



GEOGRAPHY

0460/43

Paper 4 Alternative to Coursework

October/November 2016

MARK SCHEME

Maximum Mark: 60

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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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 (✓ H_A)
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 CO₂
CO₂ / 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]