GradeMax

Cambridge Assessment International Education

Cambridge IGCSE™

GEOGRAPHY **0460/42**

Paper 4 Alternative to Coursework **February/March 2023**

MARK SCHEME

Maximum Mark: 60

Published

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 International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the February/March 2023 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

© UCLES 2023

[Turn over

GradeMax

Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

© UCLES 2023

GradeMax

Question	Answer	Marks
1(a)	One RESERVE mark for correct name. **Systematic: (1R)** Regular intervals / regular / specific pattern / evenly distributed (1) Every tenth or nth person (NOT <4) (1) **Random: (1R)** Ask anybody / next person / no pattern (1) Use random number tables / pick numbers out of a hat to generate order to ask people (1) If number 11 comes up ask 11th person (1) **Stratified: (1R)** Gender / age balance (1) Appropriate to population of town / socio-economic status / different areas of town (1) (1R + 2)	**3**
1(b)(i)	Pie graph completion **TICKS/CROSSES** Plot unsafe = 20% and very unsafe = 15% at area D 1 mark for dividing line at 85% 1 mark for correct shading. (1 +1)	**2**
1(b)(ii)	Completion of divided bar graph **TICKS/CROSSES** People do not mix = 32; people are unfriendly = 24; people are hostile = 4 1 mark for dividing lines at 72 and 96, 1 mark for correct shading (1 + 1)	**2**
1(b)(iii)	**TICKS/CROSSES** area A area B area B (1 + 1 + 1)	**3**

Question	Answer	Marks
1(b)(iv)	**Focus on distance + data** Evidence may be statistics or comparison of areas: MAX/RESERVE 1 from each Fig/Table as referenced in question. Note: Already told Hypothesis is **FALSE;** do not credit that decision. No need to refer to distance from centre unless stated below. **EXAMPLES: Can use C if comparing to A** Fig. 1.3 / Table 1.1 More / larger percentage of people feel unsafe / very unsafe in area D than area A (Need comparison and 2 named areas.) OR 15% feel very unsafe in area D and 0% feel very unsafe in area A (Need stats from 2 named areas) OR area D has highest / percentage / most / 15% who feel very unsafe and it is the furthest from the town centre (Need 1 named area and reference to distance and percentage) Fig. 1.4 / Table 1.2 More / larger percentage of people do not mix in area D than area A (Need comparison and 2 named areas) OR 29% do not mix in area D and 21% do not mix in area A (Need stats from 2 named areas) OR area B has highest percentage / most / 39% of people who care for others and it's not the furthest from the town centre (Need 1 named area and reference to distance and percentage) Table 1.3 More / larger percentage of people have not been victims of crime in area A than area D (Need comparison and 2 named areas.) OR 47% have not been victims of crime in area A and 5% have not been victims of crime in area D (Need stats from 2 named areas.) OR area D has highest percentage / most / 39% vandalism and it's the furthest from the town centre (Need 1 named area and reference to distance and percentage) (1R + 1R + 1R)	**3**
1(c)(i)	1 MAX. **TICK/CROSS** **Z** Very little traffic which is moving freely **Y** Little traffic which is moving steadily **W** Lots of traffic which is moving slowly **X** Lots of traffic which is causing congestion and queues	**1**
1(c)(ii)	Examples Scores are subjective / personal opinion (1) Students different backgrounds / students live in different types of area (1) Students are looking in different directions / angles (1) (1 + 1)	**2**

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>1(c)(iii)</td><td><u>Examples</u>
Decide whether to survey individually or in a group / pairs (1)
Use agreed categories / descriptions (1)
Agree on what descriptions mean (1)
Decide when would be best day / part of day for survey / do it same day (1)
Agree on time of survey (1)
Produce a recording sheet for survey / a survey sheet (1)
Look at the area and decide the score (1)
E.g. low traffic = 1 high traffic = 4 (1)
Share / discuss / agree / compare group score (1)
Add total score (1)
(1 + 1 + 1 + 1)</td><td>4</td></tr>
<tr><td>1(d)(i)</td><td>Completion of graph for area B TICKS/CROSSES
<table><tr><td>Building condition</td><td>4</td></tr><tr><td>Public open space</td><td>2</td></tr><tr><td>Traffic</td><td>2</td></tr><tr><td>Noise</td><td>3</td></tr></table>1 for plots and 1 for correct lines</td><td>2</td></tr>
<tr><td>1(d)(ii)</td><td>Plotting bar for area C = 8 (40 mm on ruler)
TICK/CROSS</td><td>1</td></tr>
<tr><td>1(d)(iii)</td><td>Hypothesis is false – 1 mark reserve (✓HA)

(Total / EQ) Score decreases / gets worse away from town centre (1)
All individual category scores decrease away from town centre (1)
Highest score at A 1km/nearest <u>and</u> lowest score at D 4km/furthest (1)

<u>Reserve 1 mark for total paired data</u> : no need to support statement.
e.g. total score at area A =14 and at area D = 7 (1RD)

Hypothesis conclusion is true / partially true = 0 (XHa)
If no hypothesis conclusion ^HA and credit evidence
(1HA + 1 + 1RD)</td><td>3</td></tr>
</table>

GradeMax

Question	Answer	Marks
1(e)	Examples Get into groups / pairs (1) Groups go to different areas of the town / decide on sites / roads (1) Go to opposite sides of road (1) Divide jobs between students / one counts and other records (1) Agree the categories to record vehicles (1) Decide which days to do the traffic counts (1) Use stopwatch / watch / timer for timing (1) Decide what time to do the traffic counts (1) Synchronise timing / start and finish at same time (1) Decide duration of traffic counts (1) Count vehicles / types of vehicles (1) Use counter / clicker / tally method (1) Record on sheet / table / chart (1) (1 + 1 + 1 + 1)	**4**

Question	Answer	Marks
2(a)(i)	<table><tr><th>possible danger</th><th>student precaution</th></tr><tr><td>Infection from the water / swallowing water / waterborne disease</td><td>Don’t drink water / wash when finished fieldwork / wear rubber gloves</td></tr><tr><td>Insects or animals in the river</td><td>Protections such as: gloves / long sleeves / long trousers / insect repellent</td></tr><tr><td>Sharp stones on the river bed</td><td>Wear wellingtons / waders / boots / proper shoes</td></tr><tr><td>Fast current / deep water</td><td>Don’t go into water / stay on banks</td></tr><tr><td>Slipping on wet rocks / falling into the river</td><td>Wear appropriate footwear / boots / shoes / wellingtons</td></tr></table> Credit 2 marks for dangers and 2 marks for precautions. **TICKS/CROSSES** 2 x (1 + 1)	**4**

Question	Answer	Marks
2(a)(ii)	Examples Foam on surface / water not clear / murky / cloudy / can't see river bed (1) Discolouration / grey / green / brown / dark colour or relevant colour (1) Dead fish / lack of wildlife or animals in water (1) Rubbish / litter in water or on river bank (1) Oil film in water (1) Algae on the surface (1) River water unpleasant smells (1) (1 + 1)	**2**
2(b)(i)	Examples Give precise / accurate reading / figures (1) Give instant readings / faster / quicker / saves time (1) Easy to use / clear to read (1) Less chance of making mistakes in reading / mis-reading / less errors (1) Portable / can be used at more than one site (1) Data can be stored / downloaded (1) (1 + 1)	**2**
2(b)(ii)	Examples Take more than one reading at each sampling point / do test again / repeat investigation (1) Get other students to do test / check the reading (1) Use two or more meters / another instrument (1) Make sure the meter is calibrated properly / working properly (1) Clear sensor after use / make sure sensor is clean (1) Leave sensor in water for period of time / until reading is stable (1) (1 + 1)	**2**
2(b)(iii)	Plot pH = 5.7 at site 3 **TICK/CROSS**	**1**
2(b)(iv)	Plot 8.4 mg/l at site 5 **TICK/CROSS**	**1**
2(c)(i)	Examples Water sample may include sediment / stones / leaves / particles (1) Measuring clarity is by eye / more prone to discrepancy or human error / subjective (1) Reading off scale may be inaccurate due to parallax error (1) Water poured in may be more than it should be (1) Make sure the tube is clean (1) (1 + 1)	**2**
2(c)(ii)	Plot 54cm at site 3 **TICK/CROSS**	**1**

© UCLES 2023

Question	Answer	Marks
2(c)(iii)	Hypothesis is **true / supported / yes** – 1 mark reserve (✓HA) pH score decreases / acidity increases downstream / Site 1 to 5 (1) Oxygen level decreases downstream / Site 1 to 5 (1) Water clarity / depth of clear water decreases downstream / Site 1 to 5 (1) Reserve 1 mark maximum for paired data; no need to support statement e.g. pH score at site 1 / 5 km = 6.8 and at site 5 / 25 km = 5.4 OR 2 sites that decrease (1) Hypothesis conclusion is false / partially true = 0 (XHa) If no hypothesis conclusion ^HA and credit evidence (1HA + 1 + 1 + 1RD)	**4**
2(c)(iv)	Examples Visitors throw rubbish / trash / litter / garbage into the river (1R) Waste water/products/chemicals/materials/toxic runs into the river (1R) (1R + 1R)	**2**
2(d)(i)	Complete site 4. All correct for the mark. Caddisfly = 2, mayfly = 1, midgefly = 3, snail = 1 **TICK/CROSS**	**1**
2(d)(ii)	Examples: NOTE: no credit for giving a hypothesis decision. Compare different **species** at any two sites e.g. Site 1 **species** are stonefly / caddisfly / dobsonfly and site 5 / downstream **species** are midgefly / snail / leech / worm (1) Compare different numbers of same **species** downstream e.g. 2 dobson fly at site 2 and none at site 4 (1) OR e.g. dobson fly at Site 2 not at Site 4 (1) (1 + 1)	**2**
2(d)(iii)	Examples Some species can survive in unpolluted water / some species survive in polluted water / animals live in different pollution levels (1) It depends on how tolerant the species are to polluted water (1) Pollution levels change / vary from Site 1 to Site 5 (1)	**1**
2(e)(i)	1 mark for appropriate hypothesis written as statement or question **TICK/CROSS** Examples: Channel width increases downstream (1) Does channel depth increase downstream? (1) River velocity increases downstream (1) Does river velocity vary across the channel? (1) Cross-sectional area varies downstream (1) Size of load increases downstream (1) Does the gradient of the river bed increase downstream (1) Discharge increases downstream (1)	**1**

GradeMax

Question	Answer	Marks
2(e)(ii)	<u>Example 1 – method to measure channel width</u> Choose different sites (1) One student/pole on each bank/side of river (1) Place measuring tape across channel / from one bank to the other (1) Keep tape taut/stretched (1) Poles must be directly across/ at 90 degrees /perpendicular to banks (1) Repeat at different sites and calculate average width (1) Record measurement at each site (1) <u>Example 2 – method of measuring velocity using floats</u> Choose different sites (1) Put poles/sticks 5/10 metres or fixed distance along river (1) Use tape measure to measure distance (1) Put float/orange in river at start of distance (1) Start stopwatch/timer when float released at start point (1) Measure time taken for float to travel between poles (1) Stop stopwatch/timer when float passes end point (1) Repeat at different points and calculate average speed (1) Record results from each site (1) <u>Example 3 – method of measuring velocity using flowmeter</u> Choose different sites (1) Put meter/propeller/flowmeter below surface of water/into water (1) Propeller must face upstream (1) No obstacles in front of propeller (1) Read/look at digital reading/display to see speed (1) Take several/repeat readings and calculate average speed (1) Repeat at different points and calculate average speed (1) Record results from each site (1) (1 + 1 + 1 + 1) **If totally inappropriate hypothesis in (i) = No Credit for method** **If topic is OK but not expressed as hypothesis no credit in e (i) but can give 4 marks for method e.g. River Velocity**	**4**

© UCLES 2023