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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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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(d) (i) 36/6 for 1 mark
Answer = 6 for second mark [2]

(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]

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   [2]

        (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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(c) (i) 1st choice: 16 x 2 =32
2nd choice: 10 x 1 = 10
Total score = 42   [2]

(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]

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