

**MARK SCHEME for the May/June 2012 question paper
for the guidance of teachers**

9768 GEOGRAPHY

9768/02

Paper 2 (Global Environments), maximum raw mark 50

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.

- Cambridge will not enter into discussions or correspondence in connection with these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2012 question papers for most IGCSE, Pre-U, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

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Guidance notes for marking 9768/02

This Mark Scheme contains, on the following page, the **Generic Mark Scheme** (GMS), used for assessing all pieces of extended writing bearing 25 marks in the Cambridge Pre-U Geography, followed by **Indicative content** for each question.

Whilst the GMS captures the essential generic qualities of responses in 5 mark bands, the Indicative content is what it says: some indication of the probable content in responses, or possible approaches, to the questions and titles set. Candidates may develop their own approaches to questions. Examiners should not expect to find all the Indicative content in any one response, such as to achieve a Level 5 award. The same mark may be awarded to different pieces of extended writing for different reasons.

CIE expects Examiners to use their geographical judgement and professional experience, combined with guidance given by Senior Examiners at the Standardisation Meeting and during the standardisation process, in assessing responses appropriately.

Use of the Generic Mark Scheme

The Generic Mark Scheme is used together with the indicative content for each essay question.

Responses may be placed in any level without fulfilling all the descriptors for that mark band, for example where the essay does not lend itself to the use of sketch maps and diagrams. Responses may exhibit characteristics of more than one Level and so examiners use the principle of best fit in determining response quality.

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The Generic Mark Scheme (GMS)

Examiners are encouraged to copy this page (or the same page in the Specimen Papers) and to keep it in front of them at all times when marking.

Level	Marks	Assessment criteria
5	22–25	<ul style="list-style-type: none"> • Wide-ranging, detailed and accurate knowledge and clear, high order understanding of the subject content • Relevant, detailed and accurate exemplification used effectively • Logical and clear organisation; good English expression; full and accurate use of geographical terminology • Well annotated and executed sketch maps/diagrams integrated fully with the text • Fully focused on the specific demands of the question • Systematic analysis and a critical approach to evaluation; appropriate application of concepts and theories • Conclusion shows high level insight and is logical and well founded on evidence and argument
4	18–21	<ul style="list-style-type: none"> • Good knowledge and depth of understanding of the subject content • Appropriate and well developed exemplification • Logical organisation; sound English expression; appropriate use of geographical terminology • Clearly annotated sketch maps/diagrams well integrated with the text • Well focused on the demands of the question • Elements of systematic analysis and ability to evaluate; generally appropriate application of concepts and theories • Conclusion is sound and based on evidence and argument
3	14–17	<ul style="list-style-type: none"> • Sound knowledge and understanding of the subject content lacking depth in some areas • Appropriate but partial exemplification, may not be integrated with the text • Generally clear communication but lacking some organisation; English expression and use of geographical terminology are mostly accurate • Sketch maps/diagrams generally used effectively and appropriately • Specific demands of the question mostly met • Some ability to analyse and evaluate; limited application of concepts and theories • Conclusion is limited and has some links to the rest of the response
2	10–13	<ul style="list-style-type: none"> • Some knowledge and understanding of the subject content lacking depth and detail • Exemplification used may be limited or not fully appropriate • Limited organisation; English expression is basic with some accurate use of geographical terminology • Sketch maps/diagrams may have inaccuracies and limited relevance • Question is addressed broadly or partially • Analysis, evaluation and application of concepts and theories are limited and may be superficial • Conclusion is basic and may not be linked to the rest of the response
1	0–9	<ul style="list-style-type: none"> • A little knowledge and understanding of the subject content; response may also contain unconnected material • Exemplification, if used, is simple and poorly related to the text or may not be relevant • Lack of clarity and organisation; English expression is simple with inaccuracies; geographical terminology, if used, is basic or not understood • Sketch maps/diagrams are limited or poorly executed and may lack relevance • Question is understood weakly and may be addressed slightly • Superficial statements replace analysis and evaluation; application may be minimal or absent • Conclusion may be absent or simply asserted

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How to annotate essays and show marks awarded

Ticks

Examiners are asked to tick at point of credit and not in a large or loose manner such that it is hard to ascertain what has been credited. Please avoid simply ticking at the end of paragraphs to indicate you have read them. All pages and sketch maps/diagrams, if used, should, however, bear some sign that they have received your attention, such as the simple annotation 'Seen'.

Other annotation

Examiners may find a number of symbols and annotations useful. The most commonly used are given here.

Indicating

?	an uncertain or doubtful point or an unconvincing argument
^	omission
^^	major omission
cf	compare with ...
IR or NR	often accompanied by wavy down ruling in the margin, irrelevance
(text)	identification of text for associated marginal comment
e.g.	example

Comments

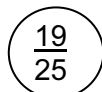
Comments on responses are useful both in forming an initial assessment of quality and for any Senior Examiner who reviews the marking at a later stage. Comments will usually reflect the descriptors in the GMS and/or the Indicative content, but other comments may be helpful, such as when an essay is clearly unfinished.

Positive comments may be made, but derogatory remarks must be avoided.

Showing marks awarded at the end of a response

In awarding a mark to an essay, please indicate the level, quote one or more phrases from the GMS to support the award made and show the mark, out of 25, ringed. The marks derived from each AO, in whole marks (no half marks) should be given, totalling to the total mark awarded, for example:

L4 Good K and depth of U, diagrams accurate and well-integrated, sound conc. based on evidence and argument.



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Section A

Answer **one** question from this section.

Arid and Semi-Arid Environments

1 Examine the role of water in shaping distinctive landforms in semi-arid environments. [25]

This is a question about Badland landscapes essentially and this should be clearly stated and recognised by candidates. Water is an important process in these semi-arid environments both in its formation of erosional and depositional landforms. Ideally there will be some knowledge of the water input from precipitation. The nature of the hydrological regime is such that sudden downpours of heavy rain can cause great torrents of flow on unprotected and frequently exposed soils. The consequence is the formation of badland landscapes with extremely high drainage densities and associated channelisation, wadis and piping. Typically, left upstanding, one finds relict hills and plateaus. Similarly, as the water slows down, it will deposit the large amount of accumulated alluvium in formations such as debris fans. Whilst there is much overlap with landforms in the arid zone, distinctly arid landforms (e.g. sand dunes), are not worthy of credit. The landforms specified in the syllabus are:

Relict hills, hoodoos, pipping, caves, arches, wadis and debris fans. Well-labelled integrated diagrams will aid answers.

Strong responses are likely to understand and detail the link between water and the landform being formed in clearly recognised badland landscapes. Such responses will identify the complexity of landform formation through acknowledgment of both deposition and erosion.

The very best answers will acknowledge the idea of 'distinctive'. This may be a useful discriminator. Weaker responses are likely to be more descriptive of landforms with less clear links and there may be a greater uncertainty about reference to semi-arid landscapes with a tendency to discuss arid landforms as well mistakenly referring to inappropriate landforms that typify arid or hyper-arid regions.

2 To what extent is vegetation clearance the main threat to the sustainable future of arid and semi-arid environments? [25]

The threat of vegetation clearance and the concept of sustainability are at the forefront of this question. The sustainable future of desert environments should be considered under the umbrella of environmental, social and economic services and, in particular, the idea that the exploitation of arid lands can very easily lead to a reduction in their longer term viability. Vegetation clearance (allow deforestation as a form of vegetation clearance although it is more applicable to the semi-arid part of the world) is an extremely important threat to the sustainable future of arid lands and this is due, in part, to its disruption of local water budgets and water storage, as well as increased erosion and soil degradation. Physical processes should be an integral part of the argument. Causes for vegetation clearance include increased population pressure and associated demand for grazing land, agriculture and fire wood. It must, however, be recognised that other factors, including over-extraction of water, mineral exploitation and secondary, tertiary and, increasingly, quaternary sector developments, are having significant impacts on water provision and causing disruption to ecological processes. Climate change is a significant factor which can be usefully mentioned/developed although not specifically mentioned in the syllabus.

Stronger responses are likely to have a firm understanding of the concept of sustainability and will make clear links between this and the threat of vegetation clearance – reduction of yield and economic potential, as well as environmental services. These candidates will also make the links via physical processes and the functioning of the hydrological cycle and the ecosystem. These

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candidates are expected to evaluate and consider other important factors that may be related (population growth) or independent (water extraction) and may recognise that both human activities and natural processes like unreliable rainfall and drought can contribute. Weaker responses are likely to have a less developed sense of the complexity of sustainability and will find it harder to link the notion of sustainability to vegetation clearance and other threats without rooting their answer in some ideas of the physical environment of arid areas. Such responses are unlikely to consider the range of threats faced by such environments.

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Glacial and Periglacial Environments

3 Examine how the distribution of periglacial environments has changed over time. [25]

Periglacial environments are those that are subjected to intense frost activity and experience a similar climatic regime to their glacial neighbours but are without permanent ice coverage. The question assumes knowledge of both past and present distribution of periglacial areas and the question requires knowledge of both spatial and temporal aspects. Such areas tend to border ice masses and, as such, are currently located in the high alpine regions and in the northerly and southerly latitudes. Their change overtime has been a direct result of shifting climatic trends and they have migrated alongside the changing ice fields. It is hoped that candidates will draw on their knowledge of Ice Ages, especially the Quaternary and glacial / interglacials, in order to look at and give examples of particular changes. Candidates might, for example, refer to the extension of a periglacial climate and associated permafrost, into central France during the peak of our last glacial, 18 000 years ago. They may be familiar with Southern England beyond the furthest extent of the ice. Candidates might also refer to the relatively short-scale advance and retreat associated with stadials and interstadials. The concept of time is deliberately broad and may be interpreted on several levels. Some candidates may choose to look at the current retreat. This is a two dimensional question which includes both time and space.

Stronger responses will see the change on a number of scales and will link this change both to shifting climate and associated securely located glacial retreat and advance. Weaker candidates are unlikely to have a firm understanding of climatic shifts and be able to link these convincingly to the changing distribution of the periglacial zone. They are likely to lack evidence by way of dates and specific examples of place.

4 Discuss the extent to which glacial environments provide more opportunities for, and constrain, economic development. [25]

There are a great many opportunities offered by both glacial environments and subsequently there is increasing desire to live in and exploit such regions. Candidates may well refer to water supply, tourism, energy, agriculture, military training and quarrying, amongst many others. Candidates may use detailed exemplification to examine these opportunities, turning, for example, to Alaska, Canada or the Alps to demonstrate growing tourism and energy sectors. However, there are clearly many constraints which involve the physical environment and which may be particularly marked in terms of agricultural production, infrastructural challenges and hazards, such as avalanches. An important aspect of this question could be the aesthetic value of the landscape per se, something which may be ignored by all but the most incisive answers. Ideally there needs to be a balance between opportunities and constraints but candidates wishing to conclude strongly on one side of the argument may write a slightly unbalanced answer which could be perfectly acceptable if the argument is cogent and convincing. **It is important that awareness is shown of the meaning of economic development.**

Opportunities are the positive aspect, constraints the negative.

Stronger responses will probably look in detail at range of both opportunities and constraints and conclude that the balance between opportunity and constraint is heavily dependent upon location. They may also recognise that there are positive and negative aspects to opportunities and constraints. For instance, the snowfalls that facilitate a successful skiing season may also provide transport difficulties.

Weaker responses are likely to lack evaluation and whilst they may have an understanding of opportunities and constraints, they may not be fully exemplified. The evaluative aspect of the question, whilst not ignored, may not be especially rigorous. Such answers may be descriptive and informative including case study material but they are not well applied to the question.

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Coastal Environments

5 Explain the process of longshore drift and how it contributes to the formation of landforms. [25]

Longshore drift is fundamental to the understanding of coastal processes and it is hoped that candidates will have a strong comprehension of the role of swash, backwash and granular movement. Fundamentally, longshore drift is a depositional process and this should be made clear. Candidates then need to link the process to the formation of specific landforms. Landforms worthy of credit would include:

Spits, Barrier Islands
Beaches

Candidates may include bars, tombolos and cusped forelands although these are not specified in the syllabus. The plural of landforms in the question necessitates the use of at least two landforms which, if done very well, would provide an answer that could access the highest levels. Salt marshes may be accepted as one of the two landforms. Equally a wider range of landforms, when well-done, may achieve similar marks. Processes and conditions are necessary with some explanation of how spits etc. actually form.

A good conclusion might suggest how, if longshore drift were curtailed then the depositional landform would lose its supply of material and begin to decline and be eroded e.g. Spurn Head.

Well-annotated, clear diagrams are needed to demonstrate (it would be difficult to write a successful answer without them but they do need to show the direction of longshore drift!) the significance of longshore drift in the sequential explanation of landform formation.

Stronger responses will be far more rigorous in their understanding of longshore drift and, in particular, will have a firm grasp on how this process is fundamental to the formation of some very distinctive coastal landforms. Diagrams will be integrated fully into the text and will be thoroughly annotated.

Weaker responses are unlikely to have a clear understanding of longshore drift, potentially becoming muddled by key terms and the detail of its sequence. Diagrams might be included but will likely lack detail and, in particular, will be unclear in the link between longshore drift and landform formation.

6 For *one* named coastal ecosystem, outline the reasons for its formation and discuss how it develops over time. [25]

There are a range of options here. Ecosystems are the focus of the question and therefore it is expected that the functioning and development of these systems will be an integral part of the answer. The choice includes:
sand dunes, salt marshes, mangroves or coral reefs.

Whilst all are equally worthy of credit it may be noted that coral reefs are more difficult to handle in relation to the question and their functioning and the source of their biodiversity will be an essential element of the answer. The obvious choices here are sand dunes and salt marshes. All chosen must be examined under the two components of the question – reasons for formation and development over time. It is expected that candidates will link formation to sea currents, estuarine environments, prevailing wind, geology and climate. Diagrams would seem to be an obvious addition to this question. Development over time should include plant succession but interaction with humans and / or natural hazards, in terms of demise or modifying succession, are certainly worthy of credit as this will provide the discursive element of the answer.

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Stronger responses are likely to include well-documented, thoroughly understood examples. Such responses are likely to consider a broad range of factors and may well consider how they interact in terms of physical processes to produce the ecosystem. These responses will offer a degree of balance between formation and development. Weaker responses will have less understanding of the complexity of factors that determine ecosystem formation and will quite likely struggle to look in any significant detail at the way in which such an ecosystem might or might not 'develop'.

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Section B

Answer **one** question from this section.

Tropical Environments

- 7 Tropical lowland evergreen forest dominates forest environments in the tropics. To what extent is this statement true? [25]**

The interpretation of the term 'domination' may be of interest in this answer. In ecosystem terms it may be interpreted as the tallest vegetation in a plant community although most candidates are likely to interpret it as meaning spatial dominance over an area between 23½°N and S of the Equator. Named locations and latitudinal definitions are essential to a question of this nature.

Essentially this question is about the variation of forests within the tropics so reference to a number of other forest types is necessary. The choice may include: tropical semi-evergreen, montane, heath, peat swamp, freshwater swamp and tropical savanna. Awareness of the local/regional factors i.e. sub-climaxes and plagioclimaxes which result in these variations is evident such as drainage, relief, and edaphic factors and human activities.

Stronger responses include not only knowledge of the tropical rain forests but where, how and why there are variations. An understanding of the functioning of an ecosystem is integral to these answers and some awareness of spatial location is evident. The conclusion will be sound and is based on the evidence provided in the answer and will attempt to answer the direct question posed. The best answers will recognise that there is variation within the latitudinal belts, as a function of other factors producing sub and plagioclimaxes.

Weaker answers are less likely to invoke a range of other forest types but may focus on the rain forest and then mention other types 'en passant' without any development. There is also likely to be less awareness of concepts like sub-climaxes, plagioclimaxes and the factors that result in these plant communities.

- 8 Examine why the management of tropical environments needs to be considered at different scales. [25]**

The tropical environment should be defined and delineated at the outset so that the answer is given a secure context. The management of tropical environments is complicated not least because of the vast numbers of 'players' involved in the decision making. These players operate at a range of scales and with a greatly different weight, both politically and financially. Despite the inequalities it is increasingly being acknowledged that consent is impossible without involvement of a great many people and this at a range of scales from the individual through to the international community. It is hoped that a number of examples will be used to exemplify this, from the community level (e.g. Iban tribal rights in southern Borneo), to company level (e.g. the work of the WWF in southern Uganda), to country level (e.g. reserve and national park policy), through to international legislation (e.g. UN funding and sponsorship). It is hoped that candidates will discuss how these levels of decision making need to complement one another in common debate and consideration in order to promote effective management strategies that are sustainable. Some candidates may mention examples of where management has only been considered at one level (e.g. governmental) and has consequently been met with fierce resistance and subsequent failure. Candidates may frame their answer by consideration of each scale and this is an acceptable approach. It may be that some candidates define scale as the difference between small scale subsistence activity and large scale plantation farming. This is acceptable provided the concepts and theories are applied to the question. It is difficult to see how the issue of management can be discussed successfully without some reference to

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organisations and decision making which is demanded in the syllabus. Also the way in the ecosystem operates via its physical processes is a necessary part of such a question in order to display and understanding of physical geography.

Stronger responses will be well exemplified. They will demonstrate an understanding of the physical processes involved in tropical environments which will enable links to be made about the nature and scale of management and the relative success or failure in relation to the concept of sustainability.

Weaker responses are unlikely to be well supported by way of exemplification and are unlikely to appreciate the equal need for a multiple level approach to management, finding it difficult to justify why different players are needed in terms of guaranteeing success and sustainability. The argument may be disjointed without links and the interplay of different levels of management.

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Temperate Grassland and Forest Environments

9 Explain the importance of precipitation in determining the distribution of different temperate environments. [25]

Precipitation and the lack of it, is extremely important at determining the distribution of different temperate environments. Both rainfall totals and seasonal distribution play a role. In general terms, temperate grasslands experience relatively low levels of rainfall (50-90cm a year) and this is a key factor in preventing water consuming trees from invading. Rainfall variation also determines differences in the type of grassland. For example, the division of tall and short grassland in America (prairies and steppes) is associated directly with differences in rainfall. This is a factor based question which highlights precipitation in the question but demands knowledge of other factors which influence the development of ecosystems such as soil, fire, human activities which may be determinants of the distribution. Awareness of sub-climaxes, plagioclimaxes and seral stages could be an appropriate approach. For instance, candidates might discuss the significance of drier areas in terms of fire regime and the importance of this in generating specific grassland environments. Likewise, links to soil type, leaching and nutrient cycling are all extremely important. Similarly, higher rates of rainfall are fundamental in determining the distribution of both deciduous forest and northern coniferous forests. Some candidates may well mention, by way of direct connection, the significance of continentality and rain shadow and associated rainfall regimes. Answers will be judged on the basis of the material presented and the way in which concepts and theories (such as the functioning of the ecosystem and nutrient cycling) discussed are applied to the question of the importance of precipitation.

Stronger responses are likely to see precipitation as a fundamental control and will tease out more complex links in terms of aspects like water supply by way of explanation. They also see these ecosystems as responding to multi-factor causes for both grasslands and forests. Given the number of different environments/ecosystems and the number of factors an answer which focuses on a narrow range but argues well can access the higher level marks. Weaker responses are likely to have limited understanding of why rainfall is significant in determining the location of different temperate environments and will be unable to make the connection to soils, nutrient cycling, and fire or water stress. Such candidates are unlikely to have their answers well exemplified and may only address one environment.

10 Discuss the extent to which strategies at the national scale have been instrumental in the sustainable management of temperate environments. [25]

The focus of the question is on national strategies but, in fact, good answers could include as much about global, regional and local scales. The reasons for sustainable management should be included demonstrating some knowledge of such aspects as habitat and biodiversity loss. As a physical geography paper some knowledge of concepts and theories such as of the functioning of the relevant ecosystems is necessary. The management of temperate environments is complicated by the number of 'players' involved in the decision making. These players operate at a range of scales and with a greatly different weight, both politically and financially. Despite the inequalities, it is increasingly being acknowledged that consent is impossible without involvement of a great many people and this at a range of scales, from the individual through to the international community. It is hoped that a number of examples will be used to exemplify this and from numerous scales, from the individual farmer through to the large corporations and government level planning. It is hoped that candidates will discuss how these levels of decision making need to complement one another in common debate and consideration in order to produce effective management strategies that are sustainable. The UK operating within the framework of European legislation would be an appropriate example. Some candidates may mention examples of where management has only been considered at one level (e.g. governmental) and has consequently been met with fierce resistance and failure.

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Stronger responses will include an implicit if not explicit understanding of the physical processes within these environments and some of the concepts involved to make the environment sustainable like habitat and biodiversity loss. They will be well exemplified and will be able to link the nature of management to success and sustainability.

Weaker responses are unlikely to be well supported by way of exemplification and are unlikely to appreciate the equal need for a multiple level approach to management, finding it difficult to justify why different players are needed in terms of guaranteeing success and sustainability. They may write about schemes at some levels without making links between them.

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The Atmospheric Environments

11 Discuss the relative contributions of vertical and horizontal transfers of energy in influencing the location and characteristics of two contrasting global climatic zones. [25]

The contrasts could be between arid versus humid, cold versus hot or tropical versus temperate. Whichever classification is selected the choice should be made clear from the outset. An appropriate starting point might be the general circulation of the atmosphere and a diagram could clarify the argument provided it is well integrated into the text. An understanding of the heat surplus at the Equator counterbalanced by the deficit at the Poles could also be fundamental. Candidates need to be able to make the distinction between horizontal and vertical movements and there should be awareness of the meeting of contrasting air masses if the vertical is to be really well exemplified so ideally the ITCZ and or The Polar Front are the obvious examples to choose. However, good use could be made of the STHPB as well.

As well as between the major cells there are variations within the global climatic zones which some of the best candidates might mention 'other factors' such as relief, ocean currents and continentality which may be found within the global climatic zones. This may be a useful discriminator for the best candidates.

Stronger responses will have a good global awareness of the movement of air and energy transfer, be able to include a well-annotated diagram as integral to their answer and discuss the relative contributions and reach a conclusion in the secure, clearly outlined context of two contrasting climatic zones. The conclusion will be the result of the discussion provided within the answer.

Weaker answers may be able to provide a diagram of the general circulation and choose two contrasting zones. However their analysis of the energy transfer within that zone is less clear and there is little discussion of horizontal as against vertical energy transfer. Most will be able to associate energy as meaning heat and be able to discuss warm and cold air but may be less certain about air masses and fronts.

12 Examine the processes which cause monsoons and explain why monsoons may be hazardous. [25]

The definition of a monsoon may appear at the beginning of the answer in order to provide an unequivocal context. Location may appear as part of that definition. However, the concept of monsoonal rain may not be restricted only to the SE Asian monsoon and as such, explanations of ITCZ migration and associated African monsoons is worthy of credit and might well serve as a central tenet for the response. Some candidates may refer to any intense periods of rainfall such as flash floods too. The European monsoon could be relevant as well. Thus sensible, relevant exemplification will be worthy of credit. However, it is expected that a great many candidates will focus on the Asian monsoon and the causes for this are complex. It is expected that candidates will have developed a reasonable understanding of the causes that will include the role of the ITCZ and pressure differences between the Bay of Bengal and the Tibetan plateau. The resulting rain bearing winds will be discussed. To reinforce the argument well-annotated maps illustrating the position of the ITCZ pressure and winds will be highly appropriate. The movement of the ITCZ seems to be the principal control with the mountains and continentality intensifying the seasonal conditions. The second part of the question asks for an explanation of the hazard and it is expected that candidates will focus both on the nature of the rain and the high rates of run off generated, the vulnerability of the people and their capacity to cope with sudden deluges. There are a great many examples to support this discussion and it is hoped that candidates will draw on contemporary exemplification. Candidates may also mention the current unreliability of the

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monsoon which would be a welcome addition to any answer. Wet and dry monsoons are a useful dimension to answers but the distinction is not essential.

Stronger responses will have a clear knowledge and understanding of the physical processes as well as an understanding of the impact of the rainfall through a combination of physical inevitability and human vulnerability. Weaker responses are likely to give an unbalanced account, possibly relying more on the second part of the question and the reasons for the hazardous impact. These answers will lack a strong physical basis to the cause of monsoons and will also tend to lack understanding of the complex combination of factors behind their frequently potent impact.