

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge International General Certificate of Secondary Education

## **MARK SCHEME for the October/November 2014 series**

### **0460 GEOGRAPHY**

**0460/41**

Paper 4 (Alternative to Coursework), maximum raw mark 60

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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- 1 (a) (i) Constructive wave: waves far apart and breaking wave spills forward  
Destructive wave: waves close together and breaking wave plunges downwards  
4 correct labels = 2 marks  
2 or 3 correct labels = 1 mark  
1 correct label = 0 marks [2]
- (ii) Use marker pole / rock / person as fixed point  
Count number of waves breaking in 1 minute / fixed period of time / specified time /  
count float going up and down in 1 minute  
Use watch / chronometer (for timing)  
Repeat counting / do counting more than once [3]
- (b) (i) 7 [1]
- (ii) 2 plots at frequency 15 on beach A [1]
- (iii) Beach A: destructive  
Beach B: constructive [1]
- (c) (i) Put tape measure on beach / poles at bottom and top of beach to create profile / transect  
line  
Measure / mark out distance between ranging poles / every 10 m  
Identify sections of the beach profile / breaks of slope  
Students hold poles at either end of measured distance / identified section  
Make sure they are vertical / same depth / on surface  
Student holds clinometers next to top / at specific height on ranging pole / rope at same  
height on both poles  
Sight other ranging pole at top / specific height  
Allow clinometers to adjust to angle / read angle / measure gradient  
Repeat along transect / repeat for different sections [4]
- (ii) Hypothesis is **true** – 1 mark reserve
- At beach A steeper profile and higher wave frequency / at beach B gentler profile and  
lower wave frequency
- At beach A frequency is 11–15 waves per minute and reaches height of 2.6 m / over  
2.5 m, at beach B frequency is 6–8 waves per minute and reaches height of 1.1 m / over  
1 m / less than 1.5 m [3]

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(iii) Destructive waves create steeper profile / constructive waves create gentler profile

Steeper profile: Destructive / strong / powerful / more frequent waves take material to back of beach / backwash takes smaller material back down beach

OR Gentler profile: Constructive / gentle / less frequent waves push material up beach / little backwash to pull material back down [2]

(d) (i) Create transect line along / up beach

Measure equal / regular distances along transect / measured distance (e.g. 20m) / equal number of paces / every 10<sup>th</sup> pebble / every 10 seconds / pick up pebble every metre

Select beach material touching tape

Use quadrat to select material

Sample of pebbles within each quadrat [3]

(ii) Use ruler / pebbleometer / callipers

Measure long axis / longest side [2]

(iii) Plot bars: 9 cm at pebble 13 on beach A

10.5 cm at pebble 15 on beach B 2 @ 1 [2]

(iv) Hypothesis is **false** / beach material is not larger where wave frequency is higher – 1 mark reserve

Pebbles smaller / average size / median size is smaller at beach A / where the wave frequency is higher

OR Pebbles larger / average size / median size is larger at beach B / where the wave frequency is lower

OR Similar size pebbles on both beaches

Beach A average size = 9.5 cm, at Beach B = 10 cm

Beach A median size = 9 cm, at beach B = 9.5 cm

Credit 1 mark maximum for comparative figures [3]

(e) Classify types of pollution / decide types of pollution / observe or see types of pollution

Create environmental index / bi-polar index

Explanation of how index is used

Decide on sampling method / quadrat / transect

Count pieces of litter / estimate area of oil / sewage coverage / weigh litter / tally

Photographs of types of pollution / polluted areas [3]

**Total 30 marks**

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- 2 (a) Major road junction / bus station / railway station / most traffic  
Peak land value point / highest land value  
Historic building or site e.g. church / square / monument / oldest building  
Town hall / government buildings
- 2 @ 1 [2]
- (b) (i) 20 minutes is long enough to give a reasonable result / fair test  
Students will not get bored if longer time  
Consistency / greater reliability of results because all counts done at same time  
All done at once / fieldwork completed quickly
- 2 @ 1 [2]
- (ii) Recording sheet should include:  
Street name / location / place / sample point / site / space for lots of points  
Tally of pedestrians / space to do tally / amount / count  
Total number / result of tally [3]
- (c) (i) Completion of isoline on Fig. 5 (-1 for each error) [2]
- (ii) Shading on Fig. 5 [1]
- (iii) Hypothesis is **true** / pedestrian flow does decrease – 1 mark reserve
- Detailed / accurate comparison:  
**Over** 200 at centre and less than 50 at the edge = 2 marks  
**Over** 200 at centre and 102 at 0.5 km = 2 marks
- Weak comparison:  
200 at centre and 50 at edge / by motorway / by river = 1 mark  
200 at centre and decreasing to 100 = 1 mark [3]
- (iv) Pedestrian numbers would increase [1]
- (v) Reasons **must link** to more / many or less / few people:
- Shopping centre / shops / services  
Bus station / railway station  
Tourist / entertainment attractions / historic attractions / parks  
Offices / workplaces / industries / businesses  
Housing (e.g. high rise blocks of flats)  
Pedestrianised zone
- 2 @ 1 [2]

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- (d) (i) Easy / quick to count number of storey (than measure height)  
 Difficult to measure actual height of tall buildings  
 Each storey is approximately same height  
 More storeys the higher the building will be [1]
- (ii) 3 (must be whole number) [1]
- (iii) Completion of bar using key = 4 storeys at location X [1]
- (iv) Hypothesis is **false** – tallest buildings are not in CBD – 1 mark reserve  
 Tallest buildings are outside / west of CBD / near motorway / near market  
 Tallest buildings in CBD are 4 storeys high and tallest buildings outside CBD are 5 / 6 storeys high [3]
- (v) Cost of land / higher costs = taller buildings  
 Competition for / availability of land for building / less space = taller buildings  
 Proximity to transport routes / e.g. taller buildings near motorway  
 Ages of buildings / historical areas are lower  
 New developments of high-rise offices or apartments  
 Building regulations / laws restricting building height  
 Different land uses / examples of two land uses 2 @ 1 [2]
- (e) Find out the land value (rateable value)  
 Identify types of land use 2 @ 1 [2]
- (f) **Pedestrian flows:**  
 Do survey later in the day / different times of day  
 More survey locations  
 Do survey on a non-work day / weekend  
 More students at each location to check accuracy  
 Use of counters / 'clickers'  
 Ensure each pair has watch / stopwatch for accurate timing
- Average building heights:**  
 More than 10 / all buildings at each sample point  
 More data collection locations  
 More students at each location to check accuracy  
 Obtain secondary data of building heights  
 Measure height of buildings using trigonometry
- Do a practice investigation – for either investigation
- 1 mark reserve for each investigation. **No double credit.** [4]

**Total 30 marks**