

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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Page 2	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2015	0460	43

- 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]

Page 3	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2015	0460	43

- (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]

Page 4	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2015	0460	43

- (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]**

Page 5	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2015	0460	43

- 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]

Page 6	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2015	0460	43

- (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]

Page 7	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2015	0460	43

- (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]