

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.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2015 series for most Cambridge IGCSE[®], Cambridge International A and AS Level components and some Cambridge O Level components.

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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]