

# INTERNATIONAL GCSE **GEOGRAPHY**

**9230/2**

Paper 2 Challenges in the Human Environment

---

Mark scheme

November 2024

---

Version: 1.0 Final



2 4 B Y 9 2 3 0 / 2 / M S

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this mark scheme are available from [oxfordaqa.com](https://www.oxfordaqa.com)

#### **Copyright information**

OxfordAQA retains the copyright on all its publications. However, registered schools/colleges for OxfordAQA are permitted to copy material from this booklet for their own internal use, with the following important exception: OxfordAQA cannot give permission to schools/colleges to photocopy any material that is acknowledged to a third party even for internal use within the centre.  
Copyright © 2024 OxfordAQA International Examinations and its licensors. All rights reserved.

## Level of response marking instructions

Level of response mark schemes are broken down into levels, each of which has a descriptor. The descriptor for the level shows the average performance for the level. There are marks in each level.

Before you apply the mark scheme to a student's answer read through the answer and annotate it (as instructed) to show the qualities that are being looked for. You can then apply the mark scheme.

### Step 1 Determine a level

Start at the lowest level of the mark scheme and use it as a ladder to see whether the answer meets the descriptor for that level. The descriptor for the level indicates the different qualities that might be seen in the student's answer for that level. If it meets the lowest level then go to the next one and decide if it meets this level, and so on, until you have a match between the level descriptor and the answer. With practice and familiarity you will find that for better answers you will be able to quickly skip through the lower levels of the mark scheme.

When assigning a level you should look at the overall quality of the answer and not look to pick holes in small and specific parts of the answer where the student has not performed quite as well as the rest. If the answer covers different aspects of different levels of the mark scheme you should use a best fit approach for defining the level and then use the variability of the response to help decide the mark within the level, ie if the response is predominantly level 3 with a small amount of level 4 material it would be placed in level 3 but be awarded a mark near the top of the level because of the level 4 content.

### Step 2 Determine a mark

Once you have assigned a level you need to decide on the mark. The descriptors on how to allocate marks can help with this. The exemplar materials used during standardisation will help. There will be an answer in the standardising materials which will correspond with each level of the mark scheme. This answer will have been awarded a mark by the Lead Examiner. You can compare the student's answer with the example to determine if it is the same standard, better or worse than the example. You can then use this to allocate a mark for the answer based on the Lead Examiner's mark on the example.

You may well need to read back through the answer as you apply the mark scheme to clarify points and assure yourself that the level and the mark are appropriate.

Indicative content in the mark scheme is provided as a guide for examiners. It is not intended to be exhaustive and you must credit other valid points. Students do not have to cover all of the points mentioned in the Indicative content to reach the highest level of the mark scheme.

An answer which contains nothing of relevance to the question must be awarded no marks.

**Section A – Urban issues and challenges****Question 1**

| Qu | Part | Marking guidance                                                                                                                                             | Total marks                           |
|----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| 01 | 1    | <p>Which country in Figure 1 had the largest percentage increase in urban population from 1990–2021?</p> <p>Shade one circle only.</p> <p><b>B</b> China</p> | <p><b>1 mark</b><br/><b>AO4=1</b></p> |

| Qu | Part | Marking guidance                                                                                                                                                                                                               | Total marks                            |
|----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| 01 | 2    | <p>Calculate the mean percentage urban population in 2021 for the countries shown in Figure 1.</p> <p>Show your working.</p> <p>1 mark for some evidence of calculation.<br/>1 mark for correct calculation = <b>66.1</b>.</p> | <p><b>2 marks</b><br/><b>AO4=2</b></p> |

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                        | Total marks                            |
|----|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| 01 | 3    | <p>Compare the changes in the percentage urban population from 1990–2021 between Australia and China.</p> <p>1 mark for basic point of difference – Australia remains constant (nearly constant) while China increases.<br/>1 mark for use of data to support the basic point of difference.<br/>(Australia – plus 1%; China- plus 37%) <b>OR</b> reference to the relative rate of change (Australia-limited/marginal; China – significant change)</p> | <p><b>2 marks</b><br/><b>AO4=2</b></p> |

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |           |                                                                                                                                                                                                            | Total marks               |
|----|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| 01 | 4    | Explain the factors that have caused the rapid growth of urban population in LICs.                                                                                                                                                                                                                                                                                                                                                                                                                         |           |                                                                                                                                                                                                            | 4 marks<br>AO1=2<br>AO2=2 |
|    |      | Level 2<br>(Clear)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3–4 marks | Demonstrates clear knowledge and understanding of how migration and natural increase have caused the rapid growth of urban populations in LICs <b>OR</b> offers clear development of one of these factors. |                           |
|    |      | Level 1<br>(Basic)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1–2 marks | Demonstrates some basic awareness of the factors that cause urban growth in LICs. Identifies migration <b>and/or</b> natural increase as factors.                                                          |                           |
|    |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0         | No relevant content.                                                                                                                                                                                       |                           |
|    |      | Indicative content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |                                                                                                                                                                                                            |                           |
|    |      | <ul style="list-style-type: none"><li>• Migration is a key factor and this may be a result of push and pull factors.</li><li>• Pull factors might include: job opportunities, regular incomes, access to services/infrastructure, leisure opportunities.</li><li>• Natural increase is a key factor and is often linked to youthful populations and high fertility rates in LIC cities.</li><li>• The two factors are linked since the majority of migrants tend to be in the fertile age range.</li></ul> |           |                                                                                                                                                                                                            |                           |

| Qu | Part | Marking guidance                                                                                                                                            | Total marks                           |
|----|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| 01 | 5    | <p><b>Complete the bar chart in Figure 2 using the information below.</b></p> <p>Drawn line must touch the 22 point and not the grid lines either side.</p> | <p><b>1 mark</b><br/><b>AO4=1</b></p> |

| Qu | Part | Marking guidance                                                                                                        | Total marks                           |
|----|------|-------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| 01 | 6    | <p><b>What is the range of the data shown in Figure 2?</b></p> <p><b>Shade one circle only.</b></p> <p><b>D 40%</b></p> | <p><b>1 mark</b><br/><b>AO4=1</b></p> |

| Qu                    | Part         | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Total marks           |              |                                                                                                                                                                                                                        |                    |              |                                                                                                                                                                                                                                   |                    |              |                                                                                                                                            |  |   |                      |                                                         |
|-----------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------|--|---|----------------------|---------------------------------------------------------|
| 01                    | 7            | <p><b>‘Urban growth creates more opportunities than challenges in LIC/NEE cities.’</b></p> <p><b>Discuss this statement using Figure 3 and an example from either an LIC or NEE city you have studied.</b></p> <p>Max 3 marks for either opportunities or challenges (with reference to Figure 3 and some exemplification).</p> <table><tr><td>Level 3<br/>(Detailed)</td><td>5–6<br/>marks</td><td>Demonstrates detailed and accurate knowledge and understanding to offer an appreciation of the opportunities and challenges created by urban growth in a named LIC or NEE city and makes a relative judgement of each.</td></tr><tr><td>Level 2<br/>(Clear)</td><td>3–4<br/>marks</td><td>Demonstrates clear knowledge and understanding which offers an appreciation of the opportunities and challenges created by urban growth with some reference to a named city and an attempt to offer a relative judgement of each.</td></tr><tr><td>Level 1<br/>(Basic)</td><td>1–2<br/>marks</td><td>Identifies a limited number of opportunities <b>and/or</b> challenges which are related to urban growth with limited locational reference.</td></tr><tr><td></td><td>0</td><td>No relevant content.</td></tr></table> <p><b>Indicative content</b></p> <p>Opportunities might include:</p> <ul style="list-style-type: none"><li>• social opportunities (access to health services/education; links to basic facilities such as water and electricity; availability of shops and leisure facilities)</li><li>• economic opportunities (formal employment, manufacturing and services; informal employment; training opportunities; business opportunities).</li></ul> | Level 3<br>(Detailed) | 5–6<br>marks | Demonstrates detailed and accurate knowledge and understanding to offer an appreciation of the opportunities and challenges created by urban growth in a named LIC or NEE city and makes a relative judgement of each. | Level 2<br>(Clear) | 3–4<br>marks | Demonstrates clear knowledge and understanding which offers an appreciation of the opportunities and challenges created by urban growth with some reference to a named city and an attempt to offer a relative judgement of each. | Level 1<br>(Basic) | 1–2<br>marks | Identifies a limited number of opportunities <b>and/or</b> challenges which are related to urban growth with limited locational reference. |  | 0 | No relevant content. | <p><b>6 marks</b><br/><b>AO1=3</b><br/><b>AO3=3</b></p> |
| Level 3<br>(Detailed) | 5–6<br>marks | Demonstrates detailed and accurate knowledge and understanding to offer an appreciation of the opportunities and challenges created by urban growth in a named LIC or NEE city and makes a relative judgement of each.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                       |              |                                                                                                                                                                                                                        |                    |              |                                                                                                                                                                                                                                   |                    |              |                                                                                                                                            |  |   |                      |                                                         |
| Level 2<br>(Clear)    | 3–4<br>marks | Demonstrates clear knowledge and understanding which offers an appreciation of the opportunities and challenges created by urban growth with some reference to a named city and an attempt to offer a relative judgement of each.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                       |              |                                                                                                                                                                                                                        |                    |              |                                                                                                                                                                                                                                   |                    |              |                                                                                                                                            |  |   |                      |                                                         |
| Level 1<br>(Basic)    | 1–2<br>marks | Identifies a limited number of opportunities <b>and/or</b> challenges which are related to urban growth with limited locational reference.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                       |              |                                                                                                                                                                                                                        |                    |              |                                                                                                                                                                                                                                   |                    |              |                                                                                                                                            |  |   |                      |                                                         |
|                       | 0            | No relevant content.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                       |              |                                                                                                                                                                                                                        |                    |              |                                                                                                                                                                                                                                   |                    |              |                                                                                                                                            |  |   |                      |                                                         |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |  |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  |  | <p>Challenges might include:</p> <ul style="list-style-type: none"> <li>• ability to find appropriate housing (Squatter and slum settlements; lack of housing security; lack of services in some areas; lack of basic facilities)</li> <li>• unemployment and crime (exploitation/low income/insecure income).</li> <li>• health issues and disease (Overcrowding/poor water and sanitation facilities increase the risk and spread of disease)</li> <li>• limited access to healthcare and education (Access to healthcare and education might be limited or expensive)</li> <li>• general issues of poverty.</li> </ul> |  |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

| Qu                 | Part         | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | Total marks        |              |                                                                                                                                                        |                    |              |                                                                                                       |  |   |                      |                                                         |
|--------------------|--------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|-------------------------------------------------------------------------------------------------------|--|---|----------------------|---------------------------------------------------------|
| 01                 | 8            | <p><b>‘Urban greening can significantly improve the quality of life for people living in cities.’</b></p> <p><b>To what extent do you agree with this statement?</b></p> <p><b>Use Figure 4 and your own understanding.</b></p> <table><tr><td>Level 2<br/>(Clear)</td><td>3–4<br/>marks</td><td>Clear understanding of what is meant by urban greening and a judgement made about how urban greening can impact particular aspects of quality of life.</td></tr><tr><td>Level 1<br/>(Basic)</td><td>1–2<br/>marks</td><td>Basic awareness of urban greening and generalised point(s) about how it might impact quality of life.</td></tr><tr><td></td><td>0</td><td>No relevant content.</td></tr></table> <p><b>Indicative content</b></p> <ul style="list-style-type: none"><li>• Figure 4 illustrates green space in the city which is used for social and recreational purposes, as well as providing food, which can be considered an economic benefit.</li><li>• Creates a social space for people to meet/support each other.</li><li>• Provides an improved environmental space (air quality/quiet).</li><li>• Reduces traffic within the area.</li><li>• Improves the nearby urban space (residential areas).</li><li>• Can provide food supply/quality, improving diet and health.</li><li>• Can provide an opportunity for people to work together.</li><li>• Increases community cohesion (reduce conflict/crime).</li></ul> | Level 2<br>(Clear) | 3–4<br>marks | Clear understanding of what is meant by urban greening and a judgement made about how urban greening can impact particular aspects of quality of life. | Level 1<br>(Basic) | 1–2<br>marks | Basic awareness of urban greening and generalised point(s) about how it might impact quality of life. |  | 0 | No relevant content. | <p><b>4 marks</b><br/><b>AO2=2</b><br/><b>AO3=2</b></p> |
| Level 2<br>(Clear) | 3–4<br>marks | Clear understanding of what is meant by urban greening and a judgement made about how urban greening can impact particular aspects of quality of life.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                    |              |                                                                                                                                                        |                    |              |                                                                                                       |  |   |                      |                                                         |
| Level 1<br>(Basic) | 1–2<br>marks | Basic awareness of urban greening and generalised point(s) about how it might impact quality of life.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                    |              |                                                                                                                                                        |                    |              |                                                                                                       |  |   |                      |                                                         |
|                    | 0            | No relevant content.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                    |              |                                                                                                                                                        |                    |              |                                                                                                       |  |   |                      |                                                         |

| Qu                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Part | Marking guidance                                                                                                           |              |                                                                                                                                                                                                                                                                | Total marks |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|
| 01                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 9    | Describe the main features of an urban regeneration project you have studied and explain why the area needed regenerating. |              |                                                                                                                                                                                                                                                                |             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      | Level 3<br>(Detailed)                                                                                                      | 7–9<br>marks | Uses an example to demonstrate accurate and detailed knowledge and an understanding of the reasons why a regeneration project was needed (idea of social, economic and environmental considerations) and describes the main features of the project in detail. |             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      | Level 2<br>(Clear)                                                                                                         | 4–6<br>marks | Uses an example to demonstrate accurate and clear knowledge and an appreciation of why a regeneration project was needed (some reference to social, economic and environmental factors) and describes the main features of the project.                        |             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      | Level 1<br>(Basic)                                                                                                         | 1–3<br>marks | Demonstrates some knowledge and understanding of regeneration, either by offering a basic awareness of why a regeneration project might be needed <b>OR</b> by offering a basic description of the general features of regeneration projects.                  |             |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |      |                                                                                                                            | 0            | No relevant content.                                                                                                                                                                                                                                           |             |
| <b>Indicative content</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |      |                                                                                                                            |              |                                                                                                                                                                                                                                                                |             |
| <ul style="list-style-type: none"><li>Urban regeneration may have been required because of a number of reasons, including:<ul style="list-style-type: none"><li>economic reasons linked to general economic decline and limited employment opportunities</li><li>social reasons linked to limited social and leisure opportunities, poverty and poor social and infrastructural opportunities</li><li>environmental reasons linked to the quality of the environment in terms of dereliction and high levels of decay and pollution.</li></ul></li><li>The choice of example will dictate the specific reasons why a regeneration project was needed.</li><li>Accept housing/community developments (Bedzed)</li><li>The main features of the project will be determined by the choice of example used to address the question.</li><li>In most cases regeneration projects have an element of holistic management which attempts to respond to the problems that the particular area is facing.</li><li>Features of a regeneration project may focus on job creation (manufacturing, research and development and service industries), the development of infrastructure (transport hubs and networks), social developments (accessible services, education and training, recreation and leisure opportunities), environmental improvements (green spaces, parks, landscaping, green walkways).</li></ul> |      |                                                                                                                            |              |                                                                                                                                                                                                                                                                |             |
| <b>9 marks</b><br><b>AO1=3</b><br><b>AO2=3</b><br><b>AO3=3</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |      |                                                                                                                            |              |                                                                                                                                                                                                                                                                |             |

**Section B – The changing economic world**

**Question 2**

| Qu | Part | Marking guidance                                                                                    | Total marks                           |
|----|------|-----------------------------------------------------------------------------------------------------|---------------------------------------|
| 02 | 1    | <p><b>In which stage of the DTM does total population increase most rapidly?</b></p> <p>Stage 2</p> | <p><b>1 mark</b><br/><b>AO4=1</b></p> |

| Qu | Part | Marking guidance                                                                                                                           | Total marks                           |
|----|------|--------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| 02 | 2    | <p><b>What does the shaded area on the DTM in Figure 5 show?</b></p> <p><b>Shade one circle only.</b></p> <p><b>D</b> Natural increase</p> | <p><b>1 mark</b><br/><b>AO1=1</b></p> |

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Total marks                            |
|----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| 02 | 3    | <p><b>Give two reasons why the birth rate falls in Stage 3 of the DTM.</b></p> <p>2 × 1 mark</p> <p>Accept any appropriate point.</p> <p>Ideas might include:</p> <ul style="list-style-type: none"> <li>• increased access to contraceptives</li> <li>• the changing position of women/more women working</li> <li>• fewer children dying</li> <li>• increased education/advice</li> <li>• fewer children seen as a labour asset.</li> <li>• later marriages</li> </ul> | <p><b>2 marks</b><br/><b>AO1=2</b></p> |

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |           |                                                                                                                                                                                           | Total marks                                    |
|----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| 02 | 4    | <b>Suggest how historical factors might make economic development more challenging.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |                                                                                                                                                                                           | <b>4 marks</b><br><b>AO2=2</b><br><b>AO3=2</b> |
|    |      | Level 2<br>(Clear)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 3–4 marks | Clear understanding of the historical factors that have made economic development more challenging and a judgement made about how these factors might have affected economic development. |                                                |
|    |      | Level 1<br>(Basic)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1–2 marks | Basic awareness of the historical factors that have made economic development more challenging.                                                                                           |                                                |
|    |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 0         | No relevant content.                                                                                                                                                                      |                                                |
|    |      | <b>Indicative content</b> <ul style="list-style-type: none"><li>• HICs have a long history of industrial and economic development and consequently have a historical economic dominance.</li><li>• Infrastructural development has made economic development and trade more challenging in less developed countries.</li><li>• International trade has historically tended to have a focus on HICs.</li><li>• Protectionist policies have tended to favour HICs.</li><li>• HICs have historically often exploited less developed countries in relation to resources.</li><li>• Post-colonial issues have created conflicts which have cost a lot of money and held back socio-economic investment.</li></ul> |           |                                                                                                                                                                                           |                                                |

| Qu | Part | Marking guidance                                                                                                                          | Total marks                    |
|----|------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| 02 | 5    | <p><b>Which country in Figure 6 increased its GDP per capita by the greatest amount from 1950–2022?</b></p> <p>United States (US/USA)</p> | <p><b>1 mark</b><br/>AO4=1</p> |

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Total marks                            |
|----|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| 02 | 6    | <p><b>Compare the GDP per capita of China and Bangladesh from 1950–2022 shown in Figure 6.</b></p> <p>Any two individual comparative points <b>OR</b> a developed point which identifies two comparative points.</p> <ul style="list-style-type: none"> <li>• Both countries start at nearly the same/similar place in 1950 and remain in this position until about late 1970s.</li> <li>• From about late 1970s/1980 China begins to grow while Bangladesh remains relatively constant.</li> <li>• From 1970 to 2018 the gap between China and Bangladesh gets increasingly larger.</li> <li>• From 1995/2000 they both grow, but China grows at a faster rate.</li> <li>• From 2015–2018 the rate of growth for China slows while Bangladesh continues to grow at a similar rate.</li> <li>• From 2020 China has very rapid growth while Bangladesh has continued steady growth.</li> </ul> | <p><b>2 marks</b><br/><b>AO4=2</b></p> |

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                                                      |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Total marks                                                                 |
|----|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 02 | 7    | <p><b>‘Transnational corporations (TNCs) can play an important part in the economic development of a country and help to improve people’s quality of life.’</b></p> <p><b>To what extent do you agree with this statement?</b></p> <p><b>Use an example from either an LIC or NEE and your own understanding.</b></p> |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <p><b>9 marks</b><br/> <b>AO1=3</b><br/> <b>AO2=3</b><br/> <b>AO3=3</b></p> |
|    |      | Level 3<br>(Detailed)                                                                                                                                                                                                                                                                                                 | 7–9<br>marks | <p>Demonstrates accurate and detailed knowledge and understanding about the potential for Transnational Corporations (TNCs) to offer opportunities for economic development and consequently improve people’s quality of life in one LIC or NEE.</p> <p>Applies this effectively to have a discussion which offers an evaluative judgement about the extent to which TNCs are influential in creating opportunities for economic development and improve people’s quality of life.</p> |                                                                             |
|    |      | Level 2<br>(Clear)                                                                                                                                                                                                                                                                                                    | 4–6<br>marks | <p>Demonstrates appropriate and clear knowledge and understanding about the potential for Transnational Corporations (TNCs) to offer opportunities for economic development and consequently improve people’s quality of life in one LIC or NEE.</p> <p>Applies this effectively to have a discussion which attempts to make an evaluative judgement about how TNCs are influential in creating opportunities for economic development and improve people’s quality of life.</p>       |                                                                             |
|    |      | Level 1<br>(Basic)                                                                                                                                                                                                                                                                                                    | 1–3<br>marks | <p>Demonstrates some basic knowledge and understanding about the potential for Transnational Corporations (TNCs) to offer opportunities for economic development (points largely about jobs/money) and consequently improve people’s quality of life in one LIC or NEE.</p> <p>Simplistic attempt to offer an evaluative judgement.</p>                                                                                                                                                |                                                                             |
|    |      |                                                                                                                                                                                                                                                                                                                       | 0            | No relevant content.                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                             |

|  |  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |  |
|--|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
|  |  | <p><b>Indicative content</b></p> <ul style="list-style-type: none"> <li>• The balance and direction of responses will be determined by the example used.</li> <li>• Examples can be based on a particular country or a specific TNC within a country.</li> <li>• Candidates may attempt to consider the question in relation to the advantages and disadvantages of TNCs to host countries.</li> <li>• Advantages might include: <ul style="list-style-type: none"> <li>○ the creation of direct and indirect employment</li> <li>○ employment generates incomes (increase in regular/formal employment)</li> <li>○ the development of a skill base/education</li> <li>○ increased levels of local and national income</li> <li>○ investment in infrastructure/services (health/education)</li> <li>○ multiplier effects in relation to other businesses</li> <li>○ increased export revenues</li> <li>○ government receives money which can be used to improve social conditions.</li> </ul> </li> <li>• Disadvantages might include: <ul style="list-style-type: none"> <li>○ local workers can be poorly paid</li> <li>○ much of the income is moved out of the country</li> <li>○ local resources can be exploited</li> <li>○ working conditions can be very poor</li> <li>○ money used to encourage TNCs to set up could be spent elsewhere.</li> </ul> </li> <li>• Quality of life can be considered in an individual sense or in relation to the ability for a government to increase spending on infrastructure/social services.</li> <li>• Generic factors such as housing quality, infrastructural improvements (water/electricity), health and education might be considered.</li> <li>• Specific individual factors such as individual incomes, ability to have secure housing and afford basic facilities, diet and wellbeing might be considered.</li> </ul> |  |
|--|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|

**Section C – Global issues**

**Water and energy resources or Population and communication**

**Question 3 – Water and energy resources**

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                               | Total marks                           |
|----|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| 03 | 1    | <p><b>Complete the line graph in Figure 7 using the information below.</b></p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>Global population with access to safe drinking water 2022 – 76%</b></p> </div> <p>End of the line clearly touches the 76% point.</p> | <p><b>1 mark</b><br/><b>AO4=1</b></p> |

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                       | Total marks                            |
|----|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| 03 | 2    | <p><b>Describe the change in global access to safe drinking water from 2000–2022.</b></p> <p>1 mark – some appreciation of an overall increase.<br/> 1 mark – use of data (starting/ending amounts) <b>OR</b> reference to idea of constant/steady increase.<br/> (Increase 61-76)</p> | <p><b>2 marks</b><br/><b>AO4=2</b></p> |

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |           |                                                                                                                                                                                                                                    | Total marks               |
|----|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| 03 | 3    | Explain how water insecurity might affect industrial output.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |           |                                                                                                                                                                                                                                    | 4 marks<br>AO1=2<br>AO2=2 |
|    |      | Level 2<br>(Clear)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 3–4 marks | Clearly explains how water insecurity might affect industrial output with some reference to either restricting industrial development <b>OR</b> restricting output in existing industries because of water shortages/restrictions. |                           |
|    |      | Level 1<br>(Basic)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 1–2 marks | Shows a basic understanding that industry uses a lot of water so if there are water shortages/restrictions it will be a challenge for industry.                                                                                    |                           |
|    |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 0         | No relevant content.                                                                                                                                                                                                               |                           |
|    |      | Indicative content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |           |                                                                                                                                                                                                                                    |                           |
|    |      | Industrial output can be considered in a broad sense (production/processing).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |           |                                                                                                                                                                                                                                    |                           |
|    |      | <ul style="list-style-type: none"><li>• Industrial output can include food processing.</li><li>• Water insecurity may deter industry from setting up in an area.</li><li>• Water insecurity may deter TNCs from investing in an area.</li><li>• Some industries are significant users of water.</li><li>• Restrictions to water supply may affect supply chains.</li><li>• Industry may be seen as unreliable if supply cannot be met.</li><li>• Water insecurity may affect the price of water and consequently finished goods may be more expensive (reducing demand and output).</li><li>• May affect labour supply (health issues).</li></ul> |           |                                                                                                                                                                                                                                    |                           |

| Qu                 | Part                                  | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Total marks |            |                    |                                       |                 |                                    |            |                       |                  |
|--------------------|---------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|--------------------|---------------------------------------|-----------------|------------------------------------|------------|-----------------------|------------------|
| 03                 | 4                                     | <p>Match the following terms with the correct definition by drawing a line between the two.</p> <p>1/2 correct – 1 mark    3 correct – 2 marks</p> <table><thead><tr><th>Term</th><th>Definition</th></tr></thead><tbody><tr><td>Water conservation</td><td>Using untreated water previously used</td></tr><tr><td>Water recycling</td><td>Reducing waste and unnecessary use</td></tr><tr><td>Grey water</td><td>Reusing treated water</td></tr></tbody></table> | Term        | Definition | Water conservation | Using untreated water previously used | Water recycling | Reducing waste and unnecessary use | Grey water | Reusing treated water | 2 marks<br>AO1=2 |
| Term               | Definition                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |             |            |                    |                                       |                 |                                    |            |                       |                  |
| Water conservation | Using untreated water previously used |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |             |            |                    |                                       |                 |                                    |            |                       |                  |
| Water recycling    | Reducing waste and unnecessary use    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |             |            |                    |                                       |                 |                                    |            |                       |                  |
| Grey water         | Reusing treated water                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |             |            |                    |                                       |                 |                                    |            |                       |                  |

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |           |                                                                                                                                                                    | Total marks               |
|----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| 03 | 5    | To what extent has a large-scale water transfer scheme that you have studied been successful?                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |                                                                                                                                                                    | 6 marks<br>AO2=3<br>AO3=3 |
|    |      | Level 3<br>(Detailed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 5–6 marks | Detailed understanding of the objectives of a large water transfer scheme and an appreciation of the extent to which the objectives have been satisfied.           |                           |
|    |      | Level 2<br>(Clear)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 3–4 marks | Some clear awareness of the advantages/disadvantages of a large water transfer scheme with some evaluative appreciation of the impact of the scheme.               |                           |
|    |      | Level 1<br>(Basic)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1–2 marks | Basic points about how a large water transfer scheme has operated in terms of managing water supply.<br>Limited judgement about how effective the scheme has been. |                           |
|    |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | 0         | No relevant content.                                                                                                                                               |                           |
|    |      | Indicative content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |           |                                                                                                                                                                    |                           |
|    |      | <ul style="list-style-type: none"><li>• The direction of the discussion will be determined by the example used.</li><li>• ‘Large scale’ can be seen as beyond a local community.</li><li>• Water transfer schemes can be general schemes (moving water from one place to another for overall use) or schemes specifically related to supplying urban areas, industry or agriculture.</li><li>• At the highest level the level of success should be considered in relation to the original objectives of the scheme.</li><li>• An overall evaluative judgement can be considered by looking at advantages/disadvantages <b>OR</b> by making a judgement and supporting that judgement with factual information.</li></ul> |           |                                                                                                                                                                    |                           |

| Qu | Part | Marking guidance                                                                                                                            | Total marks                   |
|----|------|---------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| 03 | 6    | <b>Which continent had the lowest consumption of energy per person in 2021?</b><br><br><b>Shade one circle only.</b><br><br><b>A Africa</b> | <b>1 mark</b><br><b>AO4=1</b> |

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Total marks                            |
|----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| 03 | 7    | <p><b>Describe the distribution of countries with energy consumption per person between 50 001–200 000 kWh.</b></p> <p>Any two appropriate observations (2 × 1) or a developed point (2 marks).</p> <p>Points might include:</p> <ul style="list-style-type: none"> <li>• mostly in the northern hemisphere (1) except (named examples) (1)</li> <li>• most of North and South America (1) except (named examples) (1)</li> <li>• parts of the Middle East (1) named example (1)</li> <li>• idea of in most continents (1) except Africa(1)</li> </ul> | <p><b>2 marks</b><br/><b>AO4=2</b></p> |

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Total marks                            |
|----|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| 03 | 8    | <p><b>Outline two reasons why a country's energy consumption might increase.</b></p> <p>2 × 2 marks</p> <p>1 mark for identification of a reason and an additional mark for some reasoning/development.</p> <p>Possible ideas might include:</p> <ul style="list-style-type: none"> <li>• increased population/households (1) will mean that more energy is required (1)</li> <li>• increased wealth (1) will mean more energy using appliances/cars will be bought (1)</li> <li>• the development of industry (1) will mean more factories will need energy (1)</li> <li>• increasing transport networks (1) will mean there will be more vehicles using energy. (1)</li> <li>• lack of energy saving education/energy efficient products/conservation measures(1) will mean that more energy is wasted(1)</li> <li>• Urbanisation creates added demand(1) as cities consume more energy than rural areas(1)</li> </ul> | <p><b>4 marks</b><br/><b>AO2=4</b></p> |

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Total marks                               |
|----|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|
| 03 | 9    | <p><b>Complete the pie chart in Figure 9 using the information below.</b></p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>Energy produced using gas – 6%</b></p> <p><b>Energy produced using renewables/nuclear – 5%</b></p> </div> <p>Energy produced using gas – 6%</p> <p>Energy produced using renewables/nuclear – 5%</p> <p>1 mark – accurate completion of segments (accept either order).</p> <p>1 mark – appropriate completion of the key.</p> | <p><b>2 marks</b></p> <p><b>AO4=2</b></p> |

| Qu                    | Part         | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Total marks           |              |                                                                                                                                                                                |                    |              |                                                                                                                                                                |                    |              |                                                                                                                                                   |  |   |                      |                                                         |
|-----------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------|--|---|----------------------|---------------------------------------------------------|
| 03                    | 10           | <p><b>‘The extraction of fossil fuels can create both opportunities and challenges.’</b></p> <p><b>Discuss this statement.</b></p> <p>Climate change as a challenge will only be considered a Level 1 point.</p> <table><tr><td>Level 3<br/>(Detailed)</td><td>5–6<br/>marks</td><td>Detailed understanding and judgement about how extracting fossil fuels can create both advantages and disadvantages.<br/>Balanced appreciation of advantages and disadvantages.</td></tr><tr><td>Level 2<br/>(Clear)</td><td>3–4<br/>marks</td><td>Some clear awareness and judgement about the opportunities and challenges of extracting fossil fuels.<br/>Limited balance between opportunities and challenges.</td></tr><tr><td>Level 1<br/>(Basic)</td><td>1–2<br/>marks</td><td>Basic points which identify generic opportunities and challenges <b>OR</b> a broader identification of either opportunities <b>OR</b> challenges.</td></tr><tr><td></td><td>0</td><td>No relevant content.</td></tr></table> <p><b>Indicative content</b></p> <ul style="list-style-type: none"><li>• The question is not about climate change, which is about use rather than extraction.</li><li>• Answers can operate at different scales (local impacts and national impacts).</li><li>• Local challenges can be seen as destruction to habitats/environments; pollution (air, water, noise); transport issues; managing inward increases in population; pressures on local services; conflict between local people.</li><li>• Local opportunities can be seen as employment and income; local multiplier effects; increases in local spending leading to improvements to social facilities; the development of infrastructure.</li><li>• National impacts can be seen as; observations about export income/economic development; increasing national income; links to energy security; development of trade/trading agreements; conflict with international environmental targets; competition with other forms of energy.</li></ul> | Level 3<br>(Detailed) | 5–6<br>marks | Detailed understanding and judgement about how extracting fossil fuels can create both advantages and disadvantages.<br>Balanced appreciation of advantages and disadvantages. | Level 2<br>(Clear) | 3–4<br>marks | Some clear awareness and judgement about the opportunities and challenges of extracting fossil fuels.<br>Limited balance between opportunities and challenges. | Level 1<br>(Basic) | 1–2<br>marks | Basic points which identify generic opportunities and challenges <b>OR</b> a broader identification of either opportunities <b>OR</b> challenges. |  | 0 | No relevant content. | <p><b>6 marks</b><br/><b>AO2=3</b><br/><b>AO3=3</b></p> |
| Level 3<br>(Detailed) | 5–6<br>marks | Detailed understanding and judgement about how extracting fossil fuels can create both advantages and disadvantages.<br>Balanced appreciation of advantages and disadvantages.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                       |              |                                                                                                                                                                                |                    |              |                                                                                                                                                                |                    |              |                                                                                                                                                   |  |   |                      |                                                         |
| Level 2<br>(Clear)    | 3–4<br>marks | Some clear awareness and judgement about the opportunities and challenges of extracting fossil fuels.<br>Limited balance between opportunities and challenges.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                       |              |                                                                                                                                                                                |                    |              |                                                                                                                                                                |                    |              |                                                                                                                                                   |  |   |                      |                                                         |
| Level 1<br>(Basic)    | 1–2<br>marks | Basic points which identify generic opportunities and challenges <b>OR</b> a broader identification of either opportunities <b>OR</b> challenges.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                       |              |                                                                                                                                                                                |                    |              |                                                                                                                                                                |                    |              |                                                                                                                                                   |  |   |                      |                                                         |
|                       | 0            | No relevant content.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                       |              |                                                                                                                                                                                |                    |              |                                                                                                                                                                |                    |              |                                                                                                                                                   |  |   |                      |                                                         |

**Question 4 – Population and communication**

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                                                        | Total marks                           |
|----|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------|
| 04 | 1    | <p><b>Complete the line graph in Figure 10 using the information below.</b></p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>Global life expectancy 2020 – 74 years</b></p> </div> <p>Global life expectancy 2020 – 74 years.<br/>End of the line clearly touches the 74 years point.</p> | <p><b>1 mark</b><br/><b>AO4=1</b></p> |

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                 | Total marks                            |
|----|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| 04 | 2    | <p><b>Describe the change in global life expectancy from 1900–2020.</b></p> <p>1 mark – some appreciation of an overall increase.<br/>1 mark – use of data (starting/ending numbers) <b>OR</b> reference to relative rate of increase (generally constant)/anomaly in 1950s.</p> | <p><b>2 marks</b><br/><b>AO4=2</b></p> |

| Qu                                                                                                                                                                                                                                                                                                                                                                                                                            | Part | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Total marks                                    |                    |                                                                                                                                                      |                                                                                                                                                  |                    |              |                                                                                                                                                      |  |   |                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------|--|---|----------------------|
| 04                                                                                                                                                                                                                                                                                                                                                                                                                            | 3    | <b>Explain how population change might impact economic development.</b>                                                                                                                                                                                                                                                                                                                                                                                                                                              | <b>4 marks</b><br><b>AO1=2</b><br><b>AO2=2</b> |                    |                                                                                                                                                      |                                                                                                                                                  |                    |              |                                                                                                                                                      |  |   |                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                               |      | <table><tr><td>Level 2<br/>(Clear)</td><td>3–4<br/>marks</td><td>Clearly explains how population change might affect economic development with some reference to either positive impacts and/or negative impacts.</td></tr><tr><td>Level 1<br/>(Basic)</td><td>1–2<br/>marks</td><td>Shows a basic understanding of how population change might affect economic development with limited attempt to offer any “cause-effect” explanation.</td></tr><tr><td></td><td>0</td><td>No relevant content.</td></tr></table> |                                                | Level 2<br>(Clear) | 3–4<br>marks                                                                                                                                         | Clearly explains how population change might affect economic development with some reference to either positive impacts and/or negative impacts. | Level 1<br>(Basic) | 1–2<br>marks | Shows a basic understanding of how population change might affect economic development with limited attempt to offer any “cause-effect” explanation. |  | 0 | No relevant content. |
|                                                                                                                                                                                                                                                                                                                                                                                                                               |      | Level 2<br>(Clear)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                | 3–4<br>marks       | Clearly explains how population change might affect economic development with some reference to either positive impacts and/or negative impacts.     |                                                                                                                                                  |                    |              |                                                                                                                                                      |  |   |                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                               |      | Level 1<br>(Basic)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                | 1–2<br>marks       | Shows a basic understanding of how population change might affect economic development with limited attempt to offer any “cause-effect” explanation. |                                                                                                                                                  |                    |              |                                                                                                                                                      |  |   |                      |
|                                                                                                                                                                                                                                                                                                                                                                                                                               |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                | 0                  | No relevant content.                                                                                                                                 |                                                                                                                                                  |                    |              |                                                                                                                                                      |  |   |                      |
| <b>Indicative content</b>                                                                                                                                                                                                                                                                                                                                                                                                     |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                |                    |                                                                                                                                                      |                                                                                                                                                  |                    |              |                                                                                                                                                      |  |   |                      |
| <b>Answer might consider the impacts of population growth OR population decline.</b>                                                                                                                                                                                                                                                                                                                                          |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                |                    |                                                                                                                                                      |                                                                                                                                                  |                    |              |                                                                                                                                                      |  |   |                      |
| <ul style="list-style-type: none"><li>• Population change can affect labour supply.</li><li>• A more youthful population might be more economically dynamic.</li><li>• A more youthful population might have a wider skill base.</li><li>• Population change can affect demand and stimulate the economy.</li><li>• Population change may put additional financial pressures on social services (education/health).</li></ul> |      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                |                    |                                                                                                                                                      |                                                                                                                                                  |                    |              |                                                                                                                                                      |  |   |                      |

| Qu                | Part                                                 | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Total marks |            |                |                                                     |                   |                                                      |          |                                            |                                        |
|-------------------|------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|----------------|-----------------------------------------------------|-------------------|------------------------------------------------------|----------|--------------------------------------------|----------------------------------------|
| 04                | 4                                                    | <p><b>Match the following terms with the correct definition by drawing a line between the two.</b><br/><b>1/2 correct – 1 mark    3 correct – 2 marks</b></p> <table><thead><tr><th>Term</th><th>Definition</th></tr></thead><tbody><tr><td>Asylum seekers</td><td>People who have been given international protection</td></tr><tr><td>Economic migrants</td><td>People who move to increase their standard of living</td></tr><tr><td>Refugees</td><td>People asking for international protection</td></tr></tbody></table> | Term        | Definition | Asylum seekers | People who have been given international protection | Economic migrants | People who move to increase their standard of living | Refugees | People asking for international protection | <p><b>2 marks</b><br/><b>AO1=2</b></p> |
| Term              | Definition                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |             |            |                |                                                     |                   |                                                      |          |                                            |                                        |
| Asylum seekers    | People who have been given international protection  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |             |            |                |                                                     |                   |                                                      |          |                                            |                                        |
| Economic migrants | People who move to increase their standard of living |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |             |            |                |                                                     |                   |                                                      |          |                                            |                                        |
| Refugees          | People asking for international protection           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |             |            |                |                                                     |                   |                                                      |          |                                            |                                        |

|    |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |              |                                                                                                                                                                                                    |                                                |
|----|---|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------|
| 04 | 5 | <b>To what extent has a strategy to manage population growth that you have studied been successful?</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |              |                                                                                                                                                                                                    | <b>6 marks</b><br><b>AO2=3</b><br><b>AO3=3</b> |
|    |   | Level 3<br>(Detailed)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 5–6<br>marks | Detailed understanding and judgement about how effective a specific strategy to reduce population growth has been.                                                                                 |                                                |
|    |   | Level 2<br>(Clear)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 3–4<br>marks | Some clear awareness and judgement about how effective a specific strategy to reduce population growth has been.                                                                                   |                                                |
|    |   | Level 1<br>(Basic)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1–2<br>marks | Basic points which identify how population growth has been managed with limited evaluative judgement.<br>Accept that the idea of 'managing population growth' can mean managing decline or growth. |                                                |
|    |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 0            | No relevant content.                                                                                                                                                                               |                                                |
|    |   | <b>Indicative content</b> <ul style="list-style-type: none"><li>• The nature of the debate will be determined by the particular strategy that is identified.</li><li>• 'Top down' strategies (China-One child policy) may consider that in relation to managing growth it has been effective but there have been significant issues in relation to social cohesion and ethical considerations. Also, links to population structure and the impact on socio-economic development might be considered.</li><li>• 'Bottom up' strategies (investment in health/women's rights etc) might consider that controlling growth has been effective (sometimes takes longer/harder to break with existing social norms), but creates more social cohesion and can be part of a drive for social and economic development.</li><li>• General family planning strategies (individually or as part of a broader policy) might be considered. Examples will illustrate that these have varying impacts so the nature of the discussion will be determined by the example used.</li></ul> |              |                                                                                                                                                                                                    |                                                |

| Qu | Part | Marking guidance                                                                                                              | Total marks                   |
|----|------|-------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| 04 | 6    | <b>Which continent had the lowest number of airports in 2021?</b><br><br><b>Shade one circle only.</b><br><br><b>A Africa</b> | <b>1 mark</b><br><b>AO4=1</b> |

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Total marks                            |
|----|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| 04 | 7    | <p><b>Describe the distribution of countries with 601–2000 airports.</b></p> <p>Max 1 mark for just naming appropriate countries.</p> <p>Any two appropriate observations (2 × 1) or a linked point (2 marks).</p> <p>Points might include:</p> <ul style="list-style-type: none"> <li>• Russia (1)</li> <li>• parts of Central /N America (1) named country (1)</li> <li>• a number of countries in South-East Asia (1) named country (1)</li> <li>• a number of countries in South America (1) named country (1)</li> <li>• larger countries/Islands (1) named example. (1)</li> </ul> | <p><b>2 marks</b><br/><b>AO4=2</b></p> |

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Total marks                            |
|----|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| 04 | 8    | <p><b>Outline two ways that the development of airports might encourage the growth of manufacturing.</b></p> <p>1 mark for identification of a reason and an additional mark for some reasoning/development.</p> <p>Possible ideas might include:</p> <ul style="list-style-type: none"> <li>• easier to attract workers (1) from a wide range of countries (1)</li> <li>• easier to get raw materials (1) more reliable/cheaper production (1)</li> <li>• more reliable supply chain (1) less likelihood of supply/shortage problems (1)</li> <li>• able to reach a bigger market (1) which will increase profits (1)</li> <li>• more efficient transport networks (1) will reduce costs/increase profits (1)</li> <li>• improved transport networks (1) might encourage new business. (TNCs). (1)</li> </ul> | <p><b>4 marks</b><br/><b>AO2=4</b></p> |

| Qu | Part | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Total marks                             |
|----|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| 04 | 9    | <p><b>Complete the pie chart in Figure 12 using the information below.</b></p> <div style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p><b>South Korea – proportion of exports</b><br/> <b>Iron and steel – 4%</b><br/> <b>Others – 21%</b></p> </div> <p>South Korea – proportion of exports<br/> Iron and steel – 4%<br/> Others – 21%</p> <p>1 mark – accurate completion of segments (accept either order).<br/> 1 mark – appropriate completion of the key.</p> | <p><b>2 marks</b><br/> <b>AO4=2</b></p> |

| Qu                    | Part         | Marking guidance                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Total marks           |              |                                                                                                                                        |                    |              |                                                                                                                                      |                    |              |                                                                                          |  |   |                      |                                                         |
|-----------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|--------------------------------------------------------------------------------------------------------------------------------------|--------------------|--------------|------------------------------------------------------------------------------------------|--|---|----------------------|---------------------------------------------------------|
| 04                    | 10           | <p><b>‘Information Communication Technology (ICT) is an important factor in attracting Transnational Corporation (TNC) investment in NEEs.’</b></p> <p><b>Discuss this statement.</b></p> <table><tr><td>Level 3<br/>(Detailed)</td><td>5–6<br/>marks</td><td>Detailed understanding and judgement about the extent to which ICT/access to ICT plays a part in attracting TNCs to regions/countries.</td></tr><tr><td>Level 2<br/>(Clear)</td><td>3–4<br/>marks</td><td>Some clear awareness and judgement about the extent to which ICT/access to ICT plays a part in attracting TNCs to regions/countries.</td></tr><tr><td>Level 1<br/>(Basic)</td><td>1–2<br/>marks</td><td>Basic points which identify generic points about ICT in relation to business operations.</td></tr><tr><td></td><td>0</td><td>No relevant content.</td></tr></table> <p><b>Indicative content</b></p> <ul style="list-style-type: none"><li>• Discussion may consider the significance of ICT to different types of industry (manufacturing/call centres).</li><li>• ICT can be seen in the broadest context (all types of tele/satellite communications).</li><li>• ICT can be considered in terms of efficiency/reliability.</li><li>• The international nature of TNCs means that communication is a vital part of the structure of the organisation.</li><li>• TNCs are linked to the idea of globalisation and trade, and this demands efficient communication networks.</li><li>• Manufacturing TNCs will operate ‘just in time’ principles which will demand efficient ICT networks.</li><li>• Access to, and efficiency of ICT will play an important role in locational decision making.</li></ul> | Level 3<br>(Detailed) | 5–6<br>marks | Detailed understanding and judgement about the extent to which ICT/access to ICT plays a part in attracting TNCs to regions/countries. | Level 2<br>(Clear) | 3–4<br>marks | Some clear awareness and judgement about the extent to which ICT/access to ICT plays a part in attracting TNCs to regions/countries. | Level 1<br>(Basic) | 1–2<br>marks | Basic points which identify generic points about ICT in relation to business operations. |  | 0 | No relevant content. | <p><b>6 marks</b><br/><b>AO2=3</b><br/><b>AO3=3</b></p> |
| Level 3<br>(Detailed) | 5–6<br>marks | Detailed understanding and judgement about the extent to which ICT/access to ICT plays a part in attracting TNCs to regions/countries.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                       |              |                                                                                                                                        |                    |              |                                                                                                                                      |                    |              |                                                                                          |  |   |                      |                                                         |
| Level 2<br>(Clear)    | 3–4<br>marks | Some clear awareness and judgement about the extent to which ICT/access to ICT plays a part in attracting TNCs to regions/countries.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                       |              |                                                                                                                                        |                    |              |                                                                                                                                      |                    |              |                                                                                          |  |   |                      |                                                         |
| Level 1<br>(Basic)    | 1–2<br>marks | Basic points which identify generic points about ICT in relation to business operations.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                       |              |                                                                                                                                        |                    |              |                                                                                                                                      |                    |              |                                                                                          |  |   |                      |                                                         |
|                       | 0            | No relevant content.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                       |              |                                                                                                                                        |                    |              |                                                                                                                                      |                    |              |                                                                                          |  |   |                      |                                                         |