

**MARK SCHEME for the May/June 2011 question paper  
for the guidance of teachers**

**0460 GEOGRAPHY**

**0460/41**

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 must be read in conjunction with the question papers and the report on the examination.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

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|        |                                |          |
|--------|--------------------------------|----------|
| Page 2 | Mark Scheme: Teachers' version | Syllabus |
|        | IGCSE – May/June 2011          | 0460     |

- 1 (a) (i) Dangers such as:  
 Skin irritation  
 Swallowing polluted / poisonous water  
 Water gets in eyes  
 Rats in the water  
 Infection in open wound  
 Fumes  
 Chemicals in water  
 Disease / bacteria / filth in water  
 Broken glass / physical objects  
 Algae  
 Precautions such as:  
 Gloves / waterproof clothing / protective clothing  
 Masks  
 Goggles  
 Wellingtons / waders / boots  
 Don't drink water  
 Wash hands when completed work
- Must be dangers of pollution not just river [2 + 2] [4]
- (ii) Smell  
 Foam / debris / material in river  
 Discolouration / colour  
 Dead fish / animals  
 Sample water / test pH  
 Contact government body / local authority responsible for river [2 @ 1] [2]
- (b) (i) Most visible pollutants in the river nearest to the factory / visible pollutant decreases downstream – accept distances or sites  
 Ammonia level high after / near factory / ammonia level decreases further downstream – accept distances or sites  
 Oxygen level drops / low after / near factory / oxygen level rises further downstream – accept distances or sites [2]
- (ii) Ammonia / pollution is high as waste water from factory goes into river  
 Ammonia / pollution decreases downstream as it mixes with water / dissolves  
 River current helps to disperse / spread pollution  
 More water / tributaries dilute pollution [2]
- (c) (i) To move the animals into water / disturb animals / to find / to catch / collect animals [1]
- (ii) Net should be downstream (if upstream allow correct explanation)  
 So that animals float into net/ flow with water / water flows towards net [2]
- (iii) To get a Biotic Index score for each animal / to see how polluted water is / tell them about quality of water [1]
- (iv) To find the part of the bed where most animals live  
 To get an average Biotic score for the site  
 To make the test results more reliable / fair / accurate average / more results to compare [1]

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|---------------|---------------------------------------|-----------------|--|
| <b>Page 3</b> | <b>Mark Scheme: Teachers' version</b> | <b>Syllabus</b> |  |
|               | <b>IGCSE – May/June 2011</b>          | <b>0460</b>     |  |

- (d) (i) 36/6 for 1 mark  
Answer = 6 for second mark
- (ii) Plot points on Fig. 3  
Site 4 plot must use the answer from part (i) [2 @ 1] [2]
- (iii) Highest average Biotic Index (B.I.) score is at site 1 / before factory  
Lowest average / decreases B.I. score is at site 2 / at waste pipe  
From site 2 to site 5 B.I. score increases  
By site 5 B.I. is still lower than site 1  
2 pieces of data from graph = 1 max [3]
- (iv) In unpolluted water: stonefly / mayfly / caddis fly are found (any 1)  
In most polluted water: leech / rat-tailed maggot / bloodworm are found (any 1)  
High biotic score where water not polluted / low biotic score where polluted [2 @ 1] [2]
- (e) Rubbish / litter  
Washing clothes  
People washing themselves  
Disposal of dead bodies  
Nitrates / fertilisers / pesticides  
Farm animals drinking water  
Sewage / human waste  
Cooling water from power stations / hot water from power stations  
Oil from boats / refineries  
Acid rain [2 @ 1] [2]
- (f) Hypothesis (1 reserve) such as:  
Velocity / discharge varies downstream / across a meander  
Cross-section varies downstream  
Bedload varies downstream  
Investigation involving floats, timing, measured distance, flowmeter  
Measuring poles, clinometer, quadrat, roundness index  
Credit recording data in field  
Credit analysis to test hypothesis – e.g. best-fit line, correlation analysis  
1 mark for hypothesis, 3 marks for fieldwork techniques [4]

**[Total: 30]**

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|--------|--------------------------------|----------|
| Page 4 | Mark Scheme: Teachers' version | Syllabus |
|        | IGCSE – May/June 2011          | 0460     |

- 2 (a) (i) Students only want to ask tourists / questionnaire is for tourists  
 Most people they approach will not be tourists  
 Not waste people's time  
 If include non-tourists results will be unreliable / wrong info
- (ii) Explain difference between physical and human attractions  
 More specific information than just asking people to name attractions  
 Easier to classify results  
 To see which type of attraction is more popular  
 Both types of attraction / wider choice of attractions to attract tourists [2]
- (iii) Most / highest number tourists come from Asia  
 Least / lowest number of tourists from Africa  
 More from Asia than S America (or other 2 areas)  
 Tourism is international / tourists come from around the world  
 1 mark for data if interpreted e.g. 1/3 from Asia [2]
- (iv) Completion of bar graphs [2 @ 1] [2]
- (v) Divided bar graph / pie graph / pictograph  
 1 mark for appropriate graph  
 1 mark for drawing, 1 mark for labelling [3]
- (vi) Disagree with students  
 Hypothesis was true / agree with hypothesis / physical attractions brought more visitors  
 Overall 38 say physical compared with 32 say human  
 Results are close / similar  
 170 visits to physical attractions & 140 visits to human attractions  
 Popular physical attractions – mountains, waterfall, elephant camp  
 Credit anomaly such as night bazaar was very popular human attraction  
 Credit use of paired figures for individual attractions [4]
- (b) (i) One idea for selecting interviewees, e.g. every tenth person walking past / regular intervals / one person per minute [1]
- (ii) Yes: data is more manageable  
 Prioritising their ideas  
 Stops them listing everything  
 To see if more than one positive / negative  
 Hard to choose just one idea / wider choice  
 More data  
 No: May have views about more than two impacts  
 Too much data  
 Information not required in hypothesis [2]

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| Page 5 | Mark Scheme: Teachers' version | Syllabus |  |
|        | IGCSE – May/June 2011          | 0460     |  |

- (c) (i) 1<sup>st</sup> choice:  $16 \times 2 = 32$   
2<sup>nd</sup> choice:  $10 \times 1 = 10$   
Total score = 42
- (ii) Plot result of calculation in part (i) on Fig. 7B [1]
- (iii) True / hypothesis is correct / tourism has positive effect  
53 thought tourism was a positive influence & 8 thought it was negative / 53/61 thought it was positive  
Over 80% (87) thought it was positive / less than 20% (13) thought it was negative / 7 times as many thought it was positive than negative  
Main positive impact of tourism is jobs and income  
27 out of 61 gave it as first choice [4]
- (iv) Local people can see more taxis / tut-tuts  
Most affected by these / affected daily  
Traffic congestion slows them down travelling / stops them getting to work on time  
Air pollution makes it difficult to breath  
Air pollution from planes / trains bringing tourists [2]
- (d) Do a traffic survey on main streets at different times of day and night  
E.g. tally, 10 min period of time, 3 times per day, both sides of road in pairs  
Compile a questionnaire / interview to ask drivers/pedestrians/local officials  
Ask questions such as: Where is traffic congestion worst?  
Is your journey to work/school delayed? [3]

[Total: 30]