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.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2014 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

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]

(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. 20 m) / equal number of paces / every 10th 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

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]

(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