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 May/June 2019 series for most Cambridge IGCSE™, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.
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.

<table>
<thead>
<tr>
<th>GENERIC MARKING PRINCIPLE 1:</th>
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<tbody>
<tr>
<td>Marks must be awarded in line with:</td>
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<tr>
<td>• the specific content of the mark scheme or the generic level descriptors for the question</td>
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<td>• the specific skills defined in the mark scheme or in the generic level descriptors for the question</td>
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<td>• the standard of response required by a candidate as exemplified by the standardisation scripts.</td>
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<tr>
<th>GENERIC MARKING PRINCIPLE 2:</th>
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<tr>
<td>Marks awarded are always <strong>whole marks</strong> (not half marks, or other fractions).</td>
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<tr>
<th>GENERIC MARKING PRINCIPLE 3:</th>
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<tr>
<td>Marks must be awarded <strong>positively</strong>:</td>
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<tr>
<td>• 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</td>
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<tr>
<td>• marks are awarded when candidates clearly demonstrate what they know and can do</td>
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<td>• marks are not deducted for errors</td>
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<td>• marks are not deducted for omissions</td>
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<tr>
<td>• 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.</td>
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<th>GENERIC MARKING PRINCIPLE 4:</th>
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<tr>
<td>Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.</td>
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<th>GENERIC MARKING PRINCIPLE 5:</th>
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<tr>
<td>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).</td>
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<th>GENERIC MARKING PRINCIPLE 6:</th>
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<tr>
<td>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.</td>
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<tr>
<td>Question</td>
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| 1(a)     | **Destructive wave:** waves are close together wave plunges downwards as it breaks  
**Constructive wave:** waves are far apart wave spills forward as it breaks  
4 correct = 2 marks  
2 or 3 correct = 1 mark  
1 correct = 0 marks | 2 |
| 1(b)     | Use stopwatch / timer / clock for 1 minute  
Count number of waves breaking / going up beach / hitting stick or person or rock in 1 minute  
‘1 minute’ is only required once – either with ‘stopwatch’ or ‘count number of waves ….’  
Take an average (of their measurements)  
Do method on both beaches | 3 |
| 1(c)(i)  | Create a transect line / line from sea to back of beach / pole at back of beach and tape to sea / pole at back and pole at sea and tape between poles  
Put poles at each break of slope OR at equal intervals up beach  
Measure distance between poles  
Ensure poles are vertical  
Same length of pole above surface at each point / resting on surface / same depth in ground  
Use a clinometer to measure angle / read angle / read degrees  
Hold clinometer next to top / at agreed height on marker pole / eye level  
Sight other marker pole at top / agreed height / string connects same height  
Repeat along transect / different places up beach | 4 |
| 1(c)(ii) | **Hypothesis is true / correct / Afandou beach profile is produced by constructive waves (✓HA)**  
Average wave frequency (per minute) is 7.3  
In the frequency range for constructive waves / between 6 and 9 per minute  
Beach profile is similar to profile of **constructive beach** / beach formed by **constructive waves**  
Ripples / undulates near the sea / from 30 m to the sea  
Increases in height between 0 – 9 m / height decreases after ridge  
Has a ridge at 8 / 10 m / has a ridge not steep slope  
Reserve 1 mark for frequency and profile | 4 |
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<tr>
<td>1(d)(i)</td>
<td>Line along / up beach / transect line</td>
<td>3</td>
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<tr>
<td></td>
<td>How sampling sites are chosen: Systematic sampling / Select pebbles at equal / regular distances / equal number of paces / pick up pebble every metre OR Random sampling / Could use random number tables to decide distance apart of pebbles / pick up pebbles at different distances along beach / from back of beach / throw quadrat over shoulder How pebbles are chosen at each site or beach: e.g. random numbers / randomly choose / select from quadrat Pick up same number of pebbles at each site / on each beach / do the same task on both beaches</td>
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<tr>
<td>1(d)(ii)</td>
<td>Measure pebble with tape / ruler / callipers / pebbleometer Adjust callipers / pebbleometer to hold pebble / put pebble between teeth of callipers / blocks of wood Measure long axis / longest side / maximum length (not length) Read in mm / cm</td>
<td>2</td>
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<tr>
<td>1(d)(iii)</td>
<td>Plot pebble 1 = 8.5 cm on Fig. 1.6</td>
<td>1</td>
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<tr>
<td>1(d)(iv)</td>
<td>Hypothesis is false / incorrect – 1 mark reserve (√HA) Beach material / pebbles are larger at beach formed by destructive waves OR Beach material / pebbles are smaller at beach formed by constructive waves At Afandou beach pebbles / average size / median size is smaller where the wave frequency is lower / constructive waves OR At Archangelos beach pebbles / average size / median size is larger where the wave frequency is higher / destructive waves Afandou beach average size = 9.6 cm (0.6 cm smaller), at Archangelos beach = 10.2 cm (0.6 cm larger) Afandou beach median / middle size = 9 cm (0.5 cm smaller), at Archangelos beach = 9.5 cm (0.5 cm larger) Specific feature of pebble sizes e.g. 5 pebbles over 14 cm at Archangelos beach and 1 pebbles over 14 cm at Afandou beach Credit 2 marks maximum for comparative figures, 1 mark reserve for data</td>
<td>4</td>
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<td>1(e)(i)</td>
<td>Wind drive waves / wave move in direction of (prevailing) wind Pebbles / waves / swash come to the beach at an angle / oblique / waves come in at an angle / 45° Backwash / waves takes material back down the beach at right angles / perpendicular / waves go out at 90° Waves move in zig-zag along beach</td>
<td>3</td>
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<tr>
<td>1(e)(ii)</td>
<td>Answer must focus on how far pebbles move along beach Paint pebbles / using different coloured pebbles Identify / put a pole at starting point Put them in the wave swash / backwash zone / where waves break / in sea near beach or shore Leave them for period of time / one day (more than 3 hours) Measure distance from starting point / measure distance pebbles have moved Measure long axis of pebble Measure distance moved and get average OR Answer can focus on how far pebbles move along beach or how long they take to move along beach Mark start and finish points / put poles at start and finish Lay out tape measure along beach / measure a distance along beach Put float / orange wave swash / backwash zone / where waves break / in sea near beach or shore Start stopwatch when floats put in sea Time how long it takes float to reach finish point / measure how far float moves (in set period of time / 5 minutes) Repeat a number of times and take average OR Answer focuses on groynes Measure from top of groyne to beach surface On both sides of groyne Measure at equal distances along groyne Calculate average distance from top to beach on both sides of groyne Repeat for other groynes to confirm movement along beach</td>
<td>4</td>
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| 2(a)(i)  | Learn how to do survey / agree method / know what to do / know how to use survey sheet / know how to collect data  
Agree what the descriptions mean  
Find out what doesn't work / change it / correct mistakes / to check if survey works / check if survey is appropriate  
Experience of working as a team / team organisation / in a group | 2 @1  |
| 2(a)(ii) | Get into groups  
Students or groups go to different locations / Ratcliffe and Mossbank OR go to Ratcliffe on one day and Mossbank on the next day  
Agree on time of survey / both surveys done at same time / start and finish at same time  
Circle Ratcliffe or Mossbank on survey sheet  
Individual student decides the score / group discuss / agree score NOT ask people  
Mark score on their form / record score / fill in the form / record data in table | 4    |
| 2(b)(i)  | Completion of graph for Ratcliffe  
Traffic +2, vandalism and graffiti +3, litter +1  
3 correct = 2 marks, 1 or 2 correct = 1 mark | 2    |
| 2(b)(ii) | Hypothesis is true – 1 mark reserve (√ HA)  
**Need comparison but no double credit**  
  
**Ratcliffe:**  
Higher total score  
More positive descriptions  
Score for each category is higher  
All positive descriptions but Mossbank has negative descriptions  
  
**Mossbank:**  
Lower total score  
More negative descriptions  
Score for each category is lower  
All negative descriptions but Ratcliffe has positive descriptions  
  
1 mark reserved for paired data comparing the two areas  
Can credit 2 marks for data  
e.g. total for Mossbank = −10 and for Ratcliffe = 9  
5 negative scores for Mossbank and 0 for Ratcliffe  
6 positive scores for Ratcliffe and 0 for Mossbank  
4 negative for Mossbank and 6 positive for Ratcliffe  
No credit for scores of individual categories | 4    |
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| 2(c)(i)  | **Systematic sampling**  
Ask every tenth person / regular pattern to identify people  
OR  
**Random sampling**  
Use random numbers / ask next person they meet / ask any people  
OR  
**Stratified sampling**  
Ask appropriate age / gender balance/ representative sample of population  
Name is wrong (e.g. linear sampling) but credit description if correct for any method  
Name and description don’t match then just credit name (if correct) | 2 |
| 2(c)(ii) | Saves time / only a limited amount of time to do the survey / quicker  
Impossible to ask all people in the area / produces too much data | 2 |
| 2(d)(i)  | Need **comparison** between students and residents results e.g.  
Residents’ results for the two areas are nearer in total / less difference / smaller variation 19 difference for students and 6 difference for residents / more variation in students’ results for Mossbank  
Residents’ results are higher than students’ results / more positive results for Mossbank / residents –1 and students –10  
Residents’ results are lower than students’ results for Ratcliffe / residents 5 and students 9  
Credit reference to one feature to show the difference e.g. Mossbank housing design = –3 from students and –1 from residents  
Traffic: students say better in Ratcliffe and residents say better in Mossbank | 2 |
| 2(d)(ii) | Residents / students may be biased in their opinion  
Both student and resident opinions are subjective / different people have different opinions  
Students’ results are a snapshot of one time (e.g. when it was busy) / whereas residents’ results reflect long-term view / residents know more about the area  
Residents and students have different backgrounds | 2 @ 1 |
| 2(e)(i)  | Plotting divided bar graph for community spirit in Ratcliffe  
1 mark for correct plotting of dividing lines (2,6,13,16)  
1 mark for correct shading | 2 |
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| 2(e)(ii) | Residents’ opinions are higher for Mossbank / residents say Mossbank has higher quality of life  
More excellent / good for Mossbank OR fewer excellent / good for Ratcliffe  
Fewer poor / very poor for Mossbank OR more poor / very poor for Ratcliffe  
Credit 1 mark maximum for paired total data to support this conclusion e.g. Excellent rating = 26 in Mossbank and 11 in Ratcliffe  
Very poor rating = 16 in Mossbank and 26 in Ratcliffe  
Credit 1 mark maximum for paired data of an individual aspect e.g. 6 opinions of excellent parks in Mossbank and 1 in Ratcliffe (5 more) OR 1 opinion of very poor community service in Mossbank and 9 in Ratcliffe (8 more) |
| 2(f)     | Credit any two housing features  
Look at features such as roof / windows / walls / paintwork / gutters / Look at other features such as garden / driveway / fencing  
Look at type of housing / height / building materials / age / density / prices  
2 marks maximum  
Methods such as:  
A survey index / bi-polar survey  
Field sketches  
Photographs  
Count (number of storeys)  
Use secondary data such as house prices, age of housing  
2 marks maximum (simple or developed)  
Record results:  
Put results in table  
Add up scores (if appropriate)  
Calculate average (if appropriate)  
Plot results on bar graph / land use map etc.  
2 marks maximum (simple or developed) | 5     |