**UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**International General Certificate of Secondary Education**

# MARK SCHEME for the May/June 2012 question paper

# for the guidance of teachers

## 0460 GEOGRAPHY

**0460/43** 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 must be read in conjunction with the question papers and the report on the examination.

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**1 (a)** Keep away from base of cliff/overhang
Don't stand on edge of cliff
Check tide times before setting off
Do fieldwork at low tide
Avoid **slippery** rocks
Measure waves from safe position, not in sea/don't go too far/deep into sea/face the sea
Gloves to protect hands
Wear suitable/waterproof clothes/shoes
Check weather conditions/for stormy weather/avoid big waves
Work in pairs/groups/not alone
Let others know where you are
Take mobile/cell phone
Sunblock/first aid kit/bottled water
3 @ 1 [3]

**(b) (i)** Use stopwatch/timer/clock
Count number of waves breaking/going up beach/hitting stick or person
In 1/5/10 minutes/specified time
Take an **average** of a number of readings

^ count number of waves
^ do this several times [3]

**(ii)** Plot bar B on graph = 9
Ignore width of bar and shading [1]

**(iii)** High frequency/many waves per minute/10 – 16 waves per minute/short wavelength
Strong backwash/weak swash/stronger backwash than swash
Large height/big amplitude
Erosional/takes away more sand than brings in

^ powerful/strong
^ large
2 @ 1 [2]

**(c) (i)** **Tape measure**: lay it out along transect line
Measure distance between ranging poles/put poles at equal distance
**Ranging poles**: poles at either end of measured distance
Ensure they are vertical
Rest on surface/equal depth into sand
**Clinometer**: student holds clinometer next to top/at agreed height on ranging pole
Sight other ranging pole at top/agreed height/same height
Allow clinometer to adjust to angle
Read angle/measure angle/measure slope
Reserve 1 mark for each piece of equipment [5]

**(ii)** 4.5 [1]

**(iii)** Hypothesis is true/agree/beach is steeper where waves are more frequent (reserve)
Hypothesis is wrong/partly true = 0

Average frequency at A is 16 per min. and average angle is 9°
Average frequency at B is 9 per min. and average angle is 4.5°
Average frequency at C is 7 per min. and average angle is 3.25°
Need comparison of two sites (4 pieces of data)
A has most waves per minutes/highest wave frequency and steepest angle of slope/C has least waves per minute/ lowest wave frequency and gentlest angle of slope [2]

**(d) (i)** Put quadrat on ground/used quadrat
Select sample of **7** stones
Measure stone **with** tape/rule/callipers/pebbleometer
Measures longest axis/length
Read in mm
Add up measurements and divide by number of samples/calculate the average length [3]

**(ii)** Diamond-shaped plot on scatter graph 10 m = 76 mm (on line) [1]

**(iii)** Hypothesis is true/partially true/true up to 10 m/larger beach material where waves are more frequent
Hypothesis is wrong = 0

At A wave frequency greatest, beach material is largest/at C wave frequency is least, beach material is smallest

At A at 2 m average frequency = 16 and beach material = 74.2
At C at 2 m average frequency = 7 and beach material = 3.6

Transect average overall: A = 89, B = 54.6, C = 40.6
Need A B C comparison at specific distance (4 pieces of data)

But an anomaly **at 12 m**/where there is larger beach material where waves are less frequent [4]

**(e)** More measurements of wave frequency (students only did one at each location)/collect more rock samples
Collect data at different times of year/different seasons/ different day
Count waves breaking over 10 minutes/specified time and calculate average
Collect data at more locations/transects/other beaches/more profile measurements
Collect data in different weather conditions
More students do same measurements/student repeats experiment/measurement several times
Use more accurate measuring instrument [3]

**(f)** Waves through:
Breakwater/harbour wall/ harbour
Offshore barrage barrier out at sea
Coastal defences/sea wall

Beach through:
Groyne
Replenishment/man-made beach
Removal of material
No reserve for waves or beach
2 @ 1 [2]

**[Total: 30 marks]**

**2** **(a)** Historic growth from centre outwards/built at different times
Influence of physical features such as river valley
Influence of human features such as railways, roads/accessibility
Value/cost of land (for different uses)/price of land varies
Availability of space/land
2 @ 1 [2]

**(b)** **(i)** Circle location
Made a decision about the score for each category/what they thought was the score
Put a tick in the appropriate column/filled in the chart/sheet [2]

**(ii)** Opportunity to test features/grading to see if they are suitable how features are graded
Gives a known standard/control to compare against
Check on methodology consistency/check for any errors/mistakes/improve survey
Practice survey/get used to sheet
Improves ability to work as a team
2 @ 1 [2]

**(c)** **(i)** Completion of bi-polar graph for area B
2 marks for plots (4 correct = 2 marks, 2/3 correct = 1 mark)
1 mark for line [3]

**(ii)** Area C/furthest from town centre has positive/highest score or total or index/area A is nearest to town centre has negative lowest score or total or index/score or total or index increases as move away from town centre

A= –7, B = 0, C= +13, (any 2)

Area C has +2 for six features but areas A/B has +2 for no feature
Area A has –2 for 4 features but area C has no minus scores
Area C has highest score for every feature
Area C has all neutral or positive scores but area A has some negative scores
Increase in feature scores from A to B to C
Except for open space/vandalism/litter [4]

**(iii)** One road may not be representative of the area/only three roads surveyed
Scores may vary if done at different times/different days
Scores are subjective/biased
Could be other features which are not included in survey e.g. education, crime
2 @ 1 [2]

**(d) (i)** Stratified sampling/reflect population
Appropriate gender balance/male – female balance
Appropriate age balance/different ages

1 max for Systematic or Random sampling [3]

**(ii)** Circling Surgery 5 – 30 and Cinema more than 30 [1]

**(iii)** Many people will not walk to services/go by car/bus/transport
People may not go to the nearest service/more than one service to go to
People walk at different speeds/people walk faster on one day than another
People walk by different routes
Estimated times may be inaccurate/vague/people don't know/guess
Take them longer when it's busy
Don't use specific services
2 @ 1 [2]

**(iv)** Complete score for local store = 3
Calculate accessibility index score = 20
2 @ 1 [2]

**(v)** Plot answer to **(d)(iv)** – should be 20 above resident 1 on Area B of dispersion graph [1]

**(vi)** Circle median value of area C = 22 [1]

**(vii)** Hypothesis is not true/false/disagree
Accessibility index values have a similar range in all three areas/similar pattern in all three areas/no clear pattern
**Median** value is higher in area C/very similar
Comparison of A = 20 and C = 22 (allow score or index, don't need median)
More index values over 25 in area C than area A

Hypothesis is true = 0
No reference for credit to area B [3]

**(e)** Accessibility to different services depends where people live in an area/some houses are/people live further away from services than others
Variable access to paths/people walk by different routes
People may not go to the nearest service/more than one service to go to
2 @ 1 [2]

**[Total: 30 marks]**