UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2012 question paper

for the guidance of teachers

0460 GEOGRAPHY

0460/42 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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UNIVERSITY of CAMBRIDGE
International Examinations

1 (a) (i) Positioned two surveying poles along valley floor/along wadi or river bed/one upstream & 1 downstream (1)
Put poles vertically/at 90 degrees /perpendicular (1)
Measured 10m between the ranging poles/10m apart (1)
Used clinometer to:
Measure angle (1)
Line up position on/at top of two poles (1)
Read off the angle (1)

[1 + 2] **[3]**

(ii) 22.5 (^{o}) **[1]**

(iii) Check accuracy of measurements (1)
Reduce effect of anomaly at a site (1)
Reduce effect of student error (1)
To be more reliable/make a fair test (1)
To calculate/work out an average (1) **[1]**

(iv) Hypothesis is correct/TRUE/gradient of valley floor does decrease downstream. TICK HA. (1) No need to use degrees ° here.

Evidence of average gradient variation at two different sites with two comparative figures e.g.
From 27.5 at Upper course to 22.5 in Middle course (1)
From 27.5 in Upper course to 11.5 in Lower course (1)
Can use range e.g. 25/30 in Upper course to 7/17 in Lower course (1)

[1 HA + 1] **[2]**

(b) Reserve of 1 mark for each measurement; max 2 for any category.

Size:
Hold ruler against rock (1)
Measure longest side/axis/measure length (1)
Read off the distance in mm/cm (1)

Weight:
Weigh empty plastic bag (1)
Put each rock in plastic bag (1)
Attach to spring balance (1)
Read off weight on scale/using pointer (1)
Subtract weight of plastic bag (1)

Roundness:
Put rock next to Roundness score chart (1)
Compare shape with categories (1)
Decide on the best description (1)

[2 max + 1 + 1] **[4]**

(c) (i) Two individual plots at 13 (above 1) & 9 (above 4) on dispersion graph.

[1+ 1] **[2]**

(ii) Completion of three bars on histogram – 1 mark for each correct plot; ignore any shading.
151–300 = **10**, 301–450 = **3**, 451–600 = **1**

[1+ 1 + 1] **[3]**

(iii) Completion of middle course pie graph – classes 3 & 4. Credit 1 mark for correct line at 80 (no tolerance) and 1 for correct shading in right order (Same as bottom chart). MUST follow sequence shown i.e. Class 3 after Class 2 and before Class 4.

[1 + 1] **[2]**

(iv) Yes/hypothesis is correct/TRUE/rocks or bedload become smaller and rounder downstream. Any ref to Partially/mostly

Supporting evidence for 3 marks: 1 mark reserved for Size and 1 mark for Roundness plus 1 floating for any of Size, Weight, Roundness. Credit qualitative or quantitative statements.

Quantitative: Must use any **two** figures if comparing with data.
Size: in upper course 8-18cm, middle course 4–12/13cm, lower course 2-10cm (1)
Mode in upper course 12cm, lower course 5 cm (1)
Weight: most common category in upper course 451-600gm, middle course 151-300gm, lower course 1-150gm (1)
Up to 900gm in upper course but only up to 300gm in lower course (1)
Roundness: most common class in upper course 2, middle course 3, lower course 4 (1)
No class 5 in upper course but present in lower course (1)

Qualitative: Must use comparative words NOT high/low.
Size: in upper course largest OR in lower course smallest (1)
Mode in upper course is highest OR in lower course lowest/lower (1)
Weight: in upper course heaviest/ heavier OR in lower course lightest/lighter (1)
Roundness: in upper course more angular OR in lower course less angular (1)

[1HA + 1S + 1R + 1 other] **[4]**

(v) Credit any two erosional processes that will reduce size, weight or angularity.
Can be two aspects of one erosional type.

Attrition - rocks collide with each other & break into smaller particles (1)
Smaller particles created by attrition will weigh less (1)
Attrition knocks off the sharp edges so reducing angularity/increasing roundness (1)

Accept similar answers ref Corrasion/Abrasion, Corrosion/Solution or Hydraulic Action if refer to reducing size, weight and/or angularity.

[1 + 1] **[2]**

(d) Credit any 3 processes from below:
Examples
Hot conditions/daytime - rock surface expands (1)
Cold conditions/night time - surface contracts (1)
Large daily/diurnal temperature range causes expansion/contraction (1)
Cycle of expansion/contraction continues (1)
Creates stresses/pressures in the rock/outer layers expand more (1)
Rock breaks up slowly in layers (1)
Layers crumble away/peel off (1)

[1 + 1 + 1] **[3]**

(e) Ideas relating to these methods in this investigation such as:
More investigation sites along/in valley (1)
Sample more pebbles at each site (1)
More students check measurements/student repeats experiments (1)
More than one student assesses angularity because subjective (1)
Pilot survey to test method/equipment (1)
Use better named equipment e.g. electronic scales, callipers, pebbleometer (1)

[1 + 1 + 1] **[3]**

[Total: 30]

2 (a) (i) Examples: Credit ONLY weaknesses of the 4 questions.
Only contains closed question/yes-no answers (1)
No reasons/opinions are asked for (1)
Answers are too obvious (1)
Question 1/global warming question irrelevant (1)
Questions general/vague (1)

[1 + 1] **[2]**

(ii) Need three different examples; can be opposites of (i)
Gives a scale/range/options/multiple choice/quantitative answers (1)
Includes gender/age group (1)
Introduction to the questionnaire (1)
Reasons/opinions are asked for (1)
Style more user-friendly/tick boxes/circling is easier/circling is quicker (1)

[1+ 1 + 1] **[3]**

(iii) Can be any one of stratified, systematic or random. Need to name (1) describe method (1 mark) and give one reason (1 mark) why they chose the method.

Stratified sampling (1)
Samples an appropriate gender balance (1)
Samples an appropriate age balance (1)
Avoids bias (1)
Creates a mix of age/gender –variety/representative (1)

Systematic sampling (1)
Asking at regular intervals e.g. every tenth person (1)
Easy to organise/collect data (1)
Fast to collect samples (1)
Avoids bias (1)

Random sampling (1)
Generates formal sample by random numbers (1)
Can generate sample by informal random choices e.g. 3rd then 7th person (1)
Avoids bias by using random system to choose people (1)
OR
Generates informal sample (1)
Ask anybody with no real criteria e.g. best friend (1)
Convenient/quick (1)

[1 + 1 + 1] **[3]**

(b) (i) Wind turbines only work when it is very windy **[1]**

(ii) Graph completion. 1 mark for each correct plot; ignore any shading.
Wind power doesn't pollute the atmosphere = 46
Wind is free = 19

[1 + 1] **[2]**

(iii) Yes/agree with hypothesis/TRUE.
Comparable data such as yes = 72/no = 28;
72% or 72/100 agree with it (1)

[1HA + 1] **[2]**

(iv) Reasons such as:
There are no waste materials (1)
Land beneath/around the turbines can still be used for farming (1)
Wind turbines can be a local scheme (1)
Can be in a remote area/hilly/off shore (1)
Cheap running costs/low maintenance (1)
Noise is relatively low (1)
No need to mine coal/gas/oil/fossil fuels (1)
No need for expensive nuclear stations (1)

(c) (i) Completion of divided bar:
Two dividing lines at 30 and 82 (1 + 1)
Correct shading of all 3 sectors = 1

[(1 + 1) + 1] **[3]**

(ii) Wind turbines will create few jobs in the area.
Allow 'last one/bottom one/statement number 5' **[1]**

(iii) For the hypothesis: (1 Reserve)
60%/most agree that it will spoil the view (1)
90%/almost all agree that they create a lot of noise (1)
52%/majority agree that will create few jobs in the area (1)

Against the hypothesis: (1 Reserve)
70%/most disagree that tourists will stop visiting the area (1)
84%/almost all disagree that turbines will be a danger to walkers (1)

Evidence can be data or judgement (made by looking at data).
EXCEPTION : If candidates focus on the "hilltop" in the hypothesis they can really only say
Hypothesis is TRUE because 60% agree it will spoil the view (1)
Allow max. of 2 marks for this response (1HA + 1 max = 2).

[1HA + 1R + 1R + 2] **[5]**

(d) (i) Examples each worth 1 mark each.
HEP/Hydro/Water turbines
Tidal
Solar
Geothermal
Biogas
Wave

[1 + 1] **[2]**

(ii) Four processes at 1 mark each
Sun's energy/short-wave radiation passes through the earth's atmosphere (1)
Some energy absorbed by the earth's surface (1)
Earth's surface heats up (1)
Long-wave radiation radiated back towards space (1)
Greenhouse gases form blanket/absorb/trap outgoing radiation/prevent escape (1)
Radiation reflected back towards earth's surface (1)
Atmosphere heats up (1)

[1 + 1 + 1 + 1] **[4]**

[Total: 30]