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  
(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  
(b) (i) 7  
(ii) 2 plots at frequency 15 on beach A  
(iii) Beach A: destructive  
Beach B: constructive  
(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  
(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
(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

(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

(ii) Use ruler / pebbleometer / callipers
Measure long axis / longest side

(iii) Plot bars: 9 cm at pebble 13 on beach A
10.5 cm at pebble 15 on beach B

(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

(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

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