

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge International General Certificate of Secondary Education

**MARK SCHEME for the May/June 2015 series**

**0460 GEOGRAPHY**

**0460/43**

Paper 4 (Alternative to Coursework), maximum raw mark 60

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) Dangers such as:  
 Swallowing polluted water  
 Rats in the water / insects / vermin  
 Infection in open wound / cut  
 Fumes / gases  
 Sharp objects  
 Chemicals in water
- Protections such as: gloves / waterproof clothes / long sleeves / long trousers  
 Masks / goggles  
 Don't drink water / don't put fingers in water / wash when finished fieldwork  
 Wellingtons / waders / boots / shoes  
 Insect repellent  
 Cover up wound / plaster
- Must be dangers of **pollution** not just river  
 Credit protection if appropriate to pollution, even if danger not credited.  
 No link needed
- 2 + 2 [4]
- (ii) Foam on surface / water is not clear / murky / cloudy / can't see river bed  
 Discolouration / grey / green / brown / dark colour or any appropriate colour  
 Dead fish / animals  
 Rubbish / litter in water or on river bank  
 Oil film in water  
 Algae on the surface
- 2 @ 1 [2]
- (b) (i) Take more than one reading at each sampling point (DON'T need average) /  
 do test again / repeat investigation / other student does test  
 Get other students to check the reading on the meter  
 Use two or more meters at each sampling point  
 Make sure the meter is calibrated properly / working properly  
 Clear sensor after use / make sure sensor is clean  
 Leave sensor in water for period of time / until reading is stable
- 2 @ 1 [2]

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- (ii) Digital meter gives a precise / accurate reading / to 1 or 2 decimal points  
Time for dye to disappear is measured in days  
Measuring time depends on subjective decision of when water is clear of dye or foam / hard to decide when water is clear
- 2 @ 1 [2]
- (iii) Plot results for 9 days for dye to disappear at site 1,  
48 minutes for foam to disappear at site 4
- 2 @ 1 [2]
- (iv) Hypothesis is **true** – 1 mark reserve
- pH reading decreases / water becomes more acidic (from site 1 to site 5 / downstream)  
Dye disappears more quickly or in less days / time / oxygen level decreases (from site 1 to site 5 / downstream)  
Foam takes longer to disappear (from site 1 to site 5 / downstream)  
Statements to **2 marks max**
- Credit paired data (distance or site and measurement) for any 2 sites to **1 mark max**.  
This is a **reserve mark**.  
E.g. at 5km pH is 6.6 & at 25km pH is 5.0  
At 5 km dye takes 9 days to disappear & at 25km dye takes 2 days  
At site 1 foam disappears in 2 minutes & at site 5 it disappears in 55 minutes  
No tolerance on stats.
- [4]
- (v) Different sources of pollution along the course of river  
OR Farms / sewage outfall / towns / factories in some parts of river and not others  
OR Factories release waste into river / farms release slurry etc.  
Water may be treated / cleaned at point along river  
Input of clean or dirty water from a tributary  
More water / wider or deeper river dilutes pollution  
Faster flow means less pollution / slower flow means more pollution
- 2 @ 1 [2]
- (c) (i) To practice fieldwork techniques / find out any problems / won't make mistake in real fieldwork / correct errors / practice identifying species / get experience  
To make sure that students understand instructions / know what to do / are confident / know what equipment to bring  
To practise working as team / so everyone knows what to do  
To test fieldwork equipment
- 2 @ 1 [2]

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- (ii) Indicator animals / species live on river bed  
OR Move animals into water / net  
OR To find animals / creatures / organisms [1]
- (iii) To get a biotic score for each animal / put animal into correct group  
So they could be quickly returned to the river [1]
- (d) (i) Completion of tally marks: scud = 2, dragonfly = 5  
**Both needed for 1 mark** [1]
- (ii) 30 [1]
- (iii) Plot 6.7 at 18km,  
Plot 5.7 at 25km 2 @ 1 [2]
- (iv) Average Biotic Index / score decreases / negative correlation  
  
Credit paired stats for any 2 sites for 1 mark  
e.g. at 5km / site 1 B.I. = 8.5 & at 25km / site 5 B.I. = 5.7  
BI decrease by 2.8 over 20km 2
- (v) Group 1 / clean water species or example live at sites 1, 2 /  
most group 1 species found at sites 1 / 2  
Group 3 / polluted water species or example live at sites 4,5 / most group 3  
species found at sites 4 / 5  
No group 1 species or example found at sites 4 / 5  
Number of group 1 species or example decreases from sites 1 to 5  
Group 3 species or example increase from 0 at site 1 to 7 at site 5  
Number of group 3 species or example increase from sites 1 to 5  
  
Need reference to group or example and sites or distance downstream [2]
- [Total 30 marks]**

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- 2 (a) (i) 20 people:  
 Not enough for a reliable sample  
 Too few responses to reach a conclusion / to make study worthwhile  
 Not represent all people  
 Not full range of answers
- 500 people:  
 Take too long / long time to complete  
 Too many responses to produce the results from / analyse / process /  
 put into data table  
 May not find 500 people  
 To many people for six students to deal with
- 1 + 1 [2]
- (ii) Systematic sampling  
 Ask every tenth person / regular intervals  
 Avoid bias / fair test / quick method  
 OR  
 Random sampling  
 Use random numbers / ask next person they meet /ask anybody / any order / no specific  
 order  
 Random numbers avoids bias / quick method / fair test  
 OR  
 Stratified sampling  
 Ask appropriate age / gender balance / in proportion to population / put into groups  
 Avoids bias / get proportionate sample / questionnaire contains different age groups &  
 gender /fair test
- 1 mark for name, 1 mark for description, 1 mark for explanation  
 If method is wrong or blank credit appropriate description & explanation of one sampling  
 method
- 3 @ 1 [3]
- (iii) Where did you move from?  
 How long have you lived in the squatter settlement? / When did you move here?  
 How many members of your family came to the squatter settlement with you?
- 2 @ 1 [2]

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- (b) (i) Completion of pie chart  
 This is the only house I could afford = 10%, to join other members of the family 18%  
 1 mark for dividing line at 82%, 1 mark for shading [2]
- (ii) Results **do** support hypothesis – 1 mark reserve  
 More than half / more than 50% / most / majority moved to look for work / get a job / for employment  
 Less than half / less than 50% moved for other reasons  
 Credit data to **2 marks max**  
 54 moved for employment / 46 moved for reasons other than employment  
 31 moved to look for work & 23 moved to earn money to look after family (NEED BOTH) [4]
- (c) (i) Completion of bar graphs  
 New schools built for older children = 40  
 House is too small with too few rooms = 57 2 @ 1 [2]
- (ii) Fire:  
 Houses are built of wood / scrap materials / easily burn / flammable  
 Houses are very cramped / close together  
 Fire can easily spread  
 Difficult for fire service to access community / no local fire service  
 Electrical cables / wires may not be safe / exposed  
 Gas leaks due to poor pipes  
 Open fires for cooking  
 Lack of regulations to prevent fire  
 Flooding:  
 Houses often built on floodplain / lowland / near river / on flat land  
 No flood protection barriers  
 Poor drainage / no pipes so water cannot drain away  
 Often in areas of heavy / intense / monsoon rainfall  
 2 + 2 [4]

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- (iii) No / results do **not** support hypothesis – 1 mark reserve  
 There are more problems (than benefits) / there are more types of problems  
 The main problem has a higher score than the main benefit

Credit paired data to **2 marks max**

e.g. 270 benefits and 311 problems (NOT people)

6 (named) benefits & 7 (named) problems

64 replies for highest scoring problem & 58 replies for highest scoring benefit

[4]

- (d) Safety of students / mugging / theft / crime / dangerous place  
 Hassle from residents / children  
 People being reluctant to answer questions / won't answer truthfully /  
 may lie / rude / embarrassed to give correct answer / busy doing something /  
 will not cooperate  
 Getting lost / difficult to get to / poor transport links to squatter settlement  
 Not finding enough people to make the survey accurate /  
 people working away from squatter settlement  
 Language difficulties for people to understand the survey / people cannot understand  
 questionnaire / do not speak English  
 Polluted water / air / rubbish / unhygienic conditions / student illness /  
 disease / open drains or sewers / rats  
 Busy / crowded / noisy streets make it difficult to use questionnaire with people

3 @ 1

[3]

- (e) Talk to people who live in squatter settlement / interview them **about** ....  
 (not questionnaire)  
 Take photos (of different houses to show varying conditions)  
 Collect secondary data from internet / local government records / census  
 Make a blog to get peoples' opinions about conditions  
 Make a podcast / video to show housing conditions  
 Draw field sketches (of houses) and label them to show conditions  
 Do a housing quality survey / bi-polar survey  
 Count / tally different types of building materials / number of brick-built houses  
 Observe / look at / make notes on / write a description of / walk round **something** e.g.  
 housing conditions

Credit development of ideas related to various methods

[4]

[Total 30 marks]