**GEOGRAPHY** **0460/41**

Paper 4  Alternative to Coursework **October/November 2017**

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.

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This document consists of **6** printed pages.

| Question | Answer | Marks |
|---|---|---|
| 1(a) | Accessibility (from road / school)<br>(Safety) – strength of current / speed of flow<br>Depth / sharp rocks / width / stability of banks / specified dangerous animals<br>(Equal) distance from other investigation sites / spread out / upstream and downstream / upper-middle-lower course<br>Away from human impact / weir / artificial levees / dam<br>Away from waterfalls / rapids                  3 @ 1 | 3 |
| 1(b)(i) | Ranging poles<br>Tape measure                                        1 + 1 | 2 |
| 1(b)(ii) | Put ranging poles / students stand on opposite banks / sides of river<br>Measure across river / from bank to bank / between ranging poles<br>Keep tape measure taut / horizontal / stretched / tight / at same level<br>Measure perpendicular / at right angles to banks / straight across / directly opposite | 2 |
| 1(c)(i) | Plotting points on cross-section                      2 marks:<br><br>| Distance across channel (m) | Depth (m) | |<br>|---|---|---|<br>| 5.6 | 0.40 | ✓ |<br>| 5.8 | 0.48 | ✓ |<br>| 6.0 | 0.43 | |<br><br>shade in cross-sectional area                     1 mark | 3 |
| 1(c)(ii) | At site 2 / Fig. 1<br>Cross-section is narrower / less distance across<br>Cross-section is shallower<br>Cross-section is more irregular<br>Cross-section is smaller / smaller channel area<br><br>Accept 'only' with stats<br>Answers must be comparative                      2 @ 1 | 2 |
| 1(d)(i) | Width x mean (average) depth | 1 |
| 1(d)(ii) | Hypothesis is **correct** / **true** – 1 mark reserve<br><br>paired data from any two sites                      1 mark<br>e.g. Site 1 / 3 km / first site – area = 0.32 (sq m) and site 6 / 37 km / last site – area = 9.44 (sq m)<br><br>No credit for Hypothesis is false / incorrect<br>If no hypothesis conclusion credit evidence | 2 |

| Question | Answer | Marks |
|---|---|---|
| 1(e)(i) | The students agree an average score / most popular score OR<br>Do a practice survey / pilot study OR<br>One student surveys at all six sites<br><br>Do the survey at all six sites on the same day / at same time OR<br>Repeat the survey in different seasons / months / weeks / several times during year<br><br>Do a practice survey / pilot study OR<br>Complete the first survey under teacher guidance / teacher shows how to use sheet / ask for help from teacher                           3 @ 1 | 3 |
| 1(e)(ii) | Plotting site 2: 7 km downstream, pollution score = 6 | 1 |
| 1(e)(iii) | Hypothesis is **false** / **incorrect** / **partly correct**             1 mark reserve<br><br>Water quality decreases / pollution score increases to from site 1 / 3 km to site 4 / 15 km AND<br>Water quality increases / pollution score decreases from site 4 to site 6 / at sites 5 and 6<br>OR Water quality is worst / pollution is highest at site 4 / halfway down the river / factory site<br><br>Paired data to show changes (site / distance downstream / land use and pollution score)                                             2 marks<br>e.g.<br>Site 1 / 3 km downstream / animal farming = score of 3 and site 4 / 15 km downstream / factory = score of 17<br>Site 4 / 15 km = 17 and site 6 / 37 km = 7<br><br>No credit for Hypothesis is true / correct<br>If no hypothesis conclusion credit evidence | 4 |
| 1(e)(iv) | Land use varies / depends on different types of land use / any 3 land uses from table<br>Comparison of pollution level in two different land uses – e.g. less pollution in agriculture than industry<br><br>Pesticide / fertiliser run-off in arable farming area<br>Slurry run-off in animal farming area<br>Rubbish from shopping area<br>Factory waste<br>Water is cleaned to attract visitors / to protect wildlife in countryside park<br>Pollution is dispersed / diluted as river flows downstream from factory / more tributaries join river | 2 |

| Question | Answer | Marks |
|---|---|---|
| 1(e)(v) | Use a Biotic Index / identify indicator species <br> Look at how many / count number species / creatures / animals / wildlife found in different sections of the river <br> Measure PH (using a meter) <br> Measure level of oxygen in the water <br> Do a foam test <br> Count number of dead fish <br> Filter water sample and weigh solids <br> Evaporate water sample and weigh solids | **1** |
| 1(f) | Measure a fixed distance / 10 m along river (5 or more metres) <br> Put float in river at start of measured distance / first pole <br> Start stopwatch when float is put in river <br> Measure time it takes to travel the measured distance / stop stopwatch when float reaches end of measured distance <br> OR <br> use a flow meter in the river <br> Put underneath the river surface <br> Stand upstream of flow meter <br> Read off measurement on digital display <br><br> labelled diagram                                                    1 mark | **4** |

| Question | Answer | Marks |
|---|---|---|
| 2(a)(i) | The minimum number of people needed to support a service | **1** |
| 2(a)(ii) | The area served by a settlement / service / where people live who go to the settlement / area people come from to use the service | **1** |
| 2(a)(iii) | High order goods and services: <br> Located in larger settlements / there are less shops selling high order goods / shops selling low order goods are more common / high order in CBD and low order everywhere <br> More expensive / luxury <br> Bought less frequently / not needed every day <br> Serve a larger sphere of influence <br> Need larger threshold population <br> People willing to travel further for <br> High order are comparison / specialist goods and low order are convenience goods <br><br> Ideas must be comparative | **3** |
| 2(b)(i) | Hairdresser: low order service <br> Furniture shop; shop selling high order goods                          2 @ 1 | **2** |
| 2(b)(ii) | Completion of pie graph – shop selling low order goods = 20% and low order service = 14%                          1 mark for dividing line <br>                                                             1 mark for shading | **2** |

| Question | Answer | Marks |
|---|---|---|
| 2(b)(iii) | Hypothesis is **true** / **correct**        1 mark reserve<br><br>paired data to compare shops and services:      2 marks<br>High order goods = 39% and low order goods = 20%<br>High order services = 27% and low order services = 14%<br>High order goods and services = 66% and low order goods and services = 34%<br><br>No credit for Hypothesis is false / incorrect<br>If no hypothesis conclusion credit evidence | 3 |
| 2(b)(iv) | Many / some shops / services are middle order / would be wrong to classify middle order as high or low order / some shops cannot be classified as low or high order<br>Including middle order would make study more realistic / valid / fair / accurate / reliable        2 @ 1 | 2 |
| 2(c)(i) | 0–19 / under 20 / 19 and under and 40–59<br>Both age groups needed | 1 |
| 2(c)(ii) | Stratified / quota:<br>Find out gender / age balance of shoppers<br>Ask a balanced number / proportionate number of people of different age group / gender<br><br>OR Get people of different ages / gender / male and female     1 mark<br><br>Systematic:<br>Choose people at regular intervals<br>Every tenth person who passes them (accept 2nd, 5th etc.)<br><br>Random:<br>Use random number tables to generate order to ask people<br>Choose people who fit the sequence identified<br><br>OR Ask anybody / next person / no pattern        1 mark | 3 |
| 2(c)(iii) | Work in pairs / small groups / not alone / don't work in large groups<br>Don't block pavement / entrance to shops<br>Be polite / kind / respectful to interviewees / say thank you / do not ask age or gender / estimate age or gender<br>Accept that people won't want to answer questions / too busy / in a hurry / don't force to answer<br>Choose a time when there are plenty of people shopping<br>Ask people leaving different shops / spread out evenly<br>Avoid 'dangerous' people / 'dangerous places'       2 @ 1 | 2 |
| 2(d)(i) | Completion of flow lines – Sumidouro = 10 and Sao Jorge = 3    2 @ 1 | 2 |

| Question | Answer | Marks |
|---|---|---|
| 2(d)(ii) | Sphere of influence extends mainly / further to north / north east OR most people come from north / north east<br><br>Sphere of influence also extends to south / south west OR some / least people come from south / south west<br><br>Sphere of influence does not extend to east / does extend to west OR few come from east / some come from west / more come from west than east<br><br>Credit supporting data                 1 mark maximum e.g.<br>Cordeira is 30 km from Nova Friburgo and Santo Andre is 12 km Settlement data must be comparative and from different directions OR People come from 30 km from north, 30 km from south, 11 km from west, 8 km from east (any 2) | **3** |
| 2(d)(iii) | Completion of bars – car = 30, bicycle = 9          2 @ 1 | **2** |
| 2(d)(iv) | Most settlements are in north / uneven distribution of settlements No settlements in the uplands / settlements in lowlands / uplands are unevenly distributed / relief varies/ no uplands in north / uplands in south / east<br>Access to roads varies / easier access from north / more roads from north / roads are unevenly distributed / 4 roads from north and 1 road from south / more accessible by road<br>Rio de Janeiro will restrict sphere of influence (to the south) | **3** |