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**GEOGRAPHY**

**2217/23**

Paper 2 Investigation and Skills

**October/November 2016**

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.

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### Section A

- 1 (a) (i) NE/NNE [1]
- (ii) 10 m [1]
- (b) Measured distance of 9.3 km to 9.7 km [2]  
Addition of 3 km
- (c) West/SW (Reserved mark) [3]  
Lower land to west  
V of 10 m contour points upstream  
Angle of confluence  
Flows into sea in west  
Gets wider to the west
- (d) (i) Lowland [6]  
Mud  
Beach  
Headland  
Bay  
Bar  
Spit  
River mouth  
Tombolo  
Island
- (ii) High tide [1]
- (e) (i) 200 m contour in 7728 [1]
- (ii) North is higher/south is lower [4]  
North is steeper/south is gentler  
North rises to 230 m but south only to 105 m  
North has 2 peaks while south has 1 peak  
North has tributary valleys on the slopes
- (f) 721158 [1]
- [Max 20]
- 2 (a) (i) South America/North America [1]
- (ii) Europe [1]

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- (b) (i) Africa [2]  
Wider at base/highest % in 0–4 age group
- (ii) Europe [2]  
Wider at top/highest % in age groups of 60+
- (c) Nearly 10%/most in 15–19 age group [2]  
0–4 has more than 5–9  
Increases from 5–9 to 15–19  
Decreases from 15–19 to 25–29  
Males > females
- [Max 8]
- 3 (a) (i) Most common wind direction [1]
- (ii) Easterly/from east/to west [1]
- (iii) Crest lines perpendicular to wind direction [1]
- (iv) Arrow towards SW or swash and backwash sequence [1]
- (b) (i) East side with extended beach/material trapped by groyne [2]  
West side with reduced beach/material lost/material not replaced
- (ii) B has wider beach for tourists/activities [2]  
B has wider beach protecting cliffs from erosion  
B is higher above sea level compared to C  
B is away from the cliff edge  
B is on solid rock
- [Max 8]
- 4 (a) (i) Washing clothes [1]  
Wet play for kids  
Animals drinking
- (ii) Soap/detergent in water [1]  
Dirt from clothes in water  
Sediment stirred up by feet
- (iii) Upstream so water is clean/as dirt/soap/sediment is washed downstream [1]
- (b) (i) River flows at higher level/soil eroded by river [2]  
Trampling for human access  
Animals come here to drink  
Vegetation has been cut down
- (ii) Large boulders in river [1]  
Plank bridge to cross river

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- (c) Tall/thin/straight trees [2]  
 Palms  
 Bushes  
 Grass

[Max 8]

- 5 (a) All states [4]  
 Concentration in west/Pacific coast }  
 Concentration along Great Lakes } coastal general =1  
 Concentration in east/Atlantic coast }  
 Concentration along Gulf coast/south coast }  
 More on east side than west/most in E/NE  
 Tends to be in clusters

- (b) Raw materials/oil available at these locations [4]  
 Products from one provide raw materials for another/industrial linkages  
 Ports for export  
 Found all over as needed everywhere  
 Concentrated where population/market/other industry is concentrated  
 Located together for skilled labour  
 Water supply

[Max 8]

- 6 (a) (i) Correct completion of graph [1]  
 (ii) 82% [1]  
 (iii) Egypt [1]

- (b) Egypt – Reserve mark [4]  
 High(est) %/100% with access to electricity  
 High/second highest adult literacy percentage  
 Low(est) % children in employment

Accept highest adult literacy in Gabon for 1 mark only

- (c) Main supply lines can follow the valley [1]  
 Easy to link population centres to the grid  
 HEP may be available

[Max 8]

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### Section B

- 7 (a) (i) In a Stevenson Screen: wet and dry bulb thermometer and maximum-minimum thermometer  
 Outside a Stevenson Screen: wind vane and rain gauge  
 All correct = 2 marks, 2 or 3 correct = 1 mark [2]
- (ii) Barometer [1]
- (b) (i) To get comparable/fair/consistent/reliable reading  
 So results not affected by change in AP during the day/AP (or it) varies during the day/AP varies at different times [1]
- (ii) Millibar [1]
- (iii) 35° [1]
- (c) (i) Plot results: 1012 mb & 12° & 1019 mb & 9° 2 @ 1 [2]
- (ii) Hypothesis is **incorrect/false** – 1 mark reserve  
 There is **no** relationship between AP and temperature/no increase or decrease in temperature as AP increases (No credit for negative relationship)  
 Highest AP = lowest temperature  
  
 Credit 2 marks maximum for data e.g.  
 Highest AP = 4° and lowest AP = 8°  
 1002 mb = 8° and 1022 mb = 4° (need 4 figures)  
 1017 mb = temps of 5° 6° and 7°  
 1008 mb 1015 mb and 1017 mb all = 5° [4]
- (d) (i) Diagram of traditional rain gauge:  
 1 mark maximum for diagram which includes funnel, collecting jar and outer casing  
  
 2 marks maximum for labels:  
 Measuring jar/container/cylinder  
 Funnel  
 Outer casing  
 Scale/measurement/mm  
 If diagram is a 'home-made' gauge or pluviometer  
 Credit 1 mark for diagram as appropriate and 2 marks for labels such as scale/ruler/bottle [3]
- (ii) Playground: so that rain gauge is not interfered with/kicked/played with  
 OR rain may splash into gauge  
  
 Trees: so that there is no interception of rainfall/prevents rain entering funnel/so trees don't block rain/so leaves don't block funnel/to avoid drips from leaves 2 @ 1 [2]

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(iii) Take collecting jar/container out of casing  
 Record level of water in jar or container/measure amount of water in jar/pour water into measuring tube  
 Pour water from overflow container into measuring cylinder  
 Measure every day/daily/every 24 hours  
 Measure at same time  
 Empty jar after measuring [4]

(iv) Plot AP = 1008 mb (need plot and line) and rainfall = 2.8 mm on 20th 2 @ 1 [2]

(v) Hypothesis is **correct**/results **support** hypothesis – 1 mark reserve  
 Highest rainfall = lowest AP  
 No rainfall/0 mm of rain = highest AP

Credit 1 reserve mark (maximum) for supporting data to show contrast e.g.  
 9.3 mm of rain = 1003 mb and 0 mm of rain = 1020 mb (need 4 figures)  
 4.1 mm of rain = 1007 mb and 2.5 mm of rain = 1012 mb

[3]

(e) Sunshine recorder is placed south facing in northern hemisphere  
 Put sunshine recorder in open space/not affected by shade/exposed to sun's rays/top of building/on a pedestal or stand  
 Lens/glass ball focuses the sun's rays onto a piece of card/paper  
 Sun's rays scorch card (paper)/burns a line in the card (paper)  
 Measure length of burn line/length of (burn) line shows hours of sunlight/discontinuous or interrupted line if sun is obscured by cloud  
 Replace card (paper) each day/put card (paper) into sunshine recorder [4]

**[Total: 30 marks]**

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- 8 (a) (i) Energy which comes from resources that will not run out [1]
- (ii) 6 (accept 5–7) [1]
- (iii) Pie chart completion  
1 mark for dividing line at 73%, 1 mark for shading [2]
- (iv) Coal decreases/more coal in 1990  
Oil decreases  
Gas increases  
Total decreases  
2 @ 1 [2]
- (b) (i) Includes gender/age groups/age groups don't overlap/doesn't ask exact age or directly about gender  
Contains introduction/explanation/purpose of study/polite/respects privacy/not too personal  
Asks for reason/opinion  
Gives scale of agreement/agree or disagree  
Contains categories to choose/yes/no question/multiple choice/closed questions  
Can convert to statistics/percentages/easy to graph/easy to put into chart  
Questions are relevant to hypothesis/covers everything needed/asks relevant questions/balanced  
3 @ 1 [3]
- (ii) Stratified (quota)/systematic/random [1]
- (iii) Stratified:  
Gender/age balance  
Appropriate to population of town/socio-economic status/different areas of town  
  
Systematic:  
Regular intervals/regular pattern  
Every tenth person  
  
Random:  
Ask anybody/next person/no pattern  
Use random number tables/pick numbers out of a hat to generate order to ask people  
e.g. if number 6 selected ask the 6th person (DEV)  
  
If no name/incorrect name of method in (ii) credit one appropriate description in (iii)  
If name in (ii) does not match description in (iii) credit (ii) but no credit for (iii) [2]
- (c) (i) Tidal power does not pollute the atmosphere [1]
- (ii) Completion of bars  
Turbines = 17, Free = 8  
2 @ 1 [2]
- (iii) **Yes / results do support** hypothesis (✓*H*<sub>A</sub>)  
1 mark for comparable data e.g.  
Yes = 71, No = 29/71 out of 100 people agree/over 70 agree/71% agree/29 out of 100 disagree/29% disagree [2]

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- (d) (i) Completion of divided bar  
Two marks for dividing lines at 74% and 94%  
1 mark for shading [3]
- (ii) Construction of the barrage will create jobs in the area [1]
- (iii) 1 mark (**not reserve**) for general idea such as:  
About same amount of people/even balance of people agree and disagree/equal numbers have positive and negative opinions  
e.g. 'negligible difference between the number of positive and negative opinions'  
Most people agreed with the positive statements (or an example of a positive statement) and most people agreed with the negative statements (or an example of a negative statement)  
e.g. 90 said barrage will be a tourist attraction and 93 said barrage will threaten natural habitats
- Credit 2 marks maximum for comparable data of **total** number of opinions against and for barrage e.g.  
'strongly agree' 121 negative and 128 positive opinions  
'strongly agree' and 'agree' 217 negative and 219 positive opinions  
Agree can be column 2 or columns 1 and 2 combined
- Credit 1 mark maximum for comparable data evidence of one opinion against barrage and one opinion in favour of barrage e.g.  
90 agree that barrage will threaten natural habitats and 93 agree that barrage will be a tourist attraction
- Credit 1 mark maximum for comparison between agree and disagree for **total** responses about benefits (NOT problems) i.e.  
219 agree and 81 disagree that the scheme brought benefits [3]
- (e) (i) HEP/hydro  
Solar  
Geothermal  
Wave  
Wind  
Wood  
Biomass/biofuel  
2 @ 1 [2]
- (ii) Burning fossil fuels or coal/cars use petrol/release greenhouse gases/release CO<sub>2</sub>  
CO<sub>2</sub>/greenhouse gases build up or increase in atmosphere  
Sun's energy/radiation passes through the earth's atmosphere  
Heats up earth's surface/absorbed by the earth's surface  
Radiation re-radiated back towards space/reflected back  
Greenhouse gases absorb/prevent escape of/trap outgoing radiation/reflect heat back  
Reference to ozone layer: if ozone layer is **entire** context of answer award 0 but otherwise credit ideas which apply to global warming and ignore ozone layer reference [4]

[Total: 30 marks]