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**GEOGRAPHY**

**2217/23**

Paper 2 Investigation and Skills

**October/November 2018**

MARK SCHEME

Maximum Mark: 90

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**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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This document consists of **11** printed pages.

**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.

**Section A**

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
1(a)(i)	Playground	<b>1</b>
1(a)(ii)	Mountain hut	<b>1</b>
1(a)(iii)	Viewpoint	<b>1</b>
1(a)(iv)	Wroxenbach	<b>1</b>
1(a)(v)	491 m	<b>1</b>
1(b)	Correct shape Correct position	<b>2</b>
1(c)(i)	NE / ENE 7	<b>2</b>
1(c)(ii)	Uphill Along valley / beside Schaller River Passes museum Passes church Passes industrial area Passes residential Through forest / grassland Passes viewpoint Follows railway line	<b>4</b>
1(d)	826557	<b>1</b>
1(e)	High / hills / mountains Two peaks / Steimkerberg <u>and</u> Voßtaler Highest peak is 491 m Lowest land between 210 and 250 m Highest land between 500 and 560 m Steep slopes Valleys V-shaped Spur Parallel (valleys / rivers) Rivers drain to N / NNW Spring / source at 876541	<b>6</b>

Question	Answer	Marks
2(a)	Nucleated in centre / clustered in centre Linear to road / along road Separated from each other along the road Isolated	3
2(b)	Low(er) land Flat(er) land Grazing / farmland Sheltered by highland / by trees Road access Spring at foot of hills	3
2(c)	Spoil the view / visual pollution Make a noise / noise pollution Traffic issues / soil erosion during construction	2

Question	Answer	Marks
3(a)(i)	Bar at 150 mm Plot at 33 °C	2
3(a)(ii)	May	1
3(a)(iii)	June	1
3(a)(iv)	Highest temperature minus lowest temperature / 33–25 °C	1
3(b)	(Very) dry / <50 mm of rain in a year Rain in July, August and September / winter / cool season Hot Highest temperature of 23 °C / lowest temperature of 16 °C / range of 7 °C	3

Question	Answer	Marks
4(a)	Plate boundaries West of N / S America (plate) Around Pacific (plate) Middle of Atlantic Between Europe and Africa (plates) East Africa / African rift valley North / east of Australian plate Edge of Philippine plate Named country	4
4(b)	Plates converge / destructive boundary Nazca plate subducts Melting Magma rises Lines of weakness on edge of crumpled plate	2

Question	Answer	Marks
4(c)	Have an evacuation plan / evacuate Be linked to an early warning / monitoring system Practice emergency drill / first aid training Know the escape routes Keep an emergency kit / survival kit / first aid kit Dust masks Building modifications such as strong roof / fire proofing	2

Question	Answer	Marks
5(a)(i)	Grassed channels Debris dams	1
5(a)(ii)	Slows water flow Traps sediment	1
5(b)	Roots anchor soil Canopy reduces rain impact Shelters from wind / reduced wind speed Leaf fall enriches soil Roots remove excess moisture	3
5(c)(i)	Limit herd size Move animals regularly / increase time before returning to same area Keep off the steep slopes Provide water troughs so animals don't churn up the channels	2
5(c)(ii)	Contour ploughing Cover crops Terracing Crop rotation	1

Question	Answer	Marks
6(a)(i)	3	1
6(a)(ii)	Biofuel Wood  Oil Coal Natural gas	2
6(b)(i)	Crop / plant grown as fuel / vegetable oil	1
6(b)(ii)	Energy from inside the earth Heat from magma	1
6(b)(iii)	Cannot use it at night Limited by cloudy conditions	1

<b>Question</b>	<b>Answer</b>	<b>Marks</b>
6(c)	Water flow disrupted / reduced downstream Fish movement stopped by dam Habitats flooded Habitats destroyed by construction Construction noise disturbs wildlife Visual pollution of dam wall Noise / traffic during construction Routes cut by the new lake Crowds due to new water facilities	<b>2</b>

## Section B

Question	Answer	Marks
7(a)(i)	Source	1
7(a)(ii)	Confluence	1
7(b)(i)	Slippery surfaces in and around the river	1
7(b)(ii)	Slippery surfaces: wear suitable shoes / boots / work with a partner / don't work alone / use a stick for support Fast currents: avoid the area of fast water or deep water / work with partner / don't work alone / use a rope Waterborne disease: do not drink water / wash hands after being in river / wear gloves / drink bottled water  3 @ 1	3
7(c)	Photo C, A, B  3 correct = 2 marks, 1 or 2 correct = 1 mark	2
7(d)(i)	Average depth multiplied by width	1
7(d)(ii)	Plotting bar for site 3 = 0.51 sq m	1
7(d)(iii)	<b>Partially</b> – 1 mark reserve  Sites below waterfall / 7–12 / downstream <b>generally</b> or overall or majority or most or some have a bigger cross section area  There are <b>exceptions</b> / anomalies at sites 2 / 5 / 7 / 9 / 12 (any e.g.) e.g. site 7 is smaller cross section and there are larger ones upstream e.g. site 12 is smaller cross section than site 11  Credit 2 marks maximum for data – any 2 sites and cross-section areas (1 mark for supporting hypothesis and 1 mark for exception) Sites must relate to a context above e.g. Site 1 = 0.12 sq m and site 12 = 0.84 sq m (support) e.g. Site 5 = 1.65 sq m and site 7 = 0.23 sq m (exception) e.g. average 1–6 (above) = 0.8 / 0.81 sq m and average 7–12 (below) = 1.94 sq m  If no hypothesis conclusion credit evidence	4
7(e)(i)	Plotting score for site 10 = 1.53	1

Question	Answer	Marks
7(e)(ii)	<p>Hypothesis is <b>true</b> – 1 mark reserve</p> <p>(Average) score is higher / increases downstream (of waterfall)</p> <p>Credit 1 mark for paired data – average or sites above and below waterfall or range – which support hypothesis e.g.            Sites 1–6 average = 1.11 and sites 7–12 average = 1.35            Site 1 = 1.19 and site 12 = 1.37            Range of sites 1–6 = 1.01 to 1.19 and range of sites 7–12 = 1.14 to 1.63</p> <p>If no hypothesis conclusion credit evidence</p>	<b>3</b>
7(f)(i)	<p>Erosion on outside of meander / bank / side            Lateral / sideways erosion</p>	<b>1</b>
7(f)(ii)	<p>Plot width at site 8 = 8.4 m</p>	<b>1</b>
7(f)(iii)	<p>Credit evidence from upstream and downstream of waterfall such as            Second largest measurement at site 3 / upstream of waterfall            Sites 2 / 3 / 5 are wider than some sites downstream            Site 7 / 8 / 9 / 10 are narrower than some sites upstream</p> <p>Credit any two appropriate sites (upstream and downstream of waterfall) –            either statement or statistics to 2 marks            e.g. site 3 is wider than site 7 OR site 3 = 24.7 m and site 7 = 4.2 m            e.g. site 2 is wider than site 10 OR Site 2 = 18.2 m and site 10 = 10.3 m</p> <p style="text-align: right;">2 @ 1</p>	<b>2</b>



Question	Answer	Marks
7(g)	<p>Method to measure stream velocity or gradient or load characteristics or wetted perimeter or pollution</p> <p><b>Velocity using floats</b>            Use tape measure to measure a fixed distance / 10 metres            Put poles/sticks at fixed distance / 10 metres along river / 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            Measure at different points across river channel</p> <p><b>Velocity using flowmeter</b>            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 readings across river channel</p> <p><b>Gradient</b>            Measure 10 m distance along river            Put two poles vertically on river bed            Hold / put poles at either end of measured distance            Hold clinometer next to top / at agreed height on pole            Line up identified position / top of two poles            Use clinometer to measure angle / degrees</p> <p><b>Load – size, material or roundness</b>            Select rocks at different sites downstream            Sample a number / 10–20 rocks at each site            Systematic or random sampling technique            Put rock into callipers or pebbleometer / adjusted callipers to hold rock            Measure length using scale on callipers            Measured long axis / length with ruler            Compare selected rock with Powers roundness scale            Classify rocks according to roundness scale</p> <p>If characteristic does not match the method, credit method to 2 marks maximum            If more than one method, credit best answer</p>	4
7(h)	<p>(Layers of) hard and soft rock / hard rock (layer) on top of soft rock (layer)            Soft rock (layer) is eroded by river / river erodes at base of waterfall            Abrasion / corrasion            Hard rock (layer) is undercut / forms overhang / nothing to hold it / unsupported            Hard rock (layer) collapses</p>	4

Question	Answer	Marks
8(a)	Plotting O5 at 4.5 km SW from town centre Plotting R3 at 3.8 km ENE from town centre 2 @ 1	2
8(b)(i)	Traffic moving freely (with few parked vehicles) Traffic moving slowly (with many parked vehicles) Traffic not moving (with many parked vehicles)	1
8(b)(ii)	Tells students what they are looking for at each site / gives a <b>description</b> to choose from / categories / specific description Gives standardised / range of <b>scores</b> for different situations / scores are specific Decision is less <b>subjective</b> / scoring is more objective / unbiased	2
8(b)(iii)	Example of conditions which might vary during the day, i.e. <b>noise / litter / traffic</b> Creates <b>time</b> as a variable	1
8(b)(iv)	Watch out for <b>traffic</b> / keep away from road / be careful crossing road / stay on pavement Stay in your <b>group</b> / do not go off by yourself Take a <b>mobile phone</b> Wear appropriate <b>clothing</b> / high visibility jacket / sunblock, etc. <b>Do not</b> talk to strangers / take valuables with you / go into dangerous areas / pick up sharp objects, etc. 2 @ 1	2
8(c)(i)	Results sheet to include: At least 3 categories Scoring system (3 2 1 0) / score out of 3 / score Total score / EQ score	3
8(c)(ii)	Plotting site R1 = 8 (x) Plotting average industry score = 10.6 (---) 2 @ 1	2
8(c)(iii)	<b>Agree</b> with conclusion / Yes / conclusion is correct – 1 mark reserve (✓HA)  There is variation in (mean) scores / values / figures  Compare any 2 types of land use – shops, residential, open space, industry e.g. Highest score is for shops and lowest score is for industry OR e.g. Shops score is higher than industry score  Credit 1 mark(s) for supporting paired data e.g. (Average) score for shops = 16.2 and for industry = 10.6  Disagree with conclusion / conclusion is incorrect = 0 (XHA) If no hypothesis conclusion ^HA and credit evidence	4

Question	Answer	Marks
8(c)(iv)	<p>Depends on type / age of industry / different industries / examples of two different industries</p> <p>Some industrial areas are more built-up / more concentrated number of buildings / less open space</p> <p>Some industries are noisier</p> <p>Some industries cause more atmospheric pollution / smell</p> <p>Some industries have no waste treatment / recycling</p> <p>Variation in type / amount of transport / traffic to industry</p> <p>Amount of landscaping in industrial sites vary</p> <p>Need reference to variation or comparison between industries</p>	3
8(d)(i)	Plotting score for site S5: 1.7 km distance and 15 EQ score	1
8(d)(ii)	<p>No pattern / random / no relationship / no correlation / no trend / scattered / all over</p> <p>Same score at different distances from town centre</p> <p>Credit 1 mark for paired data which shows that hypothesis is <b>false</b> – need environmental scores and distances from centre</p> <p>e.g. EQ score = 20 at 0.2 km (S1) and EQ score = 6 at 4.0 km (O3)</p> <p>e.g. EQ score is 10 at 2.6 km and 5.3 km</p>	3
8(e)	<p>Repair <b>roads</b> / pavements</p> <p><b>Landscaping</b> / plants trees / cut grass</p> <p>Example of ways to <b>reduce number of vehicles</b> or vehicles parking on road – yellow lines / parking meters / more public transport / pedestrianisation / congestion charge, etc.</p> <p><b>Laws</b> / regulations on noise / atmospheric pollution / fines for companies polluting the air</p> <p><b>Litter</b> bins // recycling facility / fines for dropping litter / fines for graffiti</p> <p>Teams of people to <b>tidy up</b> area / remove graffiti</p> <p>Repair broken <b>street furniture</b> or e.g.</p> <p style="text-align: right;">2 @ 1</p>	2
8(f)	<p>Produce a questionnaire / ask questions</p> <p>Example of appropriate question e.g. Do you think this area / site is noisy? / introduction or explanation about questionnaire</p> <p>Name of sampling method (to use questionnaire)</p> <p>Description of sampling method</p> <p>Number of people to sample (20–100)</p> <p>Do fieldwork at different times of day / decide which time to do fieldwork</p> <p>Decide on who does which task within the group</p> <p>OR interview methodology</p> <p>No credit for environmental quality scores</p>	4