CAMBRIDGE
International Education

Cambridge IGCSE™

GEOGRAPHY **0460/42**

Paper 4 Alternative to Coursework **October/November 2024**

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.

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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 descriptions 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.

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Marking annotations

Examiners must use the following annotations:

Annotation	Meaning
	Correct point
	Incorrect
HA	Hypothesis answer used with another annotation e.g. tick, cross or omission mark
Highlight	Used to link parts of an answer or show where credit has or has not been given
	Omission or further development/detail needed to gain credit
J	The point has 'just' been allowed / benefit of the doubt given
LNK	Linking 2 or more ideas or paired data together to gain a mark
REP	Idea has been repeated
{ }	Brackets used to show where a point has or has not been awarded within a longer answer
	1 Response has been seen but no credit given can also be used for no response 2 Additional page has been checked

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Question	Answer	Marks
1(a)(i)	Rows 1, 2, 5 and 7 are correct**.** Traffic must be counted moving along the road in both directions; Counting must start and finish at the same time at all counting sites; A tally method can count and record vehicles in groups of five; Students must not stand too near the road while counting; 4 @ 1 mark	**4**
1(a)(ii)	Long enough for reliable/valid data/equal representation OR fair test; To compare sites/consistency between results; Not get bored/lose concentration/not affected by fumes/sunburn/don't lose count; 2 @ 1 mark	**2**
1(b)(i)	Site 5 1 mark	**1**
1(b)(ii)	Plot 310 @ 3.5 km. 1 mark	**1**
1(b)(iii)	The hypothesis is partly true with some exceptions – 1 mark reserve; (✓HA) Statement: Increases from Site 9 to 1/CBD OR lower number further from CBD; True as higher levels from 1–4 than (after Site 5) from 6–9; Sites 2, 5 OR 7 are exceptions/anomalies/do not fit OR Site 5 has most vehicles; Credit 1 mark for paired data which supports hypothesis (any 2 sites): e.g. 409 vehicles at site 1/0.5 km from CBD and 18 vehicles at site 9/7.5 km from CBD; Credit 1 mark for paired adjacent data which shows exception (5–4; 7–6 and 2–1): e.g. 616 vehicles at site 5/4.5 km from CBD and 310 vehicles at site 4/3.5km from CBD; Hypothesis is false / completely true = 0 (XHA) Credit relevant evidence supporting the correct conclusion of partly true. If no hypothesis conclusion ^ HA and credit evidence supporting the correct conclusion of partly true. 1(HA) + 1(S) + 2(D) or 1(HA) + 2(S) + 1(D) marks	**4**
1(c)	Secondary sources are collected by others/not collected by self or students/ already exist/second hand/not first-hand/professionals; Example such as: Internet/website/book/document/report/on-line/search engines/newspapers/articles/maps; (1 mark reserve) 1 + 1(R) marks	**2**

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Question	Answer	Marks
1(d)(i)	Very unhealthy 1 mark	**1**
1(d)(ii)	Orange 1 mark	**1**
1(e)(i)	<u>Correct plot with site number for 2 marks:</u> Plot vehicles = 200 and AQI = 105 at site 6 (105 between lines 104/108); Plot vehicles = 243 and AQI = 120 at site 7 (243 between lines 240/250); NOTE: 1 MAX if 1 or 2 plots correct but no site numbers. 1 MAX if plots correct with site numbers but are not crosses. 2 @ 1 mark	**2**
1(e)(ii)	Yes/results support hypothesis/hypothesis is true – 1 mark reserve; (✓HA) <u>Statement:</u> As amount of traffic/number of vehicles increases the level of air pollution/ AQI increases; (NOTE accept decrease/decrease comparison). Lowest vehicles with lowest AQI and highest vehicles with highest AQI; <u>Credit 1 mark for paired data from any 2 sites showing positive relationship:</u> e.g. (at site 9) 18 vehicles and AQI = 57 and (at site 5) 616 vehicles and AQI = 195; No/Hypothesis is false /partly true or results do not support true = 0 (XHA) Credit relevant evidence supporting the correct conclusion of true. If no hypothesis conclusion ^ HA and credit evidence supporting the correct conclusion of true. 1(HA) + 1(S) + 1(D) marks	**3**
1(e)(iii)	Factories/industry; Power station; Construction/building site; Domestic heating/fires; Burning rubbish; Methane from waste/rubbish; Untreated sewage; Airport/aircraft; Railway station/trains; 2 @ 1 mark	**2**

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Question	Answer	Marks
1(f)(i)	Note if refer to asking people, group work, consulting others etc. MAX 2 for answers below: Fill in site number/date/time; Look around the site/observe/analyse/review/investigate; Decide the score/give a score/rate the score/fit score to description; Put a tick/cross or record the score; Add up the scores/calculate total score/tally up the total score; Complete the survey sheet at each site; 4 @ 1 mark	**4**
1(f)(ii)	Work with another student: e.g. To compare scores/to discuss or agree what score to give/less error/ decreased bias/use different points of view/help to make decision/less subjective; Do all the surveys at the same time of day: e.g. To get comparable conditions/avoid variation in e.g. amount of litter, number of pedestrians, vehicle noise/so it's a fair test/avoid anomalies; Walk around each fieldwork site before making the decision: e.g. To consider what score to give/look in detail at the features to be assessed/cover whole area/not miss any factors/double check; 3 @ 1 mark	**3**

Question	Answer	Marks
2(a)	Row 5*:* Water soaking into the soil 1 mark	**1**
2(b)(i)	Push tube into ground/push tube down until 0 (mm) is at surface; Pour water into tube/fill tube with water; Start stopwatch when water at 120 mm/when water contacts soil/when water poured in tube; Use scale to measure changing height of water in tube; Stop stopwatch after a fixed time/10 minutes OR time until all water soaked into ground; Work out the change in level/rate of the water soaking into ground/measure time for water to soak into ground; 3 @ 1 mark	**3**
2(b)(ii)	Complete site 4 measurements. 13 mm at 8 mins, 9 mm at 9 mins, 6 mm at 10 mins 2 marks if 3 plots correct 1 mark if 1 or 2 plots correct	**2**

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Question	Answer	Marks
2(b)(iii)	Statement (S): Water level or infiltration falls less/slower at site 1; OR more/faster at site 4; Paired Data (D): Falls 15 mm at site 1 and 114 mm at site 4; OR Falls 120 mm–105 mm @ site 1 and 120 mm–6 mm at Site 4; It's 105 mm @ site 1 and its 6 mm @ site 4; 1(S) + 1(D) mark	**2**
2(b)(iv)	120 – 6 OR 114 1010 1 mark	**1**
2(c)(i)	Easy/simple method/easy to do/easy to use/easy to read/instant/quicker/ faster; No need to do calculation/does not need formula/results displayed; No need to take back to school; Less disturbance of soil; Less chance of error/exact/precise/accurate/reliable/less steps; Several readings can be taken at once and an average worked out; Portable/can be used on > one site/small amount of equipment; NOTE allow comparisons. 3 @ 1 mark	**3**
2(c)(ii)	Plot infiltration rate = 5.1 mm; NOTE allow between 4.8 and 5.2 Soil moisture content = 31.5% at site 3; NOTE must be on correct vertical line. 2 @ 1 mark	**2**
2(c)(iii)	Hypothesis is true - 1 mark reserve (✓HA); (Infiltration rate increases as soil moisture content decreases OR Hypothesis true) from site 1 to site 6/at all sites; Site 1 highest SMC and lowest IR and Site 6 lowest SMC and highest IR; Negative correlation/relationship between IR and SMC; <u>Credit paired data from any 2 sites that support it's TRUE:</u> e.g. (At site 1) infiltration rate is 1.5 mm per min and soil moisture content is 37.3% and (at site 6) infiltration rate is 17.1 mm per min and soil moisture content is 22.4%; No/Hypothesis is false/partly true/not supported = 0 (XHA) Credit relevant evidence supporting the correct conclusion of true. If no hypothesis conclusion ^ HA and credit evidence supporting the correct conclusion of true. 1(HA) + 1(S) + 1(D) marks	**3**

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Question	Answer	Marks
2(d)(i)	Measure a set distance/measure 5–10 metres with tape measure; Put two poles at both ends of measured distance; OR Put two poles at top and bottom of slope/break of slope; Measure distance between two poles with a tape measure; Ensure poles are vertical; Rest poles on surface OR ensure poles are at same depth in the ground; Tie string to top OR same height of both poles; Hold clinometer at top/at agreed height on pole/at eye level; Sight other pole at top/same height/along string; Read angle/measure angle/record angle/degree using clinometer; 4 @ 1 mark	**4**
2(d)(ii)	Plot gradient = 3° and infiltration rate = 5.1 mm per minute at site 3; NOTE allow tolerance of 5.1 – must be plotted between 4.8 and 5.2 lines. 1 mark	**1**
2(d)(iii)	Hypothesis is false -1-mark reserve (✓HA); No relationship/correlation/pattern between rate of infiltration and slope gradient (1S) OR no clear pattern/trend as scattered/random; Infiltration rate is not related to slope gradient; <u>Credit 1 mark MAX for paired data that do not support HA:</u> e.g.13.3 mm infiltration = 2° slope (Site 5) and 1.5 mm infiltration = 9° (Site 1) (shows negative relationship); Yes/Hypothesis is true /partly true or results support true = 0 (XHA) Credit relevant evidence supporting the correct conclusion of false. If no hypothesis conclusion ^ HA and credit evidence supporting the correct conclusion of false. 1(HA) + 1(S) + 1(D) mark	**3**
2(e)	<u>Note statement 1 max and Data 1 Max</u> Statement (S): Infiltration more where there is denser vegetation; Highest infiltration = dense grass/bushes and lowest infiltration = bare soil/ scrub grass OR infiltration increased from bare soil/scrub grass to dense grass/bushes; NOTE credit 1 mark for paired data to show contrast (need infiltration rate and vegetation at two contrasting sites) Data (D): e.g. 17.1 mm = dense grass / bushes and 1.5 mm = bare soil/scrub grass; 1(S) + 1(D) mark	**2**

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Question	Answer	Marks
2(f)	Description: People (walking) compress/compact the ground/ground hardens; People (walking) wear away/damage/disturb/kills the vegetation; Explanation: Less gaps in soil; Water cannot soak into the ground as quickly/reduces porosity; Less vegetation to extract water; 2(D) + 1(E) OR 1(D) + 2(E) marks	**3**

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