# Learning Unit 1 (The nature of geography and geographical thinking)

## Notes regarding LU 1:

### Key terms:

**Introduction to Geography**: (Sec A, 33-75)

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
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<tbody>
<tr>
<td>Atmosphere</td>
<td>Thin layer of gases around Earth.</td>
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<tr>
<td>Azimuthal project</td>
<td>A type of projection that’s well-suited for larger areas and are used for most of the world maps.</td>
</tr>
<tr>
<td>Biosphere</td>
<td>All living organisms on Earth.</td>
</tr>
<tr>
<td>Cartography</td>
<td>The science of making maps.</td>
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<tr>
<td>Concentration</td>
<td>The spread of something over an area.</td>
</tr>
<tr>
<td>Conformal map</td>
<td>Preserving the correct angles between directions within small areas (though distorting distances).</td>
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<tr>
<td>Contiguous/contagious diffusion</td>
<td>Rapid, widespread diffusion of a characteristic throughout the population.</td>
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<tr>
<td>Cultural landscape</td>
<td>Cultural landscape – a combination of cultural features such as, language and religion, economic features such as agriculture and industry, and physical features such as climate and vegetation.</td>
</tr>
<tr>
<td>Culture</td>
<td>It refers to the specific ideas, customs, and social behaviour of a particular people or society on Earth.</td>
</tr>
<tr>
<td>Density</td>
<td>The frequency with which something occurs in space.</td>
</tr>
<tr>
<td>Diffusion</td>
<td>Process where a feature or trend from one place gets spread to another over time.</td>
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<tr>
<td>Distance</td>
<td>Refers to the length between two points.</td>
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<tr>
<td>Distance decay</td>
<td>The decrease in importance and eventual disappearance of a phenomena with increasing distance from its origin.</td>
</tr>
<tr>
<td>Distribution</td>
<td>The arrangement of a feature in space.</td>
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<tr>
<td>Ecology</td>
<td>The study of ecosystems.</td>
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<tr>
<td>Ecosystem</td>
<td>A group of living organisms and the abiotic spheres they interact with.</td>
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<tr>
<td>Equal-area map</td>
<td>On a map projection, it’s accurately representing the relative sizes of regions that are of equal area, although distorting shape and direction.</td>
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<tr>
<td>Equator</td>
<td>A line drawn on the Earth equidistant from the poles, dividing the Earth into northern and southern hemispheres and constituting the parallel of latitude 0°.</td>
</tr>
<tr>
<td>Formal region/ uniform / homogeneous region</td>
<td>An area which everyone shares and have in common one or more distinctive characteristics.</td>
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<tr>
<td>Friction of distance</td>
<td>Based on the notion that distance usually requires some amount of effort (energy) and/or money to overcome.</td>
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<tr>
<td><strong>Functional region:</strong></td>
<td>Area organized around a node or focal point.</td>
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<tr>
<td><strong>Geocoding:</strong></td>
<td>To provide a set of coordinates to a location.</td>
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<tr>
<td><strong>Geographic Information System (GIS):</strong></td>
<td>A computer system that stores, organizes, analyses and displays geographic data.</td>
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<tr>
<td><strong>Geography:</strong></td>
<td>The study of the interaction of all human and physical phenomena at individual places and how interactions among places form patterns and organize larger spaces.</td>
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<tr>
<td><strong>Global Positioning System (GPS):</strong></td>
<td>System providing the exact position of something on Earth, through satellites, tracking stations and receivers.</td>
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<td><strong>Globalization:</strong></td>
<td>Actions or processes that involve the entire world and result in making something worldwide a scope.</td>
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<tr>
<td><strong>Greenwich Mean Time (GMT):</strong></td>
<td>The mean solar time at the Greenwich meridian, adopted as the standard time in a zone that includes the British Isles.</td>
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<td><strong>Hearth:</strong></td>
<td>The place from which an innovation originates.</td>
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<tr>
<td><strong>Hierarchical diffusion:</strong></td>
<td>The spread of an idea from persons or nodes of authority or power to other persons or places.</td>
</tr>
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<td><strong>Human geography:</strong></td>
<td>Studies human groups and their activities, cultural features – Social Science.</td>
</tr>
<tr>
<td><strong>Hydrosphere:</strong></td>
<td>The water realm of the earth and includes the oceans surface water (in lakes, rivers and streams), groundwater (in soil and rocks), water vapour (in the atmosphere) and ice.</td>
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<tr>
<td><strong>International Date Line:</strong></td>
<td>An internationally agreed imaginary line running roughly along the 180º meridian of longitude, to the east of which the date is one day earlier than to the west.</td>
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<td><strong>Large-scale map:</strong></td>
<td>A map made to a scale large enough to show certain features in detail. (shows a small territory).</td>
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<tr>
<td><strong>Latitude:</strong></td>
<td>The angular distance of a place north or south of the earth’s equator, or of the equator of a celestial object, usually expressed in degrees and minutes.</td>
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<tr>
<td><strong>Lithosphere:</strong></td>
<td>The rigid outer part of the earth, consisting of the crust and upper mantle.</td>
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<tr>
<td><strong>Longitude:</strong></td>
<td>The angular distance of a place east or west of the Greenwich meridian, or west of the standard meridian of a celestial object, usually expressed in degrees and minutes.</td>
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<td><strong>Map:</strong></td>
<td>A 2D or flat, representation of Earth’s surface or a portion of it.</td>
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<tr>
<td><strong>Mercator projection:</strong></td>
<td>A projection of a map of the world on to a cylinder in such a way that all the parallels of latitude have the</td>
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<tr>
<td>Meridian</td>
<td>An arch drawn between the North and South poles.</td>
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<tr>
<td>Model</td>
<td>A 3D representation of a person or thing or of a proposed structure, typically on a smaller scale than the original.</td>
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<tr>
<td>Natural landscape</td>
<td>The original landscape that exists before it is acted upon by human culture.</td>
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<tr>
<td>Parallel</td>
<td>A circle drawn around the globe parallel to the equator and at right angles to the meridians.</td>
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<tr>
<td>Pattern</td>
<td>The regular arrangement of something in a study area.</td>
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<td>Physical geography</td>
<td>Studies the characteristics of the physical environment and concentrate on the distribution of natural features – Natural Science.</td>
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<tr>
<td>Prime meridian</td>
<td>The meridian, designated as 0° longitude, passing the Royal Observatory at Greenwich, England.</td>
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<tr>
<td>Projection</td>
<td>The system used to transfer locations from Earth’s surface to a flat map.</td>
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<tr>
<td>Region</td>
<td>An area of Earth distinguished by a distinctive combination of cultural and physical features.</td>
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<tr>
<td>Regional geography</td>
<td>The part of geography that studies the world's regions.</td>
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<td>Relative location</td>
<td>The acquisition of data from Earth’s surface from a satellite orbiting the planet or other long-distance methods.</td>
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<tr>
<td>Relocation diffusion</td>
<td>The spread of a feature through bodily movement of people from places.</td>
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<tr>
<td>Remote sensing</td>
<td>The scanning of the earth by satellite or high-flying aircraft in order to obtain information about it.</td>
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<tr>
<td>Scale</td>
<td>The relationship between the portion of Earth being studied and Earth as a whole.</td>
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<tr>
<td>Site</td>
<td>The physical character of a place.</td>
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<tr>
<td>Situation</td>
<td>The location of a place relative to other places.</td>
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<tr>
<td>Small-scale map</td>
<td>A map depicting a large area, such as an entire country, is considered a small scale map. In order to show the entire country, the map must be scaled down until it is much smaller. A small scale map shows more territory, but it is less detailed.</td>
</tr>
<tr>
<td>Spatial analysis</td>
<td>Includes any of the formal techniques which study entities using their topological, geometric, or geographic properties.</td>
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<tr>
<td>System</td>
<td>A set of principles or procedures according to which something is done; an organized scheme or method.</td>
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<tr>
<td>Systematic geography</td>
<td>The study of geographical phenomena organized by class or type rather than by region.</td>
</tr>
<tr>
<td>Thematic map</td>
<td>A map created showing a specific theme.</td>
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<tr>
<td><strong>Topical geography:</strong></td>
<td>Something that has happened recently, which has something to do with Geography.</td>
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<td><strong>Topographic map:</strong></td>
<td>It’s a type of map characterized by large-scale detail and quantitative representation of relief, usually using contour lines, but historically using a variety of methods.</td>
</tr>
<tr>
<td><strong>Topography:</strong></td>
<td>The arrangement of the natural and artificial physical features of an area.</td>
</tr>
<tr>
<td><strong>Vernacular region or perceptual region:</strong></td>
<td>An area people believe exists as part of their cultural identity.</td>
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</table>

**Making meaning of Geography:**

**The various ways of defining geography:**

- Involves the exploration, description and explanation of the world we live in, specifically where natural and human activities occur, why they occur in the specific locations and how they are interacting with each other.
- Subject matter is the study of people, places and environments.
- The study of the interaction of all human and physical phenomena at individual places and how interactions among places form patterns and organize larger spaces.
- Geography is unique in bridging the social sciences (human geography) with the natural sciences (physical geography).

**Geographers are interested in:**

- Examining the earth’s surface,
- The natural and human processes that shape the earth’s surface,
- The relationships between people and their environment, and
- The interactions between different places.

**The difference between physical geography and human geography:**

**Physical geography:**

- Studies the characteristics of the physical environment and concentrate on the distribution of natural features
- Concentrates on topics such as climate, soil and vegetation, landforms; it is natural science.

**Human geography:**

- Studies human groups and their activities, cultural features
- Such as language, economic activities, industry, and the building of cities, it’s a social science.

**Basic concepts used in geography:**

To explain why a place is unique, geographers have two basic concepts:
1. **Place:**
   - A specific point on Earth distinguished by a particular characteristic.
   - Every place occupies a unique location, or position on Earth’s surface.

2. **Region:**
   - Is an area of Earth distinguished by a distinctive combination of cultural and physical features.

To explain why different places are interrelated, geographers have three basic concepts:

1. **Scale:**
   - Is the relationship between the portion of Earth being studied and Earth as a whole.
   - Geographers study every scale from the individual to the entire Earth, though they’re concerned about the global-scale patterns and processes.

2. **Space:**
   - The interval between 2 objects.
   - Geographers say that many objects are distributed across space in a regular manner, for discernible reasons.

3. **Connection:**
   - The relationships among people and objects across space.
   - Geographers are concerned by the ways connections occur.

**Spatial patterns:**

- To explain it, geographers examine the interrelationships between the natural environment and human behaviour.
- Humans are influenced by nature and alter natural processes.

**Geography’s role in everyday decision making:**

Geography, because it offers a unique way of viewing phenomena, plays an important part in our daily lives – often without us realising that this is the case. Consider the situation when you are having breakfast and you are planning your shopping activities for the day. Many of the decisions you make will be based on geographic realities. These could include: the weather forecast and the most appropriate clothing for the day (physical geography/climate); the timing of your activities, taking into consideration vehicle and pedestrian traffic (movement patterns/spatial processes); the most appropriate retail facility to visit, based on relative location (situation), capacity (site) and accessibility (connection) and the route that you will follow to get there (navigation). Depending on your unique context, you might also experience the role of additional geographic realities such as resource use, globalisation, spatial interaction, tourism related activities, cultural diversity etc.

**Geography through the ages:**

**The origins and evolution of geography:**

Earliest surviving maps were drawn in the Eastern Mediterranean in the 7th or 6th
Major contributors are:

- Thales of Miletus – applied geometry to measure land area.
- Anaximander – made a world map based on info from sailors. He argued that the world is shaped like a cylinder.
- Hecataeus – produced first geography book; “Ges Periodos” – “Travels around the Earth”
- Aristotle – first to demonstrate that Earth is spherical.
- Eratosthenes – creator of the word Geography. He thought World was round.
- Strabo – described the known world in s 17-volume work.
- Ptolemy – wrote 8-volume books on “Guide to Geography”. Explaining basic principles of mapmaking.

Chinese contributions:

- Yu Gong (book) is the earliest surviving writing by an unknown author.
- Pei Xiu – “The father of Chinese cartography”- produced an elaborate map of the country.

In the first millennium maps became more fanciful and showed Earth as a flat disk surrounded by fierce animals and monsters. Leading medieval contributors to geography included:

- Muhammad al-Idrisi – Muslim geographer who prepared a world map.
- Abu Abdullah Muhammad Ibn-Battuta – wrote “Travels”, based on his travels and journeys.

The purpose and application of geography:

Over the ages geography developed into a science from the initial desire to know the world (with emphasis on remembering locations and navigating safely to destinations) to the current emphasis on contributing to solving problems the world is facing. Although the aspects of location and navigation are still important up to today, the application of geography has diversified immensely through the ages. Modern applications include urban planning and development, economics, disaster management, tourism, politics, climate modelling, environmental management, biogeography and many more.

The relationship between geography and exploration:

Geography in the age of exploration: The discovery of the New World and development of printing led to mapmaking making a great progress.

- Martin Waldseemuller – German cartographer was credited for producing the first map labelled “America”.
- Abraham Ortelius – Flemish cartographer, created first modern atlas and the first with the hypothesis that all the continents were once joined.

The explorations they made is something we still use in Geography today.
Geographers just have more evidence on why they believe certain things.

**Geographic descriptions of location:**

**The main elements of a map:**

Maps serve 2 purposes:
1. Reference tool – helping us to find the shortest route between places and not getting lost along the way.
2. Communication tool – the best means for depicting the distribution of human activities or physical features, as well as for thinking about reasons underlying a distribution.

**Elements found on all maps:**

**Distance or scale:**
Distance or scale must always be indicated or implied, unless the audience is so familiar with the map area or distance of such little relative importance that it can be assumed by the audience. Distance and scale can be indicated in a variety of ways on a map in verbal, numeric, or graphic form. In using computer systems, the graphic form of representing scale is often preferred. With computers, maps are often drafted at different scales than they are printed. In using verbal or numeric scales, the cartographer must be certain that the map is printed at precisely the scale indicated. If a graphic scale is inserted in a digital map, it will always maintain its relative size with respect to the digital map no matter how it is printed. Remember, scale varies significantly across the area of some maps. If this is true of yours, be sure to note the adjustments required.

**Direction:**
The question of what is north can be an issue on some maps. On the earth, true north (the direction to the North Pole) differs from magnetic north, and the magnetic north pole moves due to changing geophysical conditions of the earth's crust and core. Many reference maps indicate both. Most maps we compose are oriented to true north, even though compass readings in the field are angled to the magnetic pole. Adjustments for these compass deviations are made routinely.

**Legend:**
The legend lists the symbols used on a map and what they depict. These symbols should appear in the legend exactly as they are found in the body of the map and be described clearly and fully. Do not treat the legend as an afterthought; it should receive careful attention. Be aware, however, that not all maps require legends. Sometimes the necessary information is put in a caption, or subsumed by textual annotations placed directly on the body of the map.

**Sources of information and how processed:**
Unless it is absolutely clear from the context in which a map appears, readers will need to know about the sources from which the map was derived. You must identify
your sources so that the reader could, if needed, track them down to check your information and interpretation. Often the age, accuracy, and reliability of sources is critical to the interpretation of a map and should be noted. Sometimes it is also important to indicate how the data was processed, grouped, generalized, or categorized.

**Essential elements that are sensitive to context:**

**Title:**
The title of a map is usually one of its most essential features. As such, it should receive very careful attention so as to match the needs of the theme and audience. A short title might suffice if readers can be assumed to be familiar with the theme being presented, more information is needed for less experienced readers. The content of the title should also be measured against other lettering applied to the map, for example in the legend or annotations. Sometimes, legends and annotations supplant much of the content of a title. Also, be aware that captions usually take the place of titles for maps appearing in publications such as books and journals.

**Projection:**
The projection used to create a map influences the representation of area, distance, direction, and shape. It should be noted when these characteristics are of prime importance to the interpretation of the map. Some widely used locational reference systems such as the U.S. State Plane Coordinate system and Universal Transverse Mercator system are based on predefined projective geometries that are implicit in the use of the coordinate systems themselves.

**Cartographer:**
The authority lying behind the composition of a map can be of prime importance in some situations. Most maps note the name, initials, or corporate identity of the cartographer(s).

**Date of production:**
The meaning and value of some maps--such as those relating to current affairs or weather--are time sensitive. The reader must know when they were produced to gauge whether to trust them. An out-of-date road atlas or city map can cause tremendous frustration. Other maps are less sensitive to the passage of time, but the date of production can still be important if, for example, better information becomes available in the period after publication. Be sure to indicate the date of production for your map, or make sure that it can be inferred from the context in which it is to appear (maps that appear in newspapers, magazines, and journals can be dated in this way). The detail with which you specify the date of production will depend again on the nature of your theme and audience.

Info obtained from:
http://www.colorado.edu/geography/gcraft/notes/cartocom/elements.html

**The purpose of map projections:**
By transferring the information that’s present on a globe to a flat map makes it easier to:
• photocopy,
• write on,
• display or
• refer to in a car.

**The main function and elements of the geographic grid:**

- Main function of the geographic grid is to tell the time.
- The grid divides Earth into latitudes and longitudes.

**Longitude:**
- Are meridian.
- The location’s determined by a numbering system known as longitude.
- Prime meridian – the meridian passing through the Royal Observatory at Greenwich, England = 0° longitude.
- Meridian opposite the prime meridian is the 180° longitude.
- Are a human creation.
- All have the same length and run between the poles.
- Plays important role in telling time.
- By international agreement, Greenwich Mean Time (GMT) or Universal Time (UT), which’s the prime meridian, is the master of all points on Earth.
- Earth rotates Eastwards.
- The International Date Line for the most follows the 180° longitude.

**Latitude:**
- Are parallel.
- The location’s determined by a numbering system known as latitude.
- The equator is 0°, North Pole is 90° N and the South Pole 90° S on the latitude.
- Are derived by Earth’s shape and its rotation around the sun.
- The equator is the parallel with the largest circumference and is the place where every day as 12 hours of daylight.
- Latitude could be measured by the length of daylight and position of Sun and stars in the ancient time.
Technologies used for gathering, analysing and presenting spatial data of the Earth:

Remote sensing:
• Remote-sensing satellites scans Earth’s surface and lets the receiving station receive it in digital form.
• At any moment the satellite sensor records an image of an area called a pixel or picture element.
• Geographers use it to detect the change in environments or features such as, agriculture, drought and sprawl.

GPS:
• Determines precise location on Earth.
• Through satellites placed in predetermined orbits.
• GPS commonly used to provide directions to drivers.
• Cell phones with GPS can also allow the user to share his/her location with friends.

GIS:
• GIS captures, stores and analyses geographic data.
• Can be used to produce maps – are more accurate and attractive.
• Each type of info can be stored in a layer.
• Geographers use it to calculate if relationships between objects on the map are significant coincidental.
• Layers can be compared – showing the relationships between different info.

Each layer represents a different piece of human or environmental info. It can be viewed individually or in combination.

Mash-ups:
• Example – Google Maps and Google Earth.
• Links a database such as an address list with software, such as mapping.
• Mash-ups refer to the practice of overlaying data from one source on top of one of the mapping services.
• Assists in finding apartments, bars, hotels, etc.
• Can show precise location of planes in the air, gas stations with cheapest price, and traffic tie-ups.

**Places and regions: Unique geographic locations:**

* Every place is unique, due to its location, history, physical conditions, purpose and usage by humans and animals. To capture the characteristics of a place, geographers refer to place names, situation (relative location) and site characteristics. If the characteristics are similar and extend beyond one location, regions with similar characteristics can be distinguished.

**Using toponym, situation and site characteristics to distinguish between places:**

**Toponym:**
• The name given to a place on Earth. It may be a name named after a person or ancient history. It’s the easiest way to refer to a place.

**Situation:**
• The location of a place relative to other places.

**Situation is valuable for indicating location, because:**
1. Helps to find unfamiliar places by comparing the location with a familiar one. We give directions to people by referring to the situation of the place: “It’s down by the courthouse, beside the large elm tree”.
2. Helps us understand the importance of a location. Many places are important because they are accessible to other places. Example – Singapore is a center of trading goods, because of its situation.

**Site:**
• The physical character of a place.
• Important site characteristics include:
  - climate,
  - water sources,
  - topography,
  - soil,
  - vegetation,
  - latitude, and
  - elevation.

**The different types of regions that can be distinguished.**

- An area on Earth defined by one or more distinctive characteristics is a region.
- A region derives its unified character through the cultural landscape.

- Cultural landscape – a combination of cultural features such as:
  • language and religion,
  • economic features such as agriculture and industry, and
  • physical features such as climate and vegetation.

There’s 3 types of regions:
1. Functional region
2. Formal region
3. Vernacular region

**Table summarizing regions:**

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<td>Uniform or homogeneous region.</td>
<td>Perceptual region.</td>
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<td><strong>Other:</strong></td>
<td>The characteristic chosen to define the region dominates at a central focus or node and diminishes in importance throughout.</td>
<td>The shared feature can be a language, economic activity, production of a particular crop, or environmental property such as climate.</td>
<td>Regions emerge from people’s informal sense of place rather from scientific models developed through geographic thought.</td>
</tr>
<tr>
<td><strong>Why Geographers use it:</strong></td>
<td>To display information about economic areas.</td>
<td>To help explain broad global or national patterns, such as variations in religions and</td>
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<tr>
<td>Examples:</td>
<td>Levels of economic development.</td>
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<td>• The reception area of a television station (at its strongest at the center of its service area), • circulation area of a newspaper, • trading area of a department store.</td>
<td>• Many people speak a language, practice a religion, or possess resources different from those of the majority.</td>
<td>Americans that refers to the South as a place with environmental, economic and cultural features perceived to be quite distinct from the rest of the US. Many of the features can be measured.</td>
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<tr>
<td>US can be divided into regions based on television markets, which are groups of countries served by a collection of TV stations.</td>
<td>During elections a president is able to only win in a certain region and only be in charge of that specific region.</td>
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Regions are also important in South Africa and other parts of the country.

**Regions in South Africa:**

<table>
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</tr>
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<tr>
<td>Newspaper regions (Pretoria, News in Gauteng, Die Burger in the Western Cape)</td>
<td>Nine provinces of SA</td>
<td>The Moot area in Pretoria/Tshwane (region traditionally characterised by Middle class Afrikaans speaking population and numerous religions denominations.)</td>
</tr>
<tr>
<td>Radio stations (94.7 Highveld stereo in Gauteng, K-FM in Cape Town, OFM in the central of SA)</td>
<td>Climate regions in SA</td>
<td>Vernacular regions in Cape Town.</td>
</tr>
</tbody>
</table>

**Scale: from global to local:**

Geographers think about scale at many levels, from local to global.

**Global scale:**
- Global – encompassing the entire world.
- See broad patterns.
Local scale:
• Local – such as a neighbourhood within a city.
• See unique features.

Defining globalisation:

• A force or process that involves the entire world and results in making worldwide in a scope.
• The scale of the world is shrinking – not literally, but in the ability of a person, object or idea to interact with a person, object or idea in another place.
• People are plugged into a global economy and culture, producing a world that is more uniform, integrated and interdependent.

Characteristics of globalisation locally and globally:

Local:
The language, food, clothing etc changes, due to us wanting to be the same as overseas countries. Locally the way in which we live changes.

Global:
Everything is connected, producing a world that’s more uniform, integrated and interdependent.

The spatial impact of the globalising economy:

Spatial means something in space. Globalisation has led to franchises not only being available in one part of the World, but in different parts. An example includes MacDonald’s. There’s numerous restaurants in South Africa, but not only in South Africa. They have over 32 000 restaurants in over 117 countries. Globalisation is the reason why it’s possible to have so many restaurants over a huge distance.

The impact of cultural globalisation:

Cultural globalisation involves the formation of shared norms and knowledge with which people associate their individual and collective cultural identities. It brings increasing interconnectedness among different populations and cultures. This has led to the spreading of restaurants and other places being available over the Earth, and not only in one region.

* Globalisation has an increasingly prominent impact on the South African economy
one of the best examples being the mining industry. Numerous companies from around the world have developed mines in South Africa that has increased foreign investment in numerous areas in the country to shape the national economy. The South Africa society is also increasing exposed to foreign cultural influences in retail (McDonalds, Burger King, SubWay, etc.), religion (Hindu, Buddhist temples etc.) and politics (embassies, United Nations and World Bank influence, etc.).

**Time and space: the distribution of features:**

**The properties of spatial distribution of phenomena:**

Distribution – The arrangement of a feature in space.

3 properties of distribution:

1. **Density:**
   - The frequency with which something occurs in space.
   - Features could be people, houses, cars, volcanoes or anything.
   - Area could be measured in square km, square miles, hectares, acres, or any unit of area.
   - A large population doesn’t necessarily lead to a high density. (can have a higher density due to smaller land).

   ![Density Diagram]

   **Top = 6 houses per hectare.**
   **Bottom = 12 houses per hectare.**

2. **Concentration:**
   - Extent of a feature spreading over time.
   - Clustered – objects are close to each other.
   - Dispersed – objects relatively far apart.
   - To compare concentration the two areas must have the same number of objects and the same area size.
3. Pattern:
• Arrangement of objects in space.

* The spatial arrangement of phenomena, especially in the human environment, often depends on the requirements associated with the use of space. Consideration of the distribution of phenomena necessitates the introduction of another spatial concept, namely spatial distribution. Spatial distribution is used to provide an overall geographic description of all the components of the phenomenon being considered (not the individual components) and thus refers to the different patterns and densities of places, facilities or features in relation to each other. Descriptive terms like ‘random’, ‘linear’, ‘clustered’, ‘dense’, ‘dispersed’, ‘regular’, ‘irregular’ or ‘concentric’ are used to describe how individual components of a phenomenon are distributed relative to each other or arranged in space. For example: the harbours of South Africa are distributed linearly along the coastline of South Africa.

The diversity of spaces and the implications thereof:

Patterns vary according to gender and ethnicity. Ethnicity refers to the state of belonging to some social group, who has cultural or national tradition in common.
Some genders, such as boys take up more space for their sport and recreation activities than girls. For instance, boys use ballfields, taking up a lot of space, where girls use studios for dancing. The diversity in space is then when we ask the question of “which activity takes up more space?”

**Interaction between places:**

* In the same way as every location on Earth’s unique, it’s also true that no location exists in isolation.

**The different types of diffusion, their characteristics and geographic implications:**

Diffusion - Process where a feature or trend from one place gets spread to another over time. Occurs through cultural interaction involving persons, objects or ideas.

Hearth – The place from which an innovation originates.

- Something starts at a hearth or node and diffuses from there to other places.
- Geographers document the location of nodes and the processes by which diffusion carries things elsewhere over time.

1. **Relocation diffusion:**
   - The spread of a feature through bodily movement of people from places.
   - When people move they carry with them their culture, including language, religion and ethnicity.

2. **Expansion diffusion:**
   - The spread of a feature from one place to another in an additive process.

This expansion may result from 1 or 3 processes:

2.1 **Hierarchical diffusion:**
   - The spread of an idea from persons or nodes of authority or power to other persons or places.
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   - Rapid, widespread diffusion of a characteristic throughout the population.
   - This form of diffusion is analogous to the spread of a contagious disease, such as influenza.
   - Ideas on the World Wide Web spread through contagious diffusion, because Web surfers throughout the world have access to the same material simultaneously – and quickly.
2.3 Stimulus diffusion:
   - The spread of an underlying principle.
   - Example, innovative features of Apple’s iPhone and iPad operating systems have been adopted by competitors.

All 3 types of expansion diffusion occur much more rapidly in the contemporary world than in the past, because of widespread access to modern communications systems. Ideas are able to diffuse from one place to another, even if people aren’t actually relocating.

**The explanations of spatial interaction and distance decay:**

**Spatial interaction:**
- When places are connected to each other through a network.
- The further away the group is from another, the harder it is to interact.
- Contact decreases when the distance increases and eventually disappears. (distance decay).
- Airline network – Canada configured a route network in a system known as “hub and spokes”. A large percentage of the flights originate or end at its principal hub in Toronto.

**Distance decay**
- Refers to the decrease in importance and eventual disappearance of a phenomena with increasing distance from its origin.

**The Earth’s physical systems:**

* The 4 spheres of the physical environment work together to form a suitable habitat for all the forms of life on Earth.

**The four systems comprising the earth’s physical environment:**

![Diagram of Earth's physical systems]
The role and characteristics of an ecosystem:

- An ecosystem is the mutual relationship and interaction between living organisms and between organisms and the natural environment in which they live.
- From a biological viewpoint, ecosystems are regarded as the result of the relationships and interactions between biotic (living) and abiotic (non-living) components.
- There is a delicate balance between the different components in an ecosystem, and a disturbance in one of these components affects the others.
- An ecosystem is a community in which different groups of species interact with one another and with their non-living physical and chemical environments.

How living organisms interact in the biosphere:

- The lithosphere is where most plants and animals live and where they obtain food and shelter.
- The hydrosphere provides water to drink, and physical support for aquatic life.
- The atmosphere provides the air for animals to breathe and protects them from the sun’s rays.

Effect of the interactions of humans with the 4 spheres:

- If the atmosphere’s oxygen levels are reduced, or if the atmosphere contains pollutants, humans have trouble breathing.
- Without water, humans waste away and die.
• A stable lithosphere provides humans with materials for buildings and fuel for energy.
• The rest of the biosphere provides humans with food.

* The spheres are connected and are equally important. Any disruption in one of the spheres, will impact the other spheres too.

**Human-environment interaction:**

* The relationship between humans and their environment has been associated with innovation and disaster. Examples of innovations include energy harnessing and developments in previously uninhabitable areas while examples of disasters include floods, droughts, landslides, etc.

The study of human-environmental relationships = cultural ecology.

**Geographers are interested in:**
1. How people adjust to the environment
2. How people modify it.

**The impact of the environment on humans:**

• A resource for food supply:
  - we obtain food from the environment, through vegetables, meat, fish etc.
• An energy source:
  - we get energy from the Sun.
• A source for recreation:
  - dams, rivers, mountains etc. can be used for recreation through swimming, hiking, riding bike, etc.
• A major source of medicines:
  - plants can be used for medicinal purposes, such as Aloe Vera, which gets used for sunburn and wounds.
• Natural resources for industrial products:
  - trees get used for building things, and also iron for building machines.

**The impact of humans on the environment:**

**Population Explosion**
• Using chemical fertilizers, insecticides and herbicides to increase production actually pollutes the air, soil and water with toxic chemicals. Fertilizer run-offs cause toxic algal blooms that kill aquatic animals.
• Removing trees and other plants to increase areas of cultivation causes habitat loss and threatens the survival of numerous species of animals and plants.
• Monoculture keeps cost of production low, but it reduces biodiversity and negatively impacts the soil.
• Large scale farming of animals increases their susceptibility to diseases such as Mad-cow disease and avian flu, for example. Waste generated in the farms and
meat processing plants can affect the water quality in the area.
• The greater distance food items have to travel to reach the consumer, the greater that transportation's impact is on the environment.

Soil pollution
• Pesticides, herbicides, large landfills, waste from food processing industries, and nuclear waste generated from nuclear reactors and weapons deplete our soil of its nutrients and make it virtually lifeless.

Water Pollution
• Effluence from industries, fertilizer run off, and oils spills all damage fragile ecosystems.
• It leads to fish and species dying due to the oxygen that gets taken out of the water due to pollution.

Air Pollution
• Burning of fossil fuels and toxic gases produced in factories causes pollution.
• Air pollution infects the environment and threatens the health of all who inhabit the earth.

Global Warming and Ozone Layer Depletion
• Carbon footprint is the measure of direct or indirect CO2.
• Greenhouse gases like CO2 and methane are believed to lead to global warming.
• Chlorofluorocarbons (CFCs), used in refrigeration, and aerosols destroy the ozone layer that shields the earth from UV rays.

The relationship between people and the environment is that people can't exist without the environment, because we live in it. But as humans it’s our job to look and take care of the environment.

* Human-environment interaction is a two-way relationship. It is definitely not just related to the way in which humans use (and more often than not abuse) the environment. An important part of this relationship is also how the environment enables or inhibits the activities of humans. Natural characteristics, such as elevation, water flow, climate, weather and resources often determine how the environment can be used and in many cases cause disasters which severely inhibit human activities. In the same way natural characteristics can also positively influence human activities, the most common example being tourism benefits received from an attractive natural environment.

**Guidance for preparing for MCQ’s:**

**Things that make a phenomenon or event geographical:**

Geographical - based on or derived from the physical features of an area.

**What is a geographical phenomenon?**
• Something we observe on the Earth’s surface.
• The 2 most basic questions:
  1. What is it?
  2. Where is it? – location, position and situation.

A geographical phenomenon has:

• A temporal component:
  It implies that geographical phenomena are not static – it changes over time. What is the implication when gathering data or comparing different sets of data about a phenomenon?

• A spatial component:
  All elements of the phenomenon can be linked to a specific location (it can be a point, a line or an area) on the Earth’s surface. Location can be defined in absolute (the geographical coordinate system) or relative terms (± 24 km northeast from the road and rail crossing). By the way, a line is actually a string of points.

• A thematic component:
  The thematic component refers to the measurable characteristics or properties of the phenomenon. Examples: What is its name? How big is it? How long is it? When was it erected? How old is it? What colour is it? What is the function of it? How important is it?

Examples of geographical phenomena:

<table>
<thead>
<tr>
<th>These are not</th>
<th>These are</th>
</tr>
</thead>
<tbody>
<tr>
<td>A crime scene.</td>
<td>Crime scenes in a city over 5 years.</td>
</tr>
<tr>
<td>Art.</td>
<td>Places where art is exhibited.</td>
</tr>
<tr>
<td>Rugby teams participating in Curry Cup.</td>
<td>Home towns and schools of rugby players in the Curry Cup.</td>
</tr>
<tr>
<td>Flowers of Namaqualand.</td>
<td>Spatial distribution of variation in flowers of Namaqualand.</td>
</tr>
</tbody>
</table>

The main focus of area analysis, spatial analysis and geographic systems analysis as prominent analytical methods of contemporary geography:

Geographers collect and analyse info, but they focus on different topics and analytic approaches. Most make use of 3 analytical methods:

Area Analysis:
• Integrates geographic features of a place or area.

Spatial Analysis/Locational Analysis:
• Emphasizes interactions among places.

Geographic Systems Analysis:
• A focus on interactions among between human and physical environments.

Basic geographical concepts as absolute and relative location, situation, space, scale, interconnectedness (connection), interrelatedness, site
**characteristics:**

**Absolute location:**
Describes the location of a place based on a fixed point on Earth. The most common way is to identify the location using coordinates such as latitude and longitude.

**Relative location:**
The term used that indicates a place’s location within a larger context. For instance: Bloemfontein is located in the Free State. Places nearby is Botshabelo and Thaba Nchu.

**Situation:**
The location of a place relative to other places.

**Scale:**
Is the relationship between the portion of Earth being studied and Earth as a whole. Geographers study every scale from the individual to the entire Earth, though they’re concerned about the global-scale patterns and processes.

**Interconnectedness (connection):**
The relationship among people and objects across the barrier of space.

**Interrelatedness:**
The way in which each of 2 or more things is related to the other or others.

**Site characteristics:**
The physical characteristics of a place.

**Characteristics of map projections and the globe properties they preserve/distort:**

Projection – the scientific method where locations on Earth’s surface gets transferred to a flat map.

**Types of projections:**

1. **Azimuthal projections:**
   • Well-suited for larger areas and used for most of the world maps.

2. **Cylindrical projections:**
   • Used for specialized maps.
   • Most widely used = Gerardus Mercator.

3. **Conic projections:**
   • Well-suited for small area maps.
• Used for most of the maps of countries.

Projections used in the book:

• World maps = The Winkle II pseudo-cylindrical projection.

• Continents = The Lambert azimuthal equal area.

• Countries = The Lambert conformal conic projection.

Distortion – to make a map, the spherical Earth is divided into segments. Flattening these segments onto flat paper results in distortion.

Can result in 4 types of distortion:

1. Shape can be distorted – appears more elongated or squat than in reality.
2. Distance between 2 points may become increased or decreased.
3. Relative size of areas can be altered – area can appear larger than on another map, but in reality its smaller.
4. Direction from one place to another can be distorted.

**The concept of a region and the types of regions:**

**What is a region?**
- An area on Earth defined by one or more distinctive characteristics is a region.
- A region derives its unified character through the cultural landscape.

- Cultural landscape – a combination of cultural features such as:
  - language and religion,
  - economic features such as agriculture and industry, and
  - physical features such as climate and vegetation.

<table>
<thead>
<tr>
<th></th>
<th>Functional region</th>
<th>Formal region</th>
<th>Vernacular region</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Other name:</strong></td>
<td>Nodal region.</td>
<td>Uniform or homogeneous region.</td>
<td>Perceptual region.</td>
</tr>
<tr>
<td><strong>Definition:</strong></td>
<td>Area organized around a node or focal point.</td>
<td>Area which everyone shares in common one or more distinctive characteristics.</td>
<td>A place people believe exists as part of their cultural identity.</td>
</tr>
<tr>
<td><strong>Other:</strong></td>
<td>The characteristic chosen to define the region dominates at a central focus or node and diminishes in importance throughout.</td>
<td>The shared feature can be a language, economic activity, production of a particular crop, or environmental property such as climate.</td>
<td>Regions emerge from people’s informal sense of place rather from scientific models developed through geographic thought.</td>
</tr>
<tr>
<td></td>
<td>The region’s tied to a central point through transportation, communication systems and economic or functional associations.</td>
<td>The selected characteristic is present throughout.</td>
<td></td>
</tr>
<tr>
<td><strong>Why Geographers use it:</strong></td>
<td>To display information about economic areas.</td>
<td>To help explain broad global or national patterns, such as variations in religions and</td>
<td></td>
</tr>
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**The role of technology as a modifier of the physical environment:**

**Impacts on the local natural environment**

This category focuses on the effects a technology may have on organisms, their habitats, the life supporting capacity of natural ecosystems, and on biodiversity. Of particular concern is the loss of endangered and rare plant and animal species, and destruction of endangered and limited habitats. Three principal impact pathways should be considered when assessing impacts in this category:

• Habitat loss or alteration through land clearance (e.g. as a consequence of raw material demand or development of a site);
• Physical disruption of habitat; for example, the construction of pipelines that inhibit the migration of animals; and
• The chemical contamination of the environment through the release of wastes that have a direct toxic effect on flora and fauna (e.g. pesticides) or that alter the functionality of an ecosystem through such processes as eutrophication (e.g. the discharge of nutrients or other chemicals with high biological oxygen demand (BOD)) and acidification.

**Global environmental impacts**

This category is concerned with the impact of the technology at a global scale, typically as a cumulative impact. These impacts may or may not be associated with a significant effect on a given local ecosystem or community. Particular emphasis is placed on the release of substances that:

• Enhance global warming (i.e. greenhouse gases such as carbon dioxide, methane and nitrous oxides); and those that
• Deplete the stratospheric ozone layer, for example chlorofluorocarbons.

The significance of gaseous emissions with global warming or ozone depleting potential varies with the chemical species, the amount released and the time frame over which the impacts are considered.

Some technology interventions might also reduce the effectiveness of carbon sinks, such as through the clearing of treed areas or through soil degradation leading to the release of carbon into the atmosphere.

**Impacts on scarce or non-renewable resources**
This impact category relates to the effect that the technology has upon the continued existence and availability of valued and scare resources. There are two principal ways a technology can affect resource sustainability:

• By consuming a resource at a rate greater than it is replenished or greater than the rate at which it may be continually supplied over the lifetime of the technology; and
• By contaminating a resource that is either used by the technology operators or by other parties, but which has no direct link to the technology (e.g. contamination of groundwater by an industrial manufacturing process).

When identifying and evaluating impacts on such resources it is necessary to consider the relative scarcity of the resource, in both local and regional or global terms, as well as the demands of the technology over its lifetime (e.g. how much will be consumed or contaminated).

In general, three basic resource categories should be considered in the assessment:

• Living Resources: Consumption or destruction of flora and fauna resources such as crops, forests (e.g. tropical rainforests), and fisheries;
• Non-living resources: Mineral and chemical resources such as the fossil fuels used in energy generation or the materials used in production, and also the consumption or contamination of water resources; and
• Land resources: The land required by the industrial site, wastes, and by supporting infrastructures and services which may reduce its potential for later use.

To evaluate the significance of resource consumption it is necessary to consider the future demands for the resource and how the technology limits the potential for this resource to be used in the future. A technology that uses recyclable materials and recycles wastes will generally have a lower impact than a process that does not.


**Guidance for questions requiring written answers:**

**The 6-mark question:**

An explanation of one or more of the spatial concepts of location, variation and distribution by referring to specific phenomena (illustrated in your prescribed book as world maps - this might entail consideration of phenomena as global climate, precipitation, temperature, soils or biomes and how the spatial distribution of one of the latter is related to the distribution of the global world population):

**Precipitation:**

• Ranges from almost none in some desert places to more than 300cm in wet tropical areas.
• Cool areas such as midlatitudes, precipitation takes the form of gentle rainfall, where in tropical regions they may come in torrential downpours.
• In Europe + wetter portions of North America the annual rainfall varies by less than 15% per year.
• In many of the tropical + subtropical regions it fluctuates from 15-20%, and in the semiarid and arid lands, by 50% or more.
• Because heat energy must be available to evaporate water, warmer climates make possible a greater amount of evaporative water use.
• Thus temperature is considered distinguishing between arid + humid climates.

![Global Average Annual Precipitation](Image)

**Temperature:**
• The temperature is not the same everywhere, it varies over space.
• The highest temperatures are found in low latitudes, because the Sun is highest in the sky in these areas, and therefore the intensity of solar radiation is highest.

**Biomes:**
• It rains more, closer to the Equator, due to the NE Wind and SE Wind that meets at the Equator (Inter Tropical Convergence Zone (ITCZ)).
• ITCZ is a low pressure created by intense heat from the area.
• The two winds carry a lot of moisture.
• When the 2 winds convergence they heat, becomes light + rises to the atmosphere.
• As it rises, it loses heat, becomes light + rises to the atmosphere – creating clouds, resulting in rain.
• Therefore more tropical biomes can be found closer to the Equator, drier climates further from the Equator and Polar biomes far from the Equator.
How the latter is related to the distribution of the global world population:
• Human beings are not distributed uniformly across Earth’s surface.
• Human beings avoid clustering in certain physical environments, especially those that are too dry, too wet, too cold, or too mountainous for activities such as agriculture, such as Cold lands (North + South Poles (too cold), Sub-Saharan Africa (too dry + hot), Brazil’s Amazon River (too wet) and South America (too mountainous).
• Two-thirds of the world’s inhabitants are clustered in 4 regions - East Asia, Europe, Southeast Asia and South Asia, because they show similarities – most live near an ocean or river with easy access to an ocean, rather than in the interior of major landmasses, they also occupy generally low-lying areas, with fertile soil + temperate climate.

![Population Density Map]

The characteristics and main focus of area analysis, spatial analysis and geographic systems analysis as prominent analytical methods of contemporary geography:

Geographers collect and analyse info, but they focus on different topics and analytic approaches. Most make use of 3 analytical methods:

Area Analysis:
• Integrates geographic features of a place or area.

Types of regions:

• Functional or nodal:
  - area around node or focal point.
  - Example = The service area of a hospital
• Formal, homogeneous or uniform:
  - area shares a common one or more distinctive characteristics.
  - Example = The Free State
• Vernacular or conceptual:
  - it is in the mind
  - Example = The Karoo
Spatial Analysis/Locational Analysis:
• Emphasizes interactions among places.
• Distribution of phenomena:
  - Density
  - Concentration
  - Pattern
• Movement as the indication of interaction:
  - Effect of distance on interaction.
  - Distance decay.
  - Diffusion and barriers to diffusion.

Geographic Systems Analysis:
• A focus on interactions among human and physical environments.
• A set of things working together as parts of a mechanism or an interconnecting network.

Examples:

• Earth’s physical systems:
  - The interface of the 3 abiotic (Atmosphere, hydrosphere + lithosphere) with the living system (biosphere).
• Interactions in the biosphere:
  - Ecosystem is a group of living organisms and the abiotic spheres with which they interact.
  - Distinctive geography = the importance given to the relationships between human behaviour and the natural environment – cultural ecology.
• Human-environmental interaction:
  - Humans are able to modify the environment due to technology and population size such modification has been accelerated.
  - The environment can limit human action = environmental determinism, but people can adjust to the environment = possibilism.

The 4-mark question:
The following topics are particularly important:

Why each location on earth is unique and how locations are interrelated:
- Interrelatedness refers to the way in which each of two or more things are related to the other or others.
- Locations can be defined by using place names, situation and site.
- Regions are areas of the world distinguished by a unique combination of features.

Each location is unique:
• They have different place names.
• The situation relative to other places are different, and don’t have the same characteristics. Each one of them are known for a different characteristic and what
makes it important.
• The site is the physical character of the place. The vegetation will differ because of different rainfalls. Soil will change due to the different biomes present, as well as the topography – in mountain areas there will be higher mountains than in the desert. The latitude will differ, because it’s on different lines.

These factors make locations unique, but they do have a connection with each other for they’re able to be on the same latitude lines, they can share the same vegetation and soil types. Different locations can have the same biomes etc.

The concept of interrelatedness with reference to the interaction between the biosphere and any one or more of the Earth’s main abiotic physical systems (spheres):

Interrelatedness refers to the way in which each of two or more things are related to the other or others.

How the abiotic physical systems interact in the biosphere:

The lithosphere:
• allows the plants and animals to obtain food to survive and shelter.
The hydrosphere:
• provides water to drink, and physical support for aquatic life.
The atmosphere:
• provides the air for animals to breathe and protects them from the sun’s rays.

The technologies used for gathering, analysing and presenting spatial data of the Earth:

Remote sensing:
• Remote-sensing satellites scans Earth’s surface and lets the receiving station receive it in digital form.
• At any moment the satellite sensor records an image of an area called a pixel or picture element.
• Geographers use it to detect the change in environments or features such as, agriculture, drought and sprawl.

GPS:
• Determines precise location on Earth.
• Through satellites placed in predetermined orbits.
• GPS commonly used to provide directions to drivers.
• Cell phones with GPS can also allow the user to share his/her location with friends.

GIS:
• GIS captures, stores and analyses geographic data.
• Can be used to produce maps – are more accurate and attractive.
• Each type of info can be stored in a layer.
• Geographers use it to calculate if relationships between objects on the map are significant coincidental.
• Layers can be compared – showing the relationships between different info.

Mash-ups:
• Remember by - term came from hiphop, combination of 2 songs
• Example – Google Maps and Google Earth.
• Links a database such as an address list with software, such as mapping.
• Mash-ups refer to the practice of overlaying data from one source on top of one of the mapping services.
• Assists in finding apartments, bars, hotels, etc.
• Can show precise location of planes in the air, gas stations with cheapest price, and traffic tie-ups.

**Environmental determinism and possibilism as theories explaining human-environment interaction:**

**Environmental determinism:**
• How the physical environment caused human activities.
• According to geographers physical environment caused social development.
• Example:
  - The temperate climate of northwestern Europe produced greater human efficiency as measured by better health conditions, lower death rates and higher standards of living.
• Believes that the environment can limit human action.

**Possibilism:**
• Physical environment may limit some human actions, but people can adjust to the environment.
• People can choose actions from alternatives in the physical environment, such as:
  - people learn that different crops thrive in different climates,
  - wheat is better to grow in colder climates
• The crops they grow people choose by considering the environment.

**Test yourself:**

1. Which one of the following descriptions provides the most accurate example of the relative location of a geographic phenomenon? *(Sec A, pg 38-39)*

(1) **The Piton de la Fournaise ("Peak of the Furnace") volcano is located on an island in the Indian Ocean.**
(2) The Unisa Bloemfontein Regional Service Centre is situated at 161 Zastron Street, Bloemfontein.
(3) The tallest tree in the world is located in the Redwood National Park which is situated at approximately 41°18′ N; 124°00′ W.
(4) The Parliament of South Africa, in Cape Town, is located at 33.927086°S; 18.42044°E.
2. Which one of the following spatial patterns and/or descriptions of relative location describes the global distribution of earthquakes in Figure 3.3.3 (Section B: page 71) in the best way? (Sec A, pg 44-45)

(1) Linear and located on tectonic plate boundaries.
(2) Random and located close to the oceans.
(3) Random and located at the epicentre of an earthquake.
(4) Linear and located in warm areas.

3. The basic concepts which geographers use to explain interrelatedness are … (Sec A, pg 4)

(1) maps, remote sensing and Geographical Information Systems (GIS)
(2) place and region
(3) scale, space and connection
(4) geographical coordinates, absolute location and distance
(5) distance, area and location

4. Which one of the following properties can be regarded as characteristic of spatial distribution? (Sec A, pg 44-45, 20)

(1) towns, cities and states
(2) people, buildings and cars
(3) density, concentration and pattern
(4) area analysis, spatial analysis and geographic systems analysis

5. Which one of the following is not a function of the geographic grid? (Sec A, pg 52-53, Sec B, pg 10-11)

(1) describing location
(2) navigation
(3) naming places
(4) determining universal time

6. Which one of the following research activities would be considered as part of physical geography? (Sec A, pg 24-25)

(1) studying the impact of rainfall on the carrying capacity of soil and vegetation growth in agricultural regions
(2) studying the spatial structure of ancient cities
(3) mapping the population growth and population density patterns in a country
(4) providing a detailed perspective on the spatial patterns and spatial interactions of national space economy

7. A uniform region is defined by… (Sec A, pg 39, 42-43, Sec B, pg 17-18)

(1) politicians
(2) common natural or human characteristics that exist throughout the region
8. Which one of the following statements regarding the Earth’s life-supporting spheres is false? *(Sec B, pg 24-25)*

1. The biosphere, lithosphere, hydrosphere and atmosphere are interconnected.
2. The biosphere is a biotic system.
**3. The only sphere we can possibly do without is the atmosphere.**
4. These spheres continuously interact implying that human-environment studies need to be conducted holistically.
5. In order to be classified as an ecosystem, an environment must include living organisms.

9. The spread of ideas from nodes of power to other places is an example of… *(Sec A, pg 46-47, 22-23, 30-31)*

1. stimulus diffusion
2. natural contagious diffusion
3. relocation diffusion
**4. hierarchical diffusion**
5. expansion diffusion

10. Which one of following concepts is used in contemporary geography to explain the relationship between humans and the environment? *(Sec B, pg 26, 30-31)*

1. possibilism
2. human determinism
3. environmental determinism
4. spatial interaction