

**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

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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]**