) Energy which comes from resources that will not run out [1]
- (ii) 6 (accept 5–7) [1]
- (iii) Pie chart completion  
1 mark for dividing line at 73%, 1 mark for shading [2]
- (iv) Coal decreases / more coal in 1990  
Oil decreases  
Gas increases  
Total decreases  
2 @ 1 [2]
- (b) (i) Includes gender / age groups / age groups don't overlap / doesn't ask exact age or directly about gender  
Contains introduction / explanation / purpose of study / polite / respects privacy / not too personal  
Asks for reason / opinion  
Gives scale of agreement / agree or disagree  
Contains categories to choose / yes/no question / multiple choice / closed questions  
Can convert to statistics / percentages / easy to graph / easy to put into chart  
Questions are relevant to hypothesis / covers everything needed / asks relevant questions / balanced  
3 @ 1 [3]
- (ii) Stratified (quota) / systematic / random [1]
- (iii) Stratified:  
Gender / age balance  
Appropriate to population of town / socio-economic status / different areas of town  
  
Systematic:  
Regular intervals / regular pattern  
Every tenth person  
  
Random:  
Ask anybody / next person / no pattern  
Use random number tables / pick numbers out of a hat to generate order to ask people  
e.g. if number 6 selected ask the 6th person (DEV)  
  
If no name / incorrect name of method in (ii) credit one appropriate description in (iii)  
If name in (ii) does not match description in (iii) credit (ii) but no credit for (iii) [2]
- (c) (i) Tidal power does not pollute the atmosphere [1]
- (ii) Completion of bars  
Turbines = 17, Free = 8  
2 @ 1 [2]
- (iii) **Yes** / results **do support** hypothesis (✓HA)  
1 mark for comparable data e.g.  
Yes = 71, No = 29 / 71 out of 100 people agree / over 70 agree /  
71% agree / 29 out of 100 disagree / 29% disagree  
[2]

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- (d) (i) Completion of divided bar  
Two marks for dividing lines at 74% and 94%  
1 mark for shading [3]

- (ii) Construction of the barrage will create jobs in the area [1]

- (iii) 1 mark (**not reserve**) for general idea such as:  
About same amount of people / even balance of people agree and disagree / equal numbers have positive and negative opinions  
e.g. 'negligible difference between the number of positive and negative opinions'  
Most people agreed with the positive statements (or an example of a positive statement) and most people agreed with the negative statements (or an example of a negative statement)  
e.g. 90 said barrage will be a tourist attraction and 93 said barrage will threaten natural habitats

Credit 2 marks maximum for comparable data of **total** number of opinions against and for barrage e.g.

'strongly agree' 121 negative and 128 positive opinions

'strongly agree' and 'agree' 217 negative and 219 positive opinions

Agree can be column 2 or columns 1 and 2 combined

Credit 1 mark maximum for comparable data evidence of one opinion against barrage and one opinion in favour of barrage e.g.

90 agree that barrage will threaten natural habitats and 93 agree that barrage will be a tourist attraction

Credit 1 mark maximum for comparison between agree and disagree for **total** responses about benefits (NOT problems) i.e.

219 agree and 81 disagree that the scheme brought benefits [3]

- (e) (i) HEP / hydro  
Solar  
Geothermal  
Wave  
Wind  
Wood  
Biomass / biofuel

2 @ 1 [2]

- (ii) Burning fossil fuels or coal / cars use petrol / release greenhouse gases / release CO<sub>2</sub>  
CO<sub>2</sub> / greenhouse gases build up or increase in atmosphere  
Sun's energy / radiation passes through the earth's atmosphere  
Heats up earth's surface / absorbed by the earth's surface  
Radiation re-radiated back towards space / reflected back  
Greenhouse gases absorb / prevent escape of / trap outgoing radiation / reflect heat back

Reference to ozone layer: if ozone layer is **entire** context of answer award 0 but otherwise credit ideas which apply to global warming and ignore ozone layer reference [4]

[Total: 30 marks]