Cambridge Assessment International Education

Cambridge IGCSE™

GEOGRAPHY **0460/43**

Paper 4 Alternative to Coursework **October/November 2021**

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 October/November 2021 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

[Turn over

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.

<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>1(a)</td><td>
<table>
<tr><th>Possible risk</th><th>How to reduce the risk</th></tr>
<tr><td>Slipping on rocks on the river bed</td><td>Wear boots / wellingtons / waders / shoes / protective footwear</td></tr>
<tr><td>Getting a disease or illness from the river water</td><td>Wash / shower / wear gloves / sanitise / don’t drink water</td></tr>
<tr><td>Falling into the river and getting injured</td><td>Work in groups / pairs / avoid steep or slippery slopes</td></tr>
</table>
</td><td>3</td></tr>
<tr><td>1(b)(i)</td><td>Use tape measure to measure a fixed distance / 10 metres
Put poles/sticks at fixed distance / 10 metres along river (5 to 10) / at start and end of fixed distance
Put float / orange in river at start of measured distance
Start stopwatch or timer when float / orange is put in river
Stopwatch or timer measures time it takes to travel the measured distance / stop stopwatch or timer when float reaches end of measured distance
Take several times and calculate average / take readings across river channel and calculate average
Record results

OR

Put velocity meter / propeller / flowmeter below surface of river / into the water
Propeller must be facing upstream / nothing in front of propeller
Read / look at digital reading or display / speed is shown on display
Take several readings over time and calculate average / take readings across river channel and calculate average
Record results</td><td>4</td></tr>
<tr><td>1(b)(ii)</td><td>Plot 1.6 m/sec at site 5</td><td>1</td></tr>
<tr><td>1(c)(i)</td><td>Water / river / current moves tape / fast flowing current so tape won’t stay in place
Difficult to lay tape on uneven / rocky bed
Would be dangerous in a fast flowing river / deep river
Difficult to reach bed if river is deep
Tape may not be long enough / too short
Water too muddy to see river bed / cannot see river bed

2 @ 1</td><td>2</td></tr>
<tr><td>1(c)(ii)</td><td>Plot velocity =1.2 m/sec and wetted perimeter = 7.8 m at site 4 (don’t need 4)</td><td>1</td></tr>
</table>

Question	Answer	Marks
1(c)(iii)	Hypothesis is **true –** 1 mark reserve (✓HA) There is a positive relationship / velocity increases as wetted perimeter increases 1 mark for **paired** data from two identified sites to show relationship e.g. site 1 / upstream = 0.4 m/sec velocity and 3.5 m wetted perimeter and site 5 / downstream = 1.6 m/sec velocity and 12.1 m wetted perimeter / by 1.2 m/sec over 8.6 m Hypothesis conclusion is incorrect / false = 0 (XHa) If no hypothesis conclusion ^HA and credit evidence	**3**
1(d)(i)	Classification is subjective / based on student judgement Classes of pebbles are very similar / hard to distinguish between classes / categories	**1**
1(d)(ii)	Plot pie graph for site 2 Very angular and angular = 25%, slightly angular and slightly rounded = 40%, rounded and very rounded = 35% 2 marks for lines at 25% and 65%, and 1 mark for shading	**3**
1(d)(iii)	**Rounded and very rounded rocks** (accept rounded) Increase from site 1 to site 5 / downstream Increase from site 1 to site 3, decrease to site 4, increase to site 5 / site 4 is anomaly / exception 1 reserve mark for paired data– need site and number or percentage Either site 1 = 4 rocks / 20% and site 5 = 10 rocks / 50% (increase) Or site 3 = 10 rocks / 50% and site 4 = 6 rocks / 30% OR **Very angular and angular rocks** (accept angular) Decrease from site 1 to site 5 / downstream Decrease from site 1 to site 3, increase to 4, decrease to 5 / site 4 is anomaly / exception 1 reserve mark for paired data– need site and number or percentage Either site 1 = 6 rocks / 30% and site 5 = 0 rocks / 0% (decrease) Or site 3 = 1 rock / 5% and site 4 = 3 rocks / 15%	**3**
1(d)(iv)	Pebbles crash into each other / attrition Pebbles crash into bed or banks / bounce along river bed / abrasion / corrasion Longer duration of transport / longer time to be eroded / been in river longer	**2**

Question	Answer	Marks
1(d)(v)	**Other** students use roundness scoring chart **to** check accuracy / **to** compare results / students discuss roundness / one student makes all judgements Sample / collect / look at more **pebbles** at each site / increase sample size Sample / collect pebbles from inside, middle and outside of channel / different parts of channel 2 @ 1	**2**
1(e)	Callipers Ruler 2 @ 1	**2**
1(f)	Must state river or valley (no reserve) Valley floor becomes wider / valley is wider Valley sides are (more) gently sloping Long profile / gradient becomes less steep / gentle gradient / flatter River meanders / more extreme or bigger meanders Oxbow lake in lower valley Levees in lower valley Delta in lower valley Floodplain covers lower valley floor River becomes larger / deeper / wider More deposition downstream River load becomes smaller in size / individual pieces become smaller / more rounded River load increases in total amount downstream Velocity / discharge increases Wetted perimeter increases Need comparison (except for oxbow lake, levees. Floodplain, delta)	**3**

Question	Answer	Marks
2(a)	3.2 km	**1**
2(b)	Collected from other sources / collected by others / already available / not collected by self / internet / books / second-hand / not first-hand	**1**
2(c)(i)	Tally	**1**
2(c)(ii)	Get into groups / pairs / decide who surveys each site One student / one group on each side of the road / count vehicles coming in different directions Different students / different groups count different vehicles / categories / individual puts vehicles into categories One student counts vehicles and another student records Count vehicles / use clickers / tally every time a vehicles passes Stopwatch for timing 30 mins / time for 30 minutes / count for 30 minutes Synchronise start and finish times Circle road / circle time on recording sheet	**4**
2(c)(iii)	Being unable to tally / count accurately **because** a busy time / too many vehicles come at once / vehicles come too fast Timings not synchronised Students lose concentration (Specific weather problem) – rainfall / sunstroke / too hot / snowing Breathing difficulties / exhaust or vehicle fumes Which category to include some vehicles, e.g. motor bike / some vehicles don't fit into categories 3 @ 1	**3**
2(d)(i)	Plot 76 at 16.30 and 30 at 19.30 2 @ 1	**2**
2(d)(ii)	Flow lines on a map	**1**
2(d)(iii)	Hypothesis is **true** – 1 mark reserve (✓HA) Amount of traffic has decreased / larger before by-pass / larger in 2016 Credit 1 mark for paired data from same time of day in 2016 and 2018 e.g. at 07.30 – 08.00 190 vehicles in 2016 / before by-pass and 67 vehicles in 2018 / after by-pass e.g. total in 2016 / before by-pass = 785 vehicles and in 2018 / after by-pass = 291 / 494 less in 2018 Ignore vehicle categories Hypothesis conclusion is false / partially true = 0 (XHa) If no hypothesis conclusion ^HA and credit evidence	**3**

Question	Answer	Marks
2(e)(i)	Complete divided bar graph at 16.30 – 17.00 Cars = 104, vans = 18, lorries = 13 2 marks for lines: 104 and 122 = 1 mark and 135 =1 mark 1 mark for shading	**3**
2(e)(ii)	10.30 – 11.00	**1**
2(e)(iii)	Credit 2 mark maximum for comparison of **total** amounts at different times 1 mark for statement e.g. Most traffic at 16.30 Least traffic at 19.30 More traffic at 16.30 than at 13.30 (accept any two times) 1 mark for paired data comparing any two times e.g., 135 vehicles at 16.30 and 128 at 07.30 / 7 more at 16.30 e.g., 135 vehicles at 16.30 and 55 vehicles at 19.30 Credit 2 mark maximum for comparison of **vehicle categories** at different times 1 mark for statement e.g. Most cars at 16.30 / most vans at 07.30 or 16.30 / most lorries at 10.30 Least cars at 19.30 / least vans at 19.30 / least lorries at 19.30 More lorries at 10.30 than at 13.30 (accept any two times) 1 mark for paired data comparing any two times e.g., 104 cars at 16.30 and 97 at 07.30 / 7 more at 16.30 e.g., 104 cars at 16.30 and 42 cars at 19.30 / 62 more at 16.30	**4**
2(e)(iv)	People travelling to work / going home from work / commuting / school Deliveries to shops / businesses / moving goods during the working day Home in evening / evening meal / shops closed / no reason to go out/ few people travel at night 2 @ 1	**2**

Question	Answer	Marks
2(f)	Advantages Less congestion / less hold -up / quicker journey Less noise / vibration in village Less air pollution / less breathing problems in village Less danger from traffic in the village Less accidents in village Jobs for construction workers (on by-pass) Landowners compensated for losing land Disadvantages Loss of passing trade in village / shops lose business / income Farmers' land taken to build by-pass More disturbance / noise in countryside / for people living next to by-pass Eyesore for people living near by-pass More fumes along by-pass / for people living next to by-pass Noise / disturbance / visual pollution / roads blocked off during construction Loss of amenity value / land for leisure use taken away Reserve 1 mark for advantages / disadvantages	**4**