

GCE

Edexcel GCE

Geography B (8215/9215)

6471

Summer 2005

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Mark Scheme (Results)



## Brief Explanation of Criteria Based Mark Schemes

These are used for the extended writing end parts of all questions, and for selected open-ended responses within questions.

Three criteria bands are used:

<b>Highest criteria band answers:</b>
Will show a good range, depth of detail, relevance, precision, answering the question in a logical structured way.
<b>Medium criteria band answers:</b>
Will show some of these characteristics but have limitations on a number of features, especially at the bottom of the band, whereas at the top of the band, they will have many features of the highest band material.
<b>Lowest criteria band answers:</b>
Will be limited in range, vague, using basic terminology and expression, lacking in detail, often of peripheral relevance with limited reference to rubric.

There is no restriction to the number of candidates achieving each band. It is possible that in some tasks, 40% of candidates may achieve highest band work, but because of a lack of consistency or performance, or particular strengths and weaknesses, the performance will not be sustained across a whole paper.

The **first** stage in marking therefore is to decide on the band, and **secondly** to decide on the position in the band. Note that not all points mentioned in the criteria description need to be met for an answer to be placed in the band.

## Quality of Written Communication

Structure, clarity, the use of geographical terminology and the correct use of grammar, spelling and punctuation, will be assessed within the mark scheme for section (c) of each question.

## 6471 Mark Scheme

1. (a) Study Figure 1(a) below which shows stream velocity values in a meandering channel
- (i) Describe how stream velocity varies within the river channel. (2)  
any two correct ideas, eg velocity increases towards the outside, towards the surface and towards thalweg, (below outer surface) or one correct idea and data use.
- (ii) Suggest how these variations in velocity affect features of the river channel. (4)  
looking for linkage eg slower water on inside leads to deposition of point bar, faster water on outside erodes river cliff and increase depth, or effect on cross-section (asymmetrical shape), or lateral migration.  
3-4 L2 links velocity, process and channel shape/landforms  
1-2 L1 basic idea eg erosion on outside of bend
- (iii) Explain how stream velocity controls the load carried by a stream. (5)  
looking for explanation of 'hjulstrom' concept of entrainment, etc  
5 L3 shows clear understanding of entrainment, etc referring to details of calibre, settling and pickup (perhaps coherence). Uses appropriate term.  
3-4 L2 explains link between velocity, transportation and load calibre.  
1-2 L1 basic link between velocity and amount/size of load carried
- (iv) Suggest how physical factors in a river's catchment area can affect its load. (3)  
looking for factors eg. geology - limestone solution, more resistant rock less load, - load linked to rock type, valley processes like landslide/soil erosion, vegetation holding soil, etc  
1 mark per factor identified, second for development/exemplification
- (b) Study Figure 1(b) on page 2 of the Resource Booklet. The photograph shows students investigating how discharge changes downstream. Briefly describe the methodology used and the students' probable conclusions. (6)  
looking for data collection (perhaps processing) up to 5 marks and conclusion up to 2 = max 6  
**Methodology** - float and timings or flow meter for velocity, measuring cross section for area/volume, multiplying results to get discharge, may consider sampling aspect.  
5 L3 clear understanding of methodology  
3-4 L2 describes some fieldwork activities relating to discharge, may be incomplete  
1-2 L1 limited idea of fieldwork, eg considers velocity only  
**Conclusion** - Expecting discharge to increase downstream, may be due to increased volume (tributaries) or increased velocity (channel efficiency)  
1 for basic statement second for explanation
- (c) With reference to named examples, examine the impacts of river flooding on people's daily lives. (10)  
Looking at the consequences for people of river flooding. Hazard type essay! Examine means more than accounts of flooding. Opportunity to discuss costs and benefits, to contrast different examples (eg. scale, climate, regimes, from economically different countries, or different events/places in one river basin).  
9-10 L3 Structured examination of impacts on people's lives. Expect explanation, contrasts, or costs and benefits, etc  
5-8 L2 Some explanation of a range of impacts on people's lives. Lower end descriptive.  
1-4 L1 Basic outline of one or two impacts lacking exemplification

(Total 30 marks)

2. (a) Study Figure 2(a) on page 3 of the Resource Booklet. It shows the response of the River Wye to a short spell of heavy rainfall near its source.
- (i) Name the drainage basin features at X and Y (2)  
 1. point X - *confluence*                      2. boundary Y - *watershed (divide)*
- (ii) Describe and explain the downstream changes in peak flow, lag time and volume of storm flow. (9)  
 looking for eg. classic small first graph, then pattern of declining peaks, 100,500,400 and 350, gentler sloping limbs, increasing storm volume(area in blue)increasing lag times, start of day 1,end of day 1,day 2 and late in day 2. Reward exemplification of points and use of figures.  
 Explanation should relate to pathways, response times and increase in discharge/tributaries.  
 Ignore headings; mark where found.  
 8-9 L3 clear comparison and explanation of changes - all three elements and some use of data  
 4-7 L2 identifies some changes in hydrographs; description and explanation unbalanced (may have only two ideas completed)  
 1-3 L1 describes some changes in hydrographs, incomplete or little data use
- (iii) Suggest how the Environment Agency might use this hydrograph data. (3)  
 eg. to predict flooding, give warnings, prepare emergency response, etc  
 one mark per idea, two if developed/exemplified
- (b) Study Figure 2 (b) below which identifies the flood risk in a river valley.
- (i) Annotate the right-hand side of the diagram to show how you would plan land use and buildings to minimise the risk of flood damage.
- (ii) Justify your plans (6)  
 up to 3 marks for drawings or labels to show land/building use - eg parks/pitches near river, commercial property/flats on lower slopes, residential esp older people and hospitals on terraces (see examples at standardising) - one mark per suitable label.  
 up to 4 marks (in annotations or text in (ii))for justifying/explaining how plans reduce risks - eg open space little damage, quick recovery, - flats and businesses above minor floods, can be designed to cope - residential, emergency, and at risk groups need to avoid distress and cost of floods. May refer to level of flood recurrence. One mark per point; second for development/explanation
- (c) With reference to one or more named examples, explain the benefits of environmentally sensitive river management. (10)  
 Looking for essay on benefits of sustainable river management, eg catchment management, river corridors and restoration - Kissimmee, Skerne Cole, Brede, Bangladesh 'green river' etc. Explain implies more than description so must analyse (different types/aspects) or may question/evaluate.  
 Benefits - adapts rather than controls, economical, manageable scale, environmentally sound, restorative, self-maintaining, ecologically valuable and avoids problems of hard engineering.  
 9-10 L3 Structured, balanced explanation of benefits of sustainable approach, using suitable named example(s), showing detail or range of types/aspects. May cite disadvantages or evaluate.  
 5-8 L2 Some benefits explored. May concentrate on environment or social or economics. Lower end will be descriptive(max of 6 for good critique of hard engineering)  
 1-4 L1 Basic outline lacking exemplification, one or two points made eg good for environment or cheaper

(Total 30 marks)

3. (a) **Study Figure 3(a) on page 4 of the Resources Booklet. It shows a multi-purpose river management scheme.**
- (i) **State why this scheme is described as multipurpose?** (1)  
 identifies more than one use - eg. water storage (regulation/supply), flood control or power (HEP).
- (ii) **Outline the factors taken into account when siting large dams.** (4)  
 Physical - valley site for dam, suitable geology for foundations, tectonics, wider catchment factors of precipitation and area. Economic - demand, poor quality land. Social - low population, damage to ecosystems.  
 1 mark each, second for development/exemplification.
- (iii) **Suggest one advantage and one disadvantage of the scheme upstream of the dam.** (4)  
 ADV - probably new recreation/tourism opportunities, new jobs, wildlife opportunity, storage and supply etc.  
 DIS - loss of farmland, altered ecosystems, increased soil erosion, wetter local climate, siltation, displacement (migration), etc.  
 1 mark each, two for development/exemplification
- (iv) **Explain why there may be concerns about ecosystems and water quality downstream of some large river management schemes.** (6)  
 Ecosystems- regulation and reduction of water may damage wetland and river habitats for wading birds, otters, fish, and wider food chain. Sediments removed too. May use examples such as salmon migration or places like Mississippi bayoux.  
 Water quality - low flow increases pollution concentration. Effects from agriculture (nitrates possibly sediment from soil erosion) irrigation(salinisation), industry and towns(effluent) and power(temperature). May use examples like eutrophication or Nile bilharzia here too.  
 5-6 L3 clear, balanced explanation of concerns for both ecosystems and water quality  
 3-4 L2 describes and begins to explain; impacts may be less balanced  
 1-2 L1 has basic ideas, eg. Industrial areas pollute rivers with chemicals
- (b) **Study Figure 3 (b) below which shows the problem of coastal erosion to the east of the Volta estuary. Suggest how river and coastal management have contributed to this problem of coastal erosion.** (5)  
 Impacts of siltation in lake Volta has reduced sediment supply to beaches/coastal ecosystems.  
 Failure to understand effects of longshore current. Increasing coastal erosion, made worse by interference (breakwaters). Harbour/resort losses affect economies of neighbouring countries.  
 5 L3 clear explanation, considering causes and impacts of river and coastal management  
 3-4 L2 describes problem may be less balanced (river or coast)  
 1-2 L1 lifts basic ideas, eg. dams hold sediment so beaches erode
- (c) **A number of hard engineering methods have traditionally been used to combat coastal erosion. Briefly describe two of these methods and for a named location explain why each was chosen.** (10)  
 Expecting correct location(s), and reasons for their implementation there. Traditional probably means non-sustainable but allow groynes (as are engineering)  
 List below only examples:  
 Sea wall - bulk/foundations resist wave energy, height prevents erosion, curved to reflect waves. Often used along high energy coasts, against storm surges, holiday resort and port locations. Rock armour(rip-rap) - easily 'built' to lessen movement, brought by sea, protect walls from waves. Gabions - wire boxes hold stones, can be 'built' like blocks, let water pass through, filter wave energy. Groynes - trap sand from drift, restore/protect beaches, look natural, holiday resort favourite  
 9-10 L3 Structured, balanced account of methods, well linked to location and conditions or problems. Showing detail.  
 5-8 L2 Some discussion of methods. Explains two examples. Lower end descriptive/not located  
 1-4 L1 Limited basic knowledge or exemplification

(Total 30 marks)

4. (a) Study Figure 4 on page 5 of the Resource Booklet. It gives information about Mele Beach on Vanuatu (a small island in the South Pacific).
- (i) Name the coastal feature shown on the sketch at C, and the process leading to its formation. (2)
- (ii) 1. Feature - *spit* 2. Process - *longshore drift/accept deposition* (2)  
Suggest how this coastal feature may change over time. (3)  
Various scenarios eg. Spit may recurve, extend or migrate; salt marshes; river mouth may become deferred, spit may develop into a tombolo with Coral Island. River and storms may prevent this. Such features are often cyclic and are destroyed. All are acceptable ideas.  
1 mark for each idea and up to three if well explained/exemplified
- (iii) Referring to Figure 4, describe how the following beach features change from points A to D. (6)
1. The beach profiles the height and steepness reduces, though width increases, (less trees?) D is an anomaly. May make use of scale
2. The beach materials the colour gets lighter, particle size smaller. D is again an anomaly. May refer to actual colours. Accept alternative response of little change.  
1 mark for change/trend, second for development. Ignore headings mark up to 6.
- (iv) Suggest why these changes have occurred. (4)  
May attempt general answer about longshore drift, etc or  
A= deposition on beach (coarser), B= impact of river outfall (finer), C= spit has two faces (slacker water in bay) D= coral island (solid rock/limited sediment/reef, wave refraction).  
1 mark per idea and second for explanation
- (b) New hotels are proposed for this coast. Suggest how this development may damage the coastal environment. (5)  
Treat 'coastal environment' broadly.  
Note - Imere Island(d) is "Hideaway Island" in tourist brochures (a scuba diving resort) and nearby Port Vila, the capital, already has 35,000 people and a large number of hotels.  
Impacts of pollution from tourist boats/water sports on inshore fishing and marine ecosystems. Coral is especially vulnerable and damage would ruin scuba diving trade. Hotel developments will increase effluent. Forest clearance, roads and hard surfaces will increase run off and soil loss, agricultural developments. Coastal developments like jetties may affect sites downdrift.  
5 L3 Explores several causes and effects of damage, both physical and ecological  
3-4 L2 describes effects of damage and begins to explain  
1-2 L1 basic ideas more tourists means more use and damage to coast
- (c) With reference to more than one country, examine the factors that influence government coastal management policies. (10)  
Looking for explanation of management policy/options in two countries, preferably contrasting Policies implies more than strategies, eg retreat, hold the line, hard engineering, this is expected in top level. Answer may focus on economic (MEDC/LEDC) differences eg UK and Guyana, or on situation eg Florida/Netherlands(urban) versus Essex/Bangladesh (rural).  
9-10 L3 Structured, balanced account of management policies, well linked to chosen countries. Shows detail or some range  
5-8 L2 Some explanation of named options, may be unbalanced. Lower end will be descriptive or may use LEDC - style not really specific.  
1-4 L1 Limited basic knowledge or exemplification  
Max 6 for one country.

(Total 30 marks)

5. (a) **Study Figure 5(a) on page 6 of the Resource Booklet. It shows changes along a lowland coastline.**
- (i) **Describe how this coastal landscape has changed between stages 1 and 2.** (3)  
 salt marshes reduced, shoreline moved inland, barrier built, land use changed to arable  
 1 mark for each change second for development/exemplification
- (ii) **Suggest two reasons for these changes.** (2)  
 could be physical - sea level rise (eustatic change), increased erosion  
 or human - interference (hard engineering), increasing land values (arable). 1 mark per reason
- (iii) **Suggest why the situation in stage 3 is not sustainable.** (4)  
 "coastal squeeze" means salt marshes cannot adapt/migrate. Cannot afford to keep repairing defences, walls failing/costly, especially in areas of low population or those with limited economic return. Increasing concerns about ecological losses.  
 1 mark for each idea up to 2 more for development
- (iv) **Name the sustainable strategy in stage 4 that 'deliberately lets in the sea' and give reasons why this strategy is especially suitable for this coast.** (4)  
 Coastal retreat, strategic retreat, managed retreat, coastal realignment etc. for 1 mark  
 May argue for MR or against other types - (accept Econ/Soc/Env aspects) - eg is more cost-effective, ecologically sound, socially acceptable (low population), but not 'sustainable'  
 1 for idea; up to 3 for development/exemplification.
- (b) **Study Figure 5(b) on page 6 of the Resource Booklet. It shows a sustainable coastal management scheme in Essex which has received widespread support from local oyster fishermen, Essex Wildlife Trust, local farmers, the District Council and the Environment Agency.** (7)  
**Choose two of these groups and suggest why each supports the scheme.**  
 looking for reasons for support using evidence from resource or wider knowledge  
 Fishermen - protects and develops salt marsh ecosystem (high primary productivity), nursery to shellfish and flat fish, and fishing activities retained.  
 Essex Wildlife - winter feeding grounds for waders (dunlin) and migrant birds, bird hides and hedgerows conserved. Fish nursery.  
 Local farmers - (mixed farming is better for land) keeps farming alongside farm tourism, diversification into organic or sustainable farming. Pick your own, riding, etc.  
 District Council - must look after residents, scheme is cheaper than defences, may have 'green' councillors/voters, may be landowners themselves.  
 Env Agency - The marshes should provide a basic sea defence and adapt to changing sea levels allowing finite funds to be spent in places where hard engineering seems inevitable. The visitor centre should help educate the public about sustainable solutions.  
 6-7 L3 clear explanation relating to two groups using map evidence or wider knowledge to explain support  
 4-5 L2 suggests some reasons why two groups support the scheme  
 1-3 L1 limited ideas about support, or one group only
- (c) **For a located coastal ecosystem, explain how a study of the vegetation pattern can illustrate the process of succession.** (10)  
 Looking for how a description or investigation of how change can show succession.  
 Note - expect more than spatial change at top level. Most likely choice is psammosere eg Ainsdale, Oxwich.  
 9-10 L3 Structure account of succession pattern, well linked to chosen ecosystem, detailed.  
 5-8 L2 Some discussion of change in vegetation (spatial). Lower end will be descriptive.  
 1-4 L1 limited knowledge or exemplification of coastal ecosystem.

(Total 30 Marks)

