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# **Mark Scheme (Results)**

Summer 2017

Pearson Edexcel GCE in  
Geography (6GE03)  
Unit 3: Contested Planet

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## General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

## SECTION A

Question Number	Question	
<b>1a</b>	Using Figure 1 and your own knowledge, suggest reasons why a country's energy security might increase or decrease over time. (10)	
	Indicative content	
<p>Answers should focus on why energy security changes over time, both improving and declining. The USA and Figure 1 can be used as a starting point, but other countries can be discussed. Figure 1 shows an energy security index where high bars are less secure and low bars are more secure. Reasons that could be considered include:</p> <ul style="list-style-type: none"> <li>• <b>Domestic fossil fuels supplies:</b> large reserves of oil, gas, coal make countries secure (Russia, Saudi Arabia), so much so that they can be exported in many cases; when reserves start to decline (national peak oil) security falls – this might be seen post peak oil/gas for the USA in the 1970s; rising demand e.g. in NICs can rapidly deplete domestic supplies and lead to importation, decreasing security.</li> <li>• <b>New technology/new discoveries:</b> these could increase security by increasing domestic supplies; this is what has happened in the USA with fracking for oil and gas; new discoveries of oil fields off the coast of Brazil might be mentioned as increasing supplies in the future.</li> <li>• <b>Prices:</b> rising prices for fossil fuels could increase insecurity as they suggest supply is falling and demand rising, so competition for resources – this might be seen in the mid-2000s on Fig 1, and possibly in the 'forecast' as supply tightens in the future.</li> <li>• <b>Domestic renewables/alternatives:</b> switching to renewables such as wind, solar, HEP can increase security as these are domestic sources but they might be considered unreliable/intermittent in which case security could be compromised; the idea of an energy mix could be mentioned as being more secure than 1 or 2 sources.</li> <li>• <b>Events:</b> geopolitical issues such as the 2006/2009 Russia/Ukraine dispute can disrupt supplies, as can conflicts such as the Gulf War, or hazards such as Katrina in 2005. 1970s oil crises / Iranian revolution may be mentioned.</li> </ul> <p><b>NB:</b> The question is about reasons; credit relevant reasons and explanations if the answer misinterprets the graph i.e. sees higher bars as more secure, but the reasoning is logical.</p>		
Level	Mark	Descriptor
<b>Level 1</b>	1-4	<ul style="list-style-type: none"> <li>• Descriptive of Figure 1, with a few ideas on security but not in depth.</li> <li>• Structure is poor or absent.</li> <li>• Geographical terminology is rarely used with accuracy. There are frequent grammar, punctuation and spelling errors.</li> </ul>
<b>Level 2</b>	5-7	<ul style="list-style-type: none"> <li>• Some range of reasons but some are more in-depth than others; unbalanced on increase / decrease.</li> <li>• Structure is satisfactory.</li> <li>• Geographical terminology is used with some accuracy. There are some grammar, punctuation and spelling errors.</li> </ul>
<b>Level 3</b>	8-10	<ul style="list-style-type: none"> <li>• Range of detailed reasons for increase and decrease with some support.</li> <li>• Structure is good. Explanations are always clear.</li> <li>• Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are rare.</li> </ul>

Question Number	Question	
<b>1b</b>	Using named examples, assess the extent to which TNCs are the most powerful players influencing the global supply of energy. (15)	
	Indicative content	
<p>The question is focused on players, and the expectation is that TNCs would be covered in an answer which then moves on to consider other 'players'. TNCs could include supermajors such as Shell, BP and Exxon-Mobil as well as state-owned oil and gas companies such as CNP and Gazprom; there are also electricity generators and gas suppliers (EDF, Centrica) which are trans-national in nature.</p> <p><b>TNCs:</b> Are important in terms of fossil fuel exploration and exploitation of resources; finding new resources and investing in their development.</p> <ul style="list-style-type: none"> <li>• Have global networks of production, processing and supply – especially for transport fuels which businesses and the public rely on; this includes (in some countries) domestic electricity and gas supply.</li> <li>• Have a role in developing new technology and renewables, e.g. BP has invested heavily in these, both to secure supply and conserve energy by using it efficiently, although it has recently scaled this back.</li> </ul> <p><b>Government:</b> In many countries, power networks and generation capacity are state-owned, e.g. France, so TNCs are perhaps less important overall.</p> <ul style="list-style-type: none"> <li>• In addition many large energy TNCs are actually state-owned enterprises but may be as influential as privately run TNCs, e.g. Gazprom, CNP in Africa.</li> <li>• Set energy policy and the 'energy mix', they may be for/against certain energy sources (nuclear) and in some cases provide subsidies to encourage the use of certain energy sources, e.g. renewable like wind</li> </ul> <p><b>OPEC (and GECF):</b> Its role is important, but it does not 'set prices' directly rather it influences price by varying production, which in turn alter the supply/demand balance and can change the oil price.</p> <ul style="list-style-type: none"> <li>• Its role might be seen as less important than it once was.</li> </ul> <p><b>Consumers:</b> May play a role via public perception/pressure to 'allow' the development of some resources (e.g. US fracking) or protest against others (nuclear).</p> <p><b>Environmental groups:</b> Pressure to develop renewable resources for environmental reasons, and conservation of energy to reduce overall demand.</p> <p><b>Overall judgement:</b> Consideration of how important TNCs are, or which types, i.e. private or government owned; could refer to different energy sources, e.g. oil versus renewable or argue that another player such as government is equally or more important.</p>		
Level	Mark	Descriptor
Level 1	1-4	<ul style="list-style-type: none"> <li>• Limited detail and a few general comments about some TNCs, not linked to role in energy supply.</li> <li>• Structure is poor or absent. Explanations are over simplified and lack clarity.</li> <li>• Geographical terminology is rarely used with accuracy. There are frequent grammar, punctuation and spelling errors.</li> </ul>
Level 2	5-8	<ul style="list-style-type: none"> <li>• Some detail on TNCs and what they do, but limited range of ideas; limited consideration other players.</li> <li>• Structure is satisfactory. Explanations are clear, but there are areas of less clarity. <b>No valid assessment of extent.</b></li> <li>• Geographical terminology is used with some accuracy. There are some grammar, punctuation and spelling errors.</li> </ul>
Level 3	9-12	<ul style="list-style-type: none"> <li>• Some detail on TNCs and their role, linked to supply and considers some other players; <b>begins to assess.</b></li> <li>• Structure is good. Explanations are always clear.</li> <li>• Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are rare.</li> </ul>
Level 4	13-15	<ul style="list-style-type: none"> <li>• Detailed assessment of the role of TNCs in relation to other players, supported and <b>makes an overall judgement (s).</b></li> <li>• Carefully structured. Explanations are always clear.</li> <li>• Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are very rare.</li> </ul>

Question Number	Question
<b>2a</b>	Using Figure 2, suggest reasons for the changes in water demand between 2000 and 2050. (10)
	Indicative content
<p>Figure 2 shows water demand by end-use sector, for three global regions as a series of stacked bars. Answers could be organised by global region, or (less likely) by sector.</p> <ul style="list-style-type: none"> <li>• <b>Overall demand</b> rises from about 3000 km<sup>3</sup> in 2000 to 5500 km<sup>3</sup> by 2050 (population growth / resources demand, global affluence)</li> </ul> <p><b>Developed</b></p> <ul style="list-style-type: none"> <li>• Overall demand falls, by around 100km<sup>3</sup> which could be a result of falling/stagnating populations in some countries (Japan).</li> <li>• Farming and irrigation falls the most, likely to be as a result of conservation and improved technology so less water is needed overall; industrial use falls which might be a result of continued deindustrialisation / global shift.</li> <li>• Increasing concerns that overall demand needs to be made more sustainable, leading to changed attitudes to use and conservation.</li> </ul> <p><b>BRICs+</b></p> <ul style="list-style-type: none"> <li>• This group experiences a dramatic increase, almost doubling water use by 2050 and changing from being dominated by farming use in 2000, so other uses in 2050.</li> <li>• Population growth is one explanation (but not for China, Russia) but as farming use falls (greater use of modern irrigation technology) it is not the only explanation.</li> <li>• Huge increases in industrial use suggest continued industrialisation and modernisation, combined with increasing household affluence (rise of middle class consumers) so domestic use grows; this can be linked to a very large rise in water use for electricity (HEP, but also cooling) to supply newly connected households and burgeoning industry.</li> </ul> <p><b>Developing</b></p> <ul style="list-style-type: none"> <li>• One of the biggest changes in industrial use, from almost nothing in 2000 to a large slice in 2050 suggesting these developing and LDC countries are expected to begin the industrial transition.</li> <li>• Domestic use is still quite small in 2050, which could be interpreted as many people still lacking household supply.</li> </ul> <p>NB: answer could be structured by sector (farming, industrial, etc) as well as by country group; either approach is acceptable.</p>	

Level	Mark	Descriptor
<b>Level 1</b>	1-4	<ul style="list-style-type: none"> <li>• Descriptive answer that outlines some changes, but with limited reasoning such as population growth only.</li> <li>• Structure is poor or absent.</li> <li>• Geographical terminology is rarely used with accuracy. There are frequent grammar, punctuation and spelling errors.</li> </ul>
<b>Level 2</b>	5-7	<ul style="list-style-type: none"> <li>• Some explanations which focus on some changes, but does provide reasons for more than one group.</li> <li>• Structure is satisfactory.</li> <li>• Geographical terminology is used with some accuracy. There are some grammar, punctuation and spelling errors.</li> </ul>
<b>Level 3</b>	8-10	<ul style="list-style-type: none"> <li>• A range of explanations for both growth and decline, across the sectors and regions, with some support.</li> <li>• Structure is good.</li> <li>• Explanations are always clear. Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are rare.</li> </ul>

Question Number	Question	
<b>2b</b>	To what extent does the extraction and use of water always lead to environmental problems? (15)	
	Indicative content	
<p>Answers need to focus on environmental issues only, not drift into issues to do with water conflict unless they have a clear environmental link. Extraction and use encompass all aspects of water withdrawal, consumption and disposal of water. The question does not require a separate consideration of extraction and use.</p> <p><b>Groundwater:</b> Can lead to saltwater encroachment in coastal aquifers as excessive water withdrawal lowers the water table leading to the contamination of well by saline water (which can be rectified by artificial recharge of the aquifer).</p> <ul style="list-style-type: none"> <li>Credit the idea that over extraction in general leads to falling water tables, cones of depression around wells, and the need to drill boreholes ever deeper – overall, unsustainable use of groundwater.</li> </ul> <p><b>Salinisation:</b> Often related to groundwater extraction in areas with high evaporation rates, or over use of surface irrigation, the formation of salt crusts on soils can contaminate soil and damage food production.</p> <p><b>Diversion and storage:</b> Overuse of rivers, such as the Colorado, by diverting supply to towns and farming has interfered with natural river discharge to such an extent that riparian ecosystems have disappeared as well as delta wetlands and marshes.</p> <ul style="list-style-type: none"> <li>Megadams (Three Gorges etc.) have a range of well-known environmental problems.</li> <li>The Aral Sea is an extreme consequence of diversion leading to an ecological disaster.</li> <li>There are environmental risks of diversions in terms of movement of alien species.</li> </ul> <p><b>Use and disposal:</b> Many of the world’s rivers are polluted (Ganges) due to waste disposal and sewage, however in many parts of the world water treatment ensures water is returned clean to rivers and much has improved in developed countries in the last 30 years.</p> <p><b>Desalination:</b> This increasingly popular process could be seen as contributing to greenhouse emissions and local marine pollution due to waste discharges into the sea.</p> <p><b>‘Not always’:</b></p> <ul style="list-style-type: none"> <li>There are many examples of more <b>sustainable</b> approaches to water management, e.g. Singapore show that integrated water management can reduce environmental problems even in places where there are intense pressures on water supply.</li> <li>These should be used by stronger answers to address the question of ‘always’.</li> </ul> <p><b>Overall judgement:</b> Likely to argue that most extraction and use has some negatives, but perhaps that some situations / some locations / some scales are more prone to environmental problems; may argue that careful management can reduce many of them.</p>		
Level	Mark	Descriptor
Level 1	1-4	<ul style="list-style-type: none"> <li>Lacks focus on environmental issues; one or two general points about water use, e.g. impacts of dams.</li> <li>Structure is poor or absent. Explanations are over simplified and lack clarity.</li> <li>Geographical terminology is rarely used with accuracy. There are frequent grammar, punctuation and spelling errors.</li> </ul>
Level 2	5-8	<ul style="list-style-type: none"> <li>Limited range of ideas about the use of water, may have some environmental issues within a more general account. <b>No valid assessment of extent.</b></li> <li>Structure is satisfactory. Explanations are clear, but there are areas of less clarity.</li> <li>Geographical terminology is used with some accuracy. There are some grammar, punctuation and spelling errors.</li> </ul>
Level 3	9-12	<ul style="list-style-type: none"> <li>Focus is on environmental issues and linked to water use/extraction situations, but with variable support; <b>begins to assess extent</b> by presenting another view.</li> <li>Structure is good. Explanations are always clear.</li> <li>Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are rare.</li> </ul>

Level 4	13-15	<ul style="list-style-type: none"><li>• Detailed, supported assessment of water use / extraction and the extent to which it brings environmental problems. <b>Makes a judgement (s).</b></li><li>• Carefully structured. Explanations are always clear.</li><li>• Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are very rare.</li></ul>
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Question Number	Question	
<b>3a</b>	Using Figure 3, explain why some threats to ecosystems are larger than others. (10)	
	Indicative content	
<p>No specific ecosystems are mentioned on Figure 3, so reference could be made to any terrestrial or marine ecosystems by way of support. Two threats dominate Figure 3, exploitation and habitat degradation/change.</p> <p>There is some overlap between destruction and degradation, e.g. deforestation could lead to both.</p> <p><b>Exploitation</b></p> <ul style="list-style-type: none"> <li>Accounts for over a third of all threat, possibly reflecting the sheer size of marine ecosystems and the issue of over-fishing (global issue) as well as over-hunting in many of the world's forests (African bushmeat); billions of people rely in part on food from wild places especially in the developing world.</li> </ul> <p><b>Destruction</b></p> <ul style="list-style-type: none"> <li>Could be related to a wide range of activities, with deforestation for timber and for commercial (farming for export) farmland likely to be major causes.</li> <li>Mining would also lead to destruction such as Canada's tar sands, Congo's coltan mines or iron ore mining in Amazonia.</li> </ul> <p><b>Degradation</b></p> <ul style="list-style-type: none"> <li>Small scale farming might be mentioned, and could be related to local demand for food and rising populations; also links to urban sprawl.</li> </ul> <p><b>Climate change</b></p> <ul style="list-style-type: none"> <li>A small threat; it might be linked to specific ecosystems which are under threat today (tundra, coral reefs) or species (amphibians).</li> <li>Arguments that this threat is likely to grow in the future and affect larger areas such as forests, and become more widespread so has a longer term impact.</li> </ul> <p><b>Alien species and disease</b></p> <ul style="list-style-type: none"> <li>Often a fairly local threat, but a widespread one in terms of incidence. Ash die-back; fungi killing amphibians.</li> <li>Might be viewed as relatively minor in terms of impact, e.g. grey versus red squirrels.</li> </ul> <p><b>Pollution</b></p> <ul style="list-style-type: none"> <li>Could be considered local, e.g. water pollution from factories or cities, so only affects a relatively small area.</li> <li>Or a temporary threat caused by accidents etc.</li> </ul>		
Level	Mark	Descriptor
<b>Level 1</b>	1-4	<ul style="list-style-type: none"> <li>Descriptive with limited reasoning; a few generalised causes mentioned but lacks reference to size of threat.</li> <li>Structure is poor or absent.</li> <li>Geographical terminology is rarely used with accuracy. There are frequent grammar, punctuation and spelling errors.</li> </ul>
<b>Level 2</b>	5-7	<ul style="list-style-type: none"> <li>Covers some parts of Figure 3 with some reasons and / or support for some of the threats, begins to consider the size variation.</li> <li>Structure is satisfactory.</li> <li>Geographical terminology is used with some accuracy. There are some grammar, punctuation and spelling errors.</li> </ul>
<b>Level 3</b>	8-10	<ul style="list-style-type: none"> <li>Range of reasons clearly linked to why some threats are larger than others, with support.</li> <li>Structure is good. Explanations are always clear.</li> <li>Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are rare.</li> </ul>

Question Number	Question
<b>3b</b>	Using named examples, assess the relative importance of physical and human factors influencing levels of biodiversity. (15)
	Indicative content

Answers should focus on both physical factors which determine the level of biodiversity and human factors which tend to reduce it; stronger answers might recognise that some human actions can conserve or even enhance (in rare cases) biodiversity.

**Physical:** these factors set the natural pattern and include:

- **Limiting climate factors:** These determine the broad global pattern with low latitude areas having high biodiversity and high latitude area lower levels; extreme regions where limiting factors restrict growth, i.e. extreme cold, aridity and lack of sunlight in Antarctic, the Arctic. Species need to be specially adapted to survive in the hostile environments – whereas close to the equator where heat, light and moisture are always available and seasonality is minimal; conditions maximise biomass and stratification producing a wide range of niches and continual growth.

**Other physical factors alter the broad pattern locally:**

- **Transition environments:** coasts (estuaries for instance) may contain a mix of terrestrial and marines species as there are many ecological niches.
- **Endemism:** unique species have evolved on islands, e.g. Indonesia, Madagascar, Galapagos due to isolation; age and size of an area also play a role.
- **Altitudinal zonation:** rapid change in temp/rainfall over short distance produces many different ecosystems all with different species due to numerous ecological niches.
- **Soils and drainage:** locally these can produce a range of different physical environments occupied by different organisms with particular adaptations.

**Human factors** alter levels from what might naturally be expected due to:

- ecosystem destruction/degradation; extinction in some cases
- conservation which stops decline, or in rare cases restoration which could return biodiversity to close to normal levels, e.g. eradication of alien species; breeding and release programmes might reintroduce species.
- Credit consideration of contemporary climate change as a physical or human factor (either).

**Overall judgement:**

Physical factors could be considered the most important, with climate playing the key role and other physical influences important locally; human factors might be considered more important today, or in some locations.

**Max 10 if only physical or human factors.**

Level	Mark	Descriptor
Level 1	1-4	<ul style="list-style-type: none"> <li>• A few general comments about levels of biodiversity; may lack a full understanding of the concept.</li> <li>• Structure is poor or absent. Explanations are over simplified and lack clarity.</li> <li>• Geographical terminology is rarely used with accuracy. There are frequent grammar, punctuation and spelling errors.</li> </ul>
Level 2	5-8	<ul style="list-style-type: none"> <li>• Covers a limited range of factors, with variable detail but some human and physical, <b>lacks valid assessment.</b></li> <li>• Structure is satisfactory. Explanations are clear, but there are areas of less clarity.</li> <li>• Geographical terminology is used with some accuracy. There are some grammar, punctuation and spelling errors.</li> </ul>
Level 3	9-12	<ul style="list-style-type: none"> <li>• Covers both physical and human factors, with some detail for but may be unbalanced and <b>begins to assess importance.</b></li> <li>• Structure is good. Explanations are always clear.</li> <li>• Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are rare.</li> </ul>
Level 4	13-15	<ul style="list-style-type: none"> <li>• <b>Detailed assessment of the relative importance</b> of both factors, which are exemplified and compared.</li> <li>• Carefully structured. Explanations are always clear.</li> <li>• Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are very rare.</li> </ul>

Question Number	Question	
<b>4a</b>	Using Figure 4, suggest possible economic and geopolitical consequences of the three futures shown. (10)	
	Indicative content	
Figure 4 shows three possible futures, expect some use to be made of the map and balanced coverage of economic and geopolitical:		
	Economic	Geopolitical
European super state	<ul style="list-style-type: none"> <li>• Possible benefits of eastward expansion in terms of lower production costs.</li> <li>• Some might argue Europe's economic problems will not be improved by adding more weak economies.</li> </ul>	<ul style="list-style-type: none"> <li>• Tensions with Russia as EU expands east (Turkey, Ukraine, Belarus).</li> <li>• Further encourages migration from Africa/Middle East and possible instability as a result.</li> <li>• Could argue that a larger EU is even harder to manage due to 30+ national views and cultural differences, e.g. if Turkey joined.</li> </ul>
Colonial China	<ul style="list-style-type: none"> <li>• Possible economic benefits for countries tied to China; jobs and export revenue from natural resources; infrastructure development and investment.</li> <li>• Exploitation of resources and workers in Africa and Asian satellites; economic dependency.</li> <li>• China boosted by cheap natural resources so continued economic growth.</li> </ul>	<ul style="list-style-type: none"> <li>• Concerns about military expansion from NATO; USA/Vietnam, Philippines.</li> <li>• Flashpoints in the Pacific sphere with US allies Japan and SK.</li> <li>• Geopolitical concerns about Chinese neo-colonialism altering power balances in some regions, e.g. Africa.</li> </ul>
Pacific Free Trade Zone	<ul style="list-style-type: none"> <li>• Expansion of trade across the Pacific benefiting all countries.</li> <li>• Improved QoL and opportunities in NICs such as Mexico, Ecuador.</li> <li>• Strengthening of USA as reserve currency country and world's largest economy.</li> </ul>	<ul style="list-style-type: none"> <li>• Rival economic sphere to the EU, and possible decline in that region.</li> <li>• USA turns west, away from the EU and NATO; new military alliances.</li> <li>• Shift in global economic centre of gravity.</li> <li>• Show-down with China more likely?</li> </ul>
Level	Mark	Descriptor
<b>Level 1</b>	1-4	<ul style="list-style-type: none"> <li>• Descriptive answer with a few general comments; simplistic and unclear on economic and geopolitical.</li> <li>• Structure is poor or absent.</li> <li>• Geographical terminology is rarely used with accuracy. There are frequent grammar, punctuation and spelling errors.</li> </ul>
<b>Level 2</b>	5-7	<ul style="list-style-type: none"> <li>• Explains some consequences, with implied economic and geopolitical ideas but unbalanced futures / eco and geopol.</li> <li>• Structure is satisfactory.</li> <li>• Geographical terminology is used with some accuracy. There are some grammar, punctuation and spelling errors.</li> </ul>
<b>Level 3</b>	8-10	<ul style="list-style-type: none"> <li>• Clear economic and geopolitical suggestions which are realistic and balanced across the three different futures shown.</li> <li>• Structure is good. Explanations are always clear.</li> <li>• Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are rare.</li> </ul>

Question Number	Question	
<b>4b</b>	Using named examples, assess the extent to which superpower status is determined largely by military power. (15)	
	Indicative content	
<p>The question is focused on military power, but other types of power will be relevant in a discussion of the extent to which military power is the most important type (or not). Different approaches could be taken including:</p> <p><b>Change over time</b></p> <ul style="list-style-type: none"> <li>Arguments that military power was important in the colonial/imperial era, e.g. the British Empire, as a means of direct control/hard power, but could be seen as less important today.</li> <li>Differences between the exercise of military power in the past versus the threat of military action during the Cold War.</li> <li>Possible resurgence in military action as a power mechanism, e.g. Russian actions in Georgia in 2008 or Ukraine in 2013-14, plus the military threat of ISIS in the Middle East; Syria in 2015.</li> </ul> <p><b>Global reach and technology</b></p> <ul style="list-style-type: none"> <li>Ability to act globally, rather than in a local or regional sphere, such as the British Navy during the imperial era, or the current US network of bases and aircraft carriers that allow it to act almost anywhere.</li> <li>China's ambitions regarding its own armed forces and 'blue water' navy might suggest this is still seen as an important characteristic of a superpower.</li> <li>Nuclear weapons, which are a global threat (ICBMs) and are owned by only a small group of powerful nations, plus drone technology that allows global deployment.</li> </ul> <p><b>Other factors</b></p> <ul style="list-style-type: none"> <li>Arguments based on the need for hard, soft and smart power or direct/indirect mechanisms; possibly based on the idea of the 'pillars of power'.</li> <li>The importance of cultural influence through film, music, media, brands leading to dominant 'western' cultural views, and the lack of cultural power of some countries (China).</li> <li>Global IGOs and their influence (UN, WB/IMF, WTO).</li> <li>Economic power as the base for investing in technology and military capacity.</li> </ul> <p>Expect some discussion of other factors with L3 and above answers.</p> <p><b>Overall judgement:</b> Military power might be argued as less important than in the past, or resurgent but a likely position is that it is only one of many different mechanisms; some might argue economic power is the most important element.</p>		
Level	Mark	Descriptor
Level 1	1-4	<ul style="list-style-type: none"> <li>One or two general ideas on military power; descriptive statements about capability.</li> <li>Structure is poor or absent. Explanations are over simplified and lack clarity.</li> <li>Geographical terminology is rarely used with accuracy. There are frequent grammar, punctuation and spelling errors.</li> </ul>
Level 2	5-8	<ul style="list-style-type: none"> <li>Some detail on military power and its importance but limited consideration of other factors, <b>no valid assessment of extent</b>.</li> <li>Structure is satisfactory. Explanations are clear, but there are areas of less clarity.</li> <li>Geographical terminology is used with some accuracy. There are some grammar, punctuation and spelling errors.</li> </ul>
Level 3	9-12	<ul style="list-style-type: none"> <li>Some details on military power and other factors, and <b>begins to assess</b> but with variable support.</li> <li>Structure is good. Explanations are always clear.</li> <li>Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are rare.</li> </ul>

Level 4	13-15	<ul style="list-style-type: none"><li>• Detailed, supported consideration of military power from different perspectives <b>within a wider assessment of extent</b> of many forms of power.</li><li>• Carefully structured. Explanations are always clear.</li><li>• Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are very rare.</li></ul>
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Question Number	Question	
<b>5a</b>	(a) Using Figure 5, comment on how the types of technology shown could improve the lives of people in Bangladesh. (10)	
	Indicative content	
<p>The photographs show a breached flood embankment in Bangladesh caused by flooding from a tropical cyclone and the second shows a rural scene showing quality of life. Answers should focus on how the four types of technology could improve the situation, but the command 'comment on' invites a consideration of their suitability:</p> <p><b>There is more than one acceptable approach:</b> answers might focus on the flood situation shown and / or consider the technologies in a more generic / developmental way.</p> <p><b>Communications technology</b></p> <ul style="list-style-type: none"> <li>• Most likely to be seen as providing warnings (radio, TV) of cyclones and this is widely done by mobile phone (texts, mobile internet for forecasts) but could also be used to ask for help, and by relief agencies to communicate during relief efforts.</li> <li>• Could save lives, but does little to prevent damage; might be seen as available to some people but not others due to costs.</li> </ul> <p><b>Intermediate technology</b></p> <ul style="list-style-type: none"> <li>• The breached flood embankment looks like it was made by local people, so repairing it locally could be seen as an intermediate solution (although it is clearly not a sufficient defence).</li> <li>• Other low cost solutions using local materials and local expertise might include better homes, to resist the impact of cyclones, or better solutions for getting clean water or storing food – to cope with the aftermath; it might be seen as not very useful in the face of a tropical cyclone.</li> </ul> <p><b>Civil engineering</b></p> <ul style="list-style-type: none"> <li>• Better flood embankments, and even complex flood defence solutions (Thames barrier); these could in theory prevent this type of disaster occurring.</li> <li>• There are cost issues, and these solutions are likely to be unaffordable; some could comment that sea level rise makes them even more difficult to implement.</li> </ul> <p><b>GM farming technology</b></p> <ul style="list-style-type: none"> <li>• Possible use in terms of flood resistant crops that can stand being submerged in water/salt water and therefore providing a post-cyclone food supply.</li> <li>• Some might comment that GM crops have yet to be developed in this way, possibly because of lack of profits for GM TNCs; this technology represents a different order of challenge to the other three.</li> </ul>		
Level	Mark	Descriptor
<b>Level 1</b>	1-4	<ul style="list-style-type: none"> <li>• Descriptive use of the photograph(s) with some comments about one or two of the technologies, but not in depth.</li> <li>• Structure is poor or absent.</li> <li>• Geographical terminology is rarely used with accuracy. There are frequent grammar, punctuation and spelling errors.</li> </ul>
<b>Level 2</b>	5-7	<ul style="list-style-type: none"> <li>• Identifies a range of ways technology might help, with variable detail; linked to the photographs shown but lacking breadth/depth of comment.</li> <li>• Structure is satisfactory.</li> <li>• Geographical terminology is used with some accuracy. There are some grammar, punctuation and spelling errors.</li> </ul>
<b>Level 3</b>	8-10	<ul style="list-style-type: none"> <li>• Detailed coverage of the technologies shown, linked to the photographs and how quality of life might be improved; may question the value of some technologies.</li> <li>• Structure is good. Explanations are always clear.</li> <li>• Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are rare.</li> </ul>

Question Number	Question
<b>5b</b>	To what extent can variations in access to different technologies be explained by personal and national income? (15)
	Indicative content

This question focuses on the idea that income level, personal wealth and/or national income, is the primary explanation for access to technology. Less successful answers are likely to argue this is the case whereas more successful responses should broaden the answer out to consider other factors:

#### **Wealth**

- Wealth might be seen to broadly correlate with access to technology; car ownership, access to electricity and use of consumer goods follows a rough 'north-south' pattern although made more subtle by NICs.
- The widely known idea of the digital divide is also broadly correlated to wealth; higher income groups can afford access to better and a wider range of technologies whereas the poorest areas, e.g. Sub-Saharan Africa have limited access, especially in rural areas.

#### **Leapfrogging**

- Mobile technologies such as solar panels, mobile phones, OLPC and others might be seen as showing that wealth is not always the key factor; very low cost handsets and contracts have made mobiles available to many poor people.
- This argument applies to some technologies, but not others; royalties and patents might be seen as barriers to further technology transfer.

#### **Social/cultural**

- In some, very limited cases access to technology is affected by socio-cultural factors, e.g. contraception, the Amish and other groups. Stronger answers will recognise the small scale nature of this.

#### **Political**

- North Korea could be mentioned as deliberate political denial of technology, but is a rare case.
- More successful answers might argue that China tends to politically limit content, rather than the carrier technology.

#### **Physical**

- Isolation/rurality could be seen to limit access to technology; partly this is based on the high cost of connections but there are also genuine physical barriers in some cases.

**Overall judgement:** A case could be made that wealth sets the broad context, within which other factors play an important role in explaining smaller scale variations; some technologies seem to be increasingly ubiquitous as they are capable of leapfrogging.

Level	Mark	Descriptor
Level 1	1-4	<ul style="list-style-type: none"> <li>• One or two general ideas, poorly linked to technology and simplistic. Structure is poor or absent.</li> <li>• Explanations are over simplified and lack clarity.</li> <li>• Geographical terminology is rarely used with accuracy. There are frequent grammar, punctuation and spelling errors.</li> </ul>
Level 2	5-8	<ul style="list-style-type: none"> <li>• A limited range of ideas but does consider income differences as a cause, but with limited support; may mention other factors in passing. <b>No valid assessment of extent.</b></li> <li>• Structure is satisfactory. Explanations are clear, but there are areas of less clarity.</li> <li>• Geographical terminology is used with some accuracy. There are some grammar, punctuation and spelling errors.</li> </ul>
Level 3	9-12	<ul style="list-style-type: none"> <li>• Some range of factors are considered including income (unbalanced personal / national) and others with some support, <b>begins to assess.</b></li> <li>• Structure is good. Explanations are always clear.</li> <li>• Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are rare.</li> </ul>
Level 4	13-15	<ul style="list-style-type: none"> <li>• A range of factors, including personal and national income are considered in detail with support within an assessment; <b>makes a judgement (s).</b></li> <li>• Carefully structured. Explanations are always clear.</li> <li>• Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are very rare.</li> </ul>

## SECTION B

Question Number	Question	
<b>6a</b>	How far do you agree that Panama is the most developed country of the three countries (Panama, Costa Rica and Nicaragua)? (14)	
	Indicative content	
<p>Answers must focus the three countries; there is no correct answer but evidence from the RB and research must be used to support judgements/conclusions.</p> <ul style="list-style-type: none"> <li>At a basic level, Panama is the wealthiest country in terms of p.c. GDP (Figure 4) by a big margin (\$6000 more than Costa Rica), so could be argued as the most economically developed; Figure 5 suggests its economy is more based on the secondary sector and some hi-tech sectors (medicines) although Costa Rica's exports are also hi-tech in some cases.</li> <li>The photos in Figure 7 could suggest Panama is a very unequal country, which some will interpret as showing a lack of genuine development.</li> <li>A strong case could be made for Costa Rica being the most developed based on the evidence/data: it is the most politically 'free' according to Figure 2, and closest to the developed countries at the top of the list.</li> <li>Figure 4 suggest Costa Rica is socially more developed; it has the lowest population aged 0-14 (further along the DTM) and the highest access to electricity as well as the lowest infant mortality (available healthcare), plus it is the most urban and lest agricultural. See View 2.</li> <li>Nicaragua scores lowest on almost all economic and social measures and its economy is more primary sector based than Panama or Costa Rica (Fig 4).</li> <li>Figure 3, the HPI, might be seen as showing Costa Rica as the most developed as it is the 'happiest' but better answers should question whether the HPI does measure 'development', especially the applicability of ecological footprints to development; credit arguments that Costa Rica could be seen as the country most able to demonstrate 'sustainable development'</li> </ul> <p><b>Overall judgement:</b> There should be a clear judgement in L4, supported by the evidence used.</p> <p><b>Synoptic linkages</b></p> <ul style="list-style-type: none"> <li>Other development indicators not covered in the RB, e.g. HDI, GDI</li> <li>Comparisons to other countries from research; Rostow model/modernisation theory idea.</li> <li>Links to development/country classifications from Unit 1.</li> </ul>		
Level	Mark	Descriptor
Level 1	1-3	<ul style="list-style-type: none"> <li>Limited use of data, a few general comments, simplistic.</li> <li>Structure is poor or absent. Explanations are over simplified and lack clarity.</li> <li>Geographical terminology is rarely used with accuracy. There are frequent grammar, punctuation and spelling errors.</li> </ul>
Level 2	4-7	<ul style="list-style-type: none"> <li>Limited direct use of data, but it is referred to and used to support a <b>one-way case</b>.</li> <li>Structure is satisfactory. Explanations are clear, but there are areas of less clarity.</li> <li>Geographical terminology is used with some accuracy. There are some grammar, punctuation and spelling errors.</li> </ul>
Level 3	8-11	<ul style="list-style-type: none"> <li>Good use of evidence, data is quoted and a range is used; a case is made in relation to Panama and <b>alternative interpretations</b> are suggested.</li> <li>Structure is good. <b>Some reference to wider links</b>.</li> <li>Explanations are always clear. Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are rare.</li> </ul>
Level 4	12-14	<ul style="list-style-type: none"> <li>Good use of all relevant evidence which is used to support a full consideration leading to a <b>clear judgement</b>.</li> <li>Carefully structured. <b>Strong synoptic links</b>.</li> <li>Explanations are always clear. Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are very rare.</li> </ul>



Question Number	Question
<b>6b</b>	Explain why different groups of people within the three countries experience contrasting levels of wealth and poverty. (12)
	Indicative content

A range of different groups are mentioned in the RB which should be covered, along with explanations for their relative wealth or poverty:

#### **Urban/rural**

- Urban poverty levels are lower than rural; urban areas have greater employment opportunities especially in capital cities (Fig 7a – jobs in hotels, offices) increasing wealth; there is evidence of a wealthy urban elite in Panama (Fig 7a, reference to banking sector) but also urban poverty in Colon (7c) perhaps explained by being a more peripheral city.
- However, working in the informal economy will mean lower wages, lacks of job security, ephemeral employment/underemployment and poverty – especially in Nicaragua where informal employment is close to 50%.
- The information on tourism could be used to support the idea that people getting jobs in this growth sector may have been lifted out of poverty.
- Migrants from other countries e.g. in Panama City, or in Costa Rica.

#### **Ethnicity**

- In Panama, Colon has a larger black population compared to the European population in Panama City; explanations could refer to discrimination in the jobs market, prejudice and the formation of ghettos.

#### **Indigenous groups**

- The RB makes reference to indigenous groups in Panama (80% live in poverty) and Nicaragua in View 3; these groups are likely to be rural, isolated, lack access to education and suffer discrimination so their opportunities are limited.

#### **Remittances**

- These are significant in all countries (fig 6) but especially so in Nicaragua (19% of GDP; they will raise the income of some families, but not others.
- Remittances might also suggest a 'brain drain' abroad, which could be seen as a cause of poverty as the best people leave.

#### **Education**

- Progress in education seems to have stalled in the three countries, and even declined slightly in recent years (Fig 8), and many Nicaraguan children are not in school (View 1).
- This is likely to mean poverty persists for some groups, who can't access the advantages a decent education brings.

#### **Synoptic linkages**

Unit 1 migration and globalisation

Credit ideas that the data is hard to compare.

Level	Mark	Descriptor
Level 1	1-4	<ul style="list-style-type: none"> <li>• Descriptive of differences, lifting some information from the RB but lacking explanation.</li> <li>• Structure is poor or absent. Explanations are over simplified and lack clarity. Geographical terminology is rarely used with accuracy. There are frequent grammar, punctuation and spelling errors.</li> </ul>
Level 2	5-8	<ul style="list-style-type: none"> <li>• Explains some differences between groups / countries, and provides some explanations for these but variable detail.</li> <li>• Structure is satisfactory.</li> <li>• Explanations are clear, but there are areas of less clarity. Geographical terminology is used with some accuracy. There are some grammar, punctuation and spelling errors.</li> </ul>
Level 3	9-12	<ul style="list-style-type: none"> <li>• Explains a range of differences using evidence from the RB, and provides a number of different groups; detailed explanations.</li> <li>• Structure is good. Explanations are always clear. <b>Synoptic links may be made.</b></li> <li>• Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are very rare.</li> </ul>

Question Number	Question
<b>6c</b>	Assess the extent to which focusing investment on transoceanic mega-projects represents the best approach to development for this part of Central America (14)
	Indicative content

The question poses the idea that the mega-projects are the 'best' approach to development, so expect their advantages and disadvantages to be considered. More successful answers should go on to consider if other approaches might be more suitable; tourism/ecotourism is one possible approach covered in the RB but others could be considered:

**Transoceanic mega-projects**

Advantages	Disadvantages
<ul style="list-style-type: none"> <li>• An existing, important trade route so expansion is possible; taking advantage of increasing globalisation.</li> <li>• Container trade (Fig 11) is growing so could increase incomes (although growth has slowed and is recession prone).</li> <li>• Major potential to create jobs in construction (View 4), some of which may last for years as the projects have long timescales.</li> <li>• Projects could act as a catalyst for further industrialisation especially if combined with FTZs or similar; they many encourage FDI.</li> </ul>	<ul style="list-style-type: none"> <li>• Long term job numbers are not known; they may be few in number because most of the shipping is just passing through.</li> <li>• The costs are very large, meaning either borrowing money (debt) or relying on foreign money (neo-colonialism?) – could the money be better spent?</li> <li>• The technical feasibility of some projects is unclear, and if all were to go ahead competition might drastically thin out the benefits.</li> <li>• Water supply is an issue – can local water supplies support the locks.</li> <li>• There is a risk to biodiversity in this hotspot region of huge engineering projects that cut across countries.</li> <li>• In Nicaragua there have been protests against the scheme over land rights; projects such as this often negatively affect the poorest.</li> </ul>

- The general argument here is likely to be one of economic benefits versus costs to people and the environment.
- These are the ultimate top-down development projects, and could be contrasted with more bottom-up or grassroots approaches.

**Tourism/ecotourism**

- Could be seen as an alternative approach, as it is already a large, significant industry which contributes between 8% and 12% of GDP in the region.
- Ecotourism uses the regions abundant natural resources while at the same time conserving them.
- It is a global growth industry, but could be seen as already saturated in this region and there are issues with jobs in tourism (exploitative, seasonal, low paid, poor working conditions).

**Others**

- Many other approaches could be mentioned; these are likely to be more bottom-up and include slum-upgrading (Fig 7c), intermediate technology to improve conditions in rural areas (water supply, farming).
- Some might argue that Panama and Nicaragua need to follow Costa Rica's lead by investing in health and education, rather than mega-projects, which are likely to benefit more people.

**Overall judgement:**

Might include decisions that some transoceanic schemes are better than others; could contrast economic benefits as outweighing environmental costs; an alternative is to argue that this 'mega' approach is weaker than other types of development (will depend on the examples used in support).

**Synoptic linkages**

Research/use of other parallel or contrasting development projects and styles to draw out the advantages and disadvantages.

Level	Mark	Descriptor
Level 1	1-3	<ul style="list-style-type: none"> <li>• One or two general ideas in a descriptive answer.</li> <li>• Structure is poor or absent. Explanations are over simplified and lack clarity. Geographical terminology is rarely used with accuracy. There are frequent grammar, punctuation and spelling errors.</li> </ul>
Level 2	4-7	<ul style="list-style-type: none"> <li>• Explains some advantages/disadvantages of the mega-projects only, with some reference to the RB; variable detail.</li> <li>• Structure is satisfactory. Explanations are clear, but there are areas of less clarity.</li> <li>• Geographical terminology is used with some accuracy. There are some grammar, punctuation and spelling errors.</li> </ul>
Level 3	8-11	<ul style="list-style-type: none"> <li>• Uses the RB resources to consider the positive and negative aspects of the mega-projects in some detail and may begin to consider other approaches.</li> <li>• Structure is good. <b>Some reference to wider links.</b> Explanations are always clear.</li> <li>• Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are rare.</li> </ul>
Level 4	12-14	<ul style="list-style-type: none"> <li>• Detailed, supported consideration of extent by carefully outlining the positive and negatives of the mega-projects and possibly other approaches; includes a <b>considered judgement.</b></li> <li>• Carefully structured. <b>Strong synoptic links.</b></li> <li>• Explanations are always clear. Geographical terminology is used with accuracy. Grammar, punctuation and spelling errors are very rare.</li> </ul>