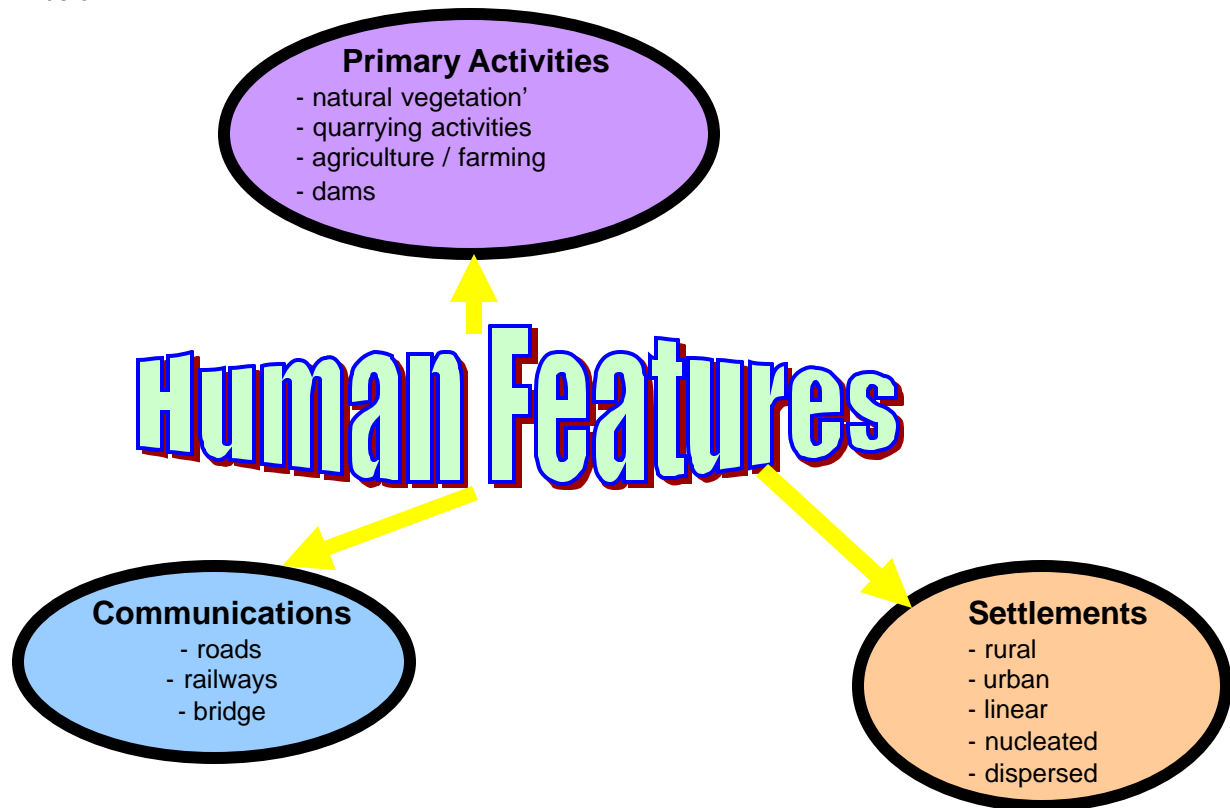


(c) **Human features**

- ✓ We interpret human features on a topographic map in order to find out the activities that are carried out by people and how they are influenced by the physical environment and other human features.
- ✓ The topographical maps from tropical countries have the common human features as listed below.

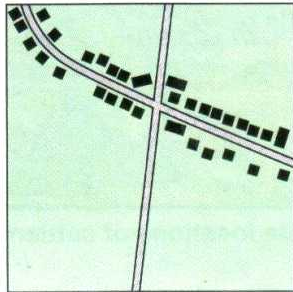


(b) Settlements

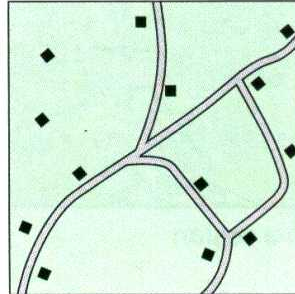
- ✓ Settlements refer to places where people live and carry out economic activities.
- ✓ Settlements are represented by symbols for towns, populated areas and built-up areas crossed by roads, buildings, some of which are named, staff quarters, huts and names of settlements.
- ✓ Variations in the sizes of the symbols may be used to denote the physical sizes of the settlement and different population densities.
- ✓ Their distribution on the map will indicate the distance of one settlement from another.
- ✓ They are found on gently sloping land which allows for future expansion and may be served by rivers.
- ✓ Their development is limited by physical environments such as highlands and swampy land.

Settlement patterns

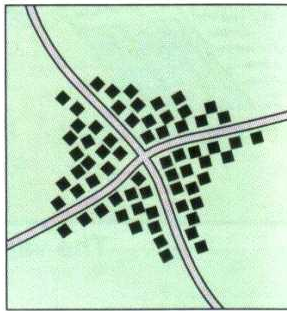
- ✓ In rural settlements, the settlement patterns refer to the physical layout of a settlement and its general appearance.
- ✓ The arrangement of symbols of uniform shape (e.g. black dots or squares) on a map represents the development of the settlements.
- ✓ There are several settlement patterns on just one topographical map.



Linear pattern



Dispersed pattern

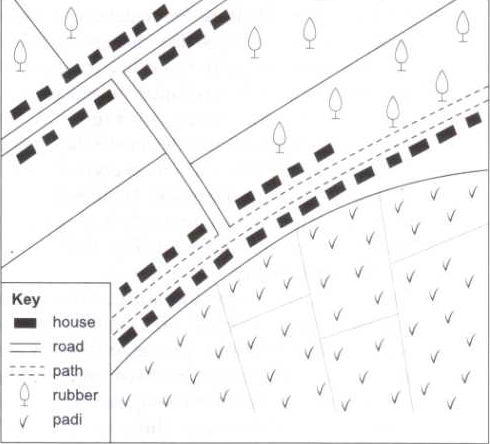
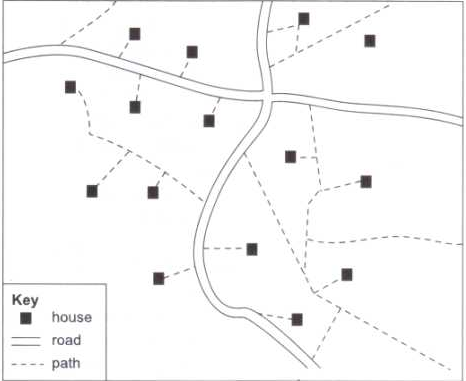



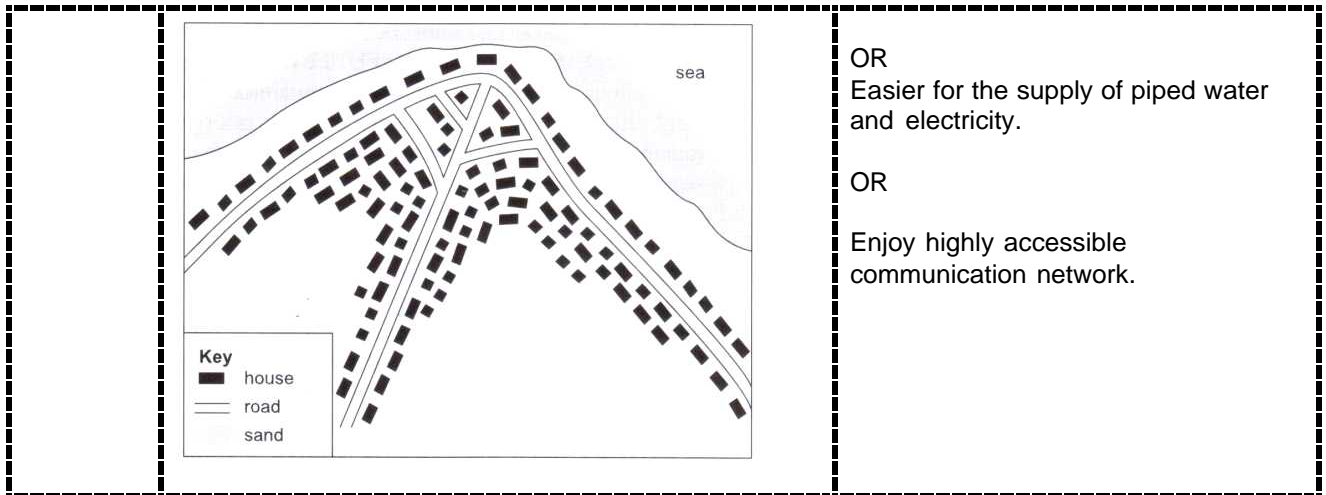
Nucleated pattern

How to distinguish among the 3 settlement patterns?

- ✓ A dispersed settlement will appear as black squares scattered over a large area on the map.
- ✓ A linear settlement will appear as black squares in a straight line along a road or a coastline.
- ✓ A nucleated settlement will appear grouped or concentrated in 1 or 2 areas such as at road junctions.

Type	Location	Reasons
Linear	Near roads, railways, etc	Get accessibility to other places
	Near roads, railways, etc- near the cities	Easy to go to work
	Near rivers	Water for own consumption
	Near rivers- but cultivation is nearby	Water is used for watering of crops
	Near the side of the cultivation	Easy access for the labour to the farm

		
	Near embankments or levees in padi growing region	To avoid flooding
	Raised ground along the coast	To protect from winds and waves
Dispersed	Settlement near the tracks	To enable the farmers to reach the farm easily
		
	In agricultural areas where farms are spaced apart	Each farmer works his own large area of land and his source of water.
	Limited favourable physical	Steep relief, poor soil conditions and poorly distributed resources cause small settlements to locate on these sites.
Nucleated	Estate e.g. plantation	Get labour to stay
		
	Intersections of transport routes	Gives a greater sense of security to the settlers and facilitates the exchange of goods and services

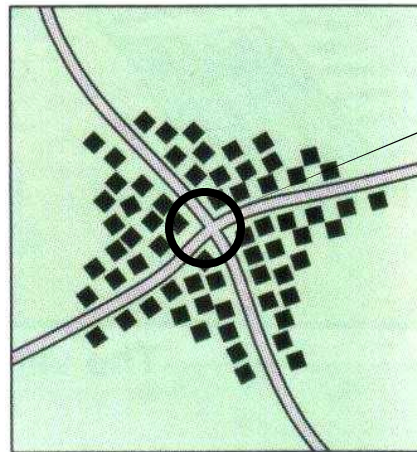


OR
Easier for the supply of piped water and electricity.

OR
Enjoy highly accessible communication network.

Note:

- ✓ The word 'junction' is often used in map reading questions when describing transport network.



The **intersections** between transport networks

Conditions to allow growth of Settlements

- ✗ Some regions are suitable for settlements while some are not suitable for settlements.
- ✗ As a result, this may affect development.

E.g. Region not suitable for settlements

- ✗ The region is **heavily dissected by rivers** and streams resulting in difficulty in constructing roads and houses.
- ✗ The region is **undulating** making it difficult for construction
- ✗ The region is **too hilly / mountainous with many steep slopes**.
 - The mountainous places becoming inaccessible and lack of economic opportunities and therefore cannot attract settlers.
- ✗ The region has **game trails**.
 - This could have made people avoid building settlements as the government might have designated the place to be nature reserve.
- ✗ Settlements will not be allowed to be set up here since there is a **national park**.
 - There will be a clash in land use.

Common mistake:

At this level, Candidates must realize that the Cambridge will ask questions in map reading like **explain** why the region found on the map does not attract settlements.

- ✗ Explanation by candidates tends to fall short of giving a rounded reasoning based on the evidence seen on the map.
 - E.g. mention of 'mountainous region' 'undulating land' in the region but no mention of e.g. mountainous and undulating terrain **makes construction difficult, costly resulting in the mountainous places becoming inaccessible and lack of economic opportunities and therefore cannot attract settlers. [Important]**

(c) Transport networks


- ✓ Transport is important for the development of agriculture, mining, industries.
- ✓ Roads, railways and canals are shown by the maps as lines.
 - Roads are usually represented by red lines.
 - Railways are usually represented by black lines.
 - Canals are usually represented by blue lines.
- ✓ The location of roads and railways is often related to the relief of the land.
- ✓ Topographical maps will reveal the relationship between the location of roads and railways to the location of settlements.
 - Where settlements are dispersed (not dispersed settlement pattern), the transport patterns are simple.
 - Where large settlements occur, the lines of transport become more complex.

Common mistake

- ✓ Candidates often misinterpret the type of transport network especially roads found in a region.



From the legend above, candidates must note that

- ✓ A **thick red bold** line represents **wide tarred** road.
- ✓ A **thinner red bold** line represents **narrow tarred** road.
- ✓ A **thin red** line represents **gravel** road.
- ✓ A  symbol represents a **bridge**.
- ✓ A **red -----** symbol represents a **track** or **cut line** or **game trail**.

Summary of road transport system

In Geography Elective, you will be analyzing topographical maps from the developing countries. It will be ideal for Candidates to familiarise the transport network found in the developing countries.

In Victoria Falls topographical map

Road, Wide Tarred _____ 

" Narrow Tarred _____ 

" Gravel or Earth, Bridge _____ 

" other _____ 

Track, Cut Line or Game Trail _____ 

In Lesser Antilles topographical map

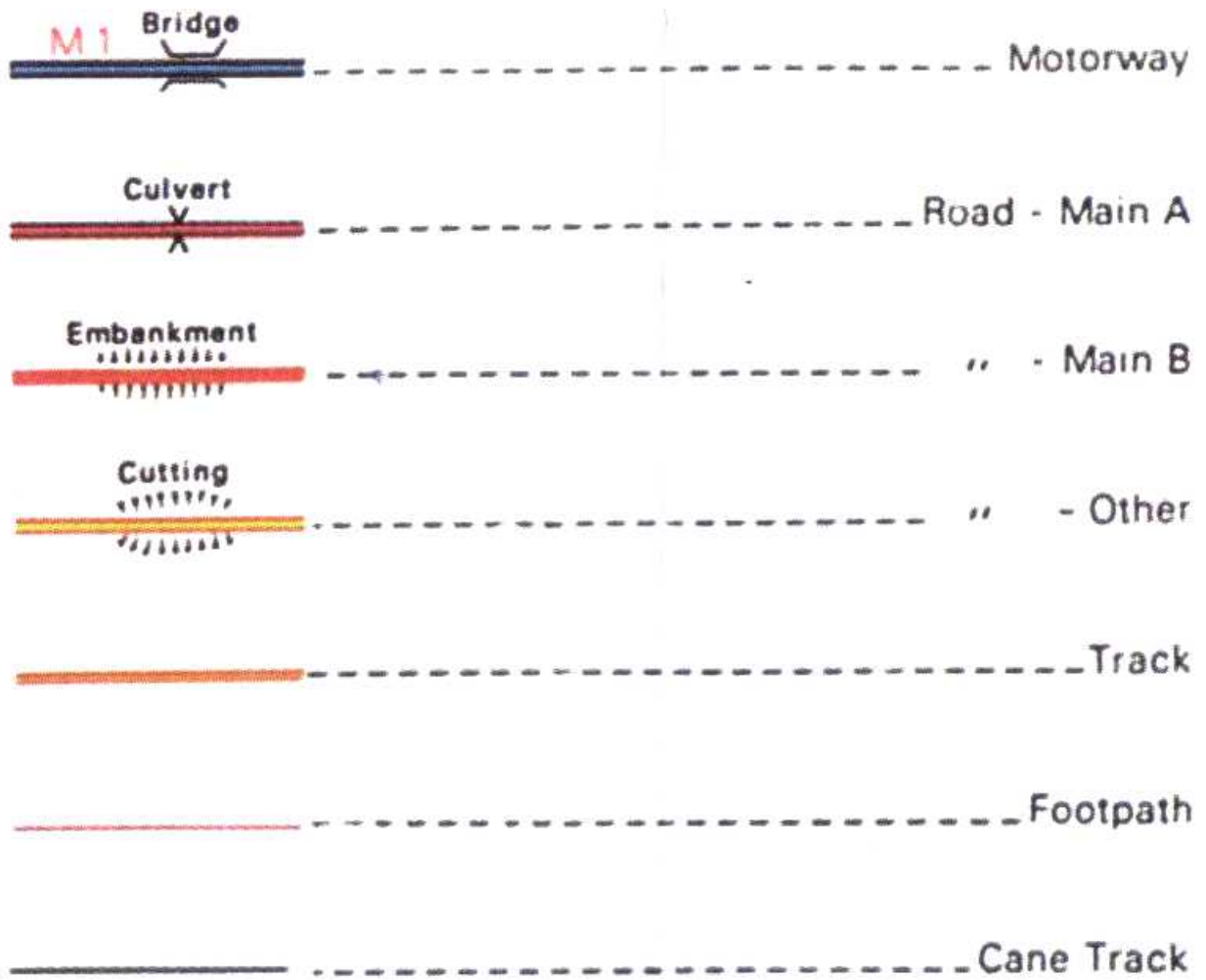
Surfaced Road _____ 

Unsurfaced Road _____ 

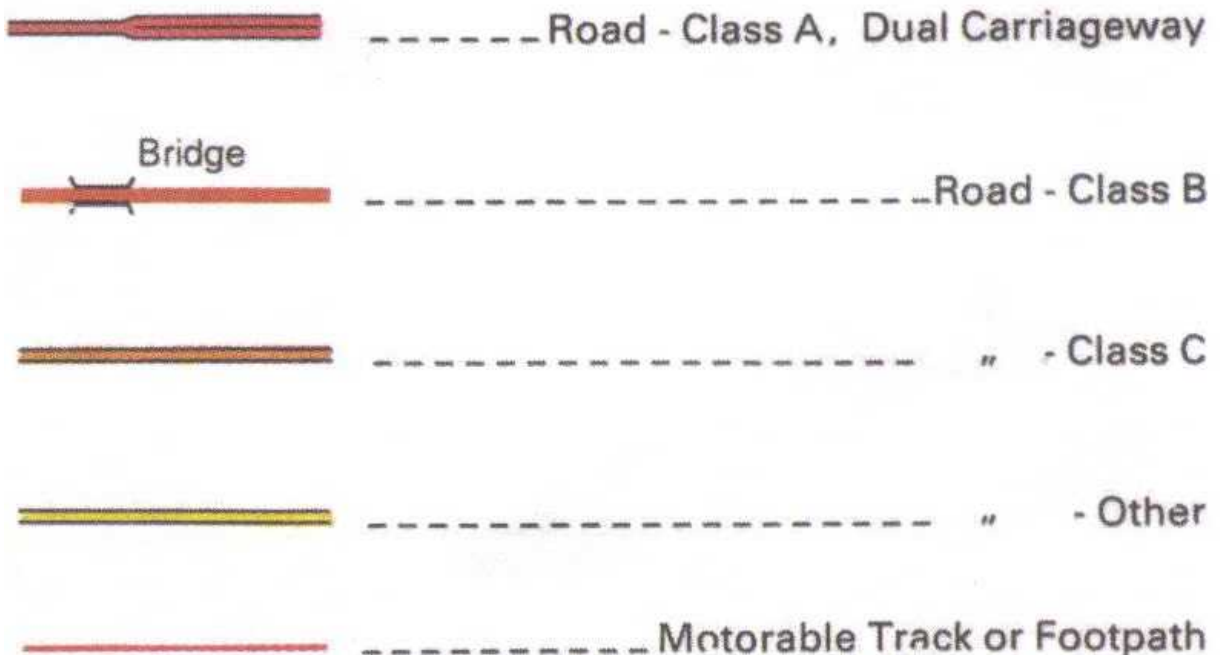
Track and four wheel drive trail _____ 

Footpath _____ 

In Port Louis topographical map



In Savanna La Mar topographical map

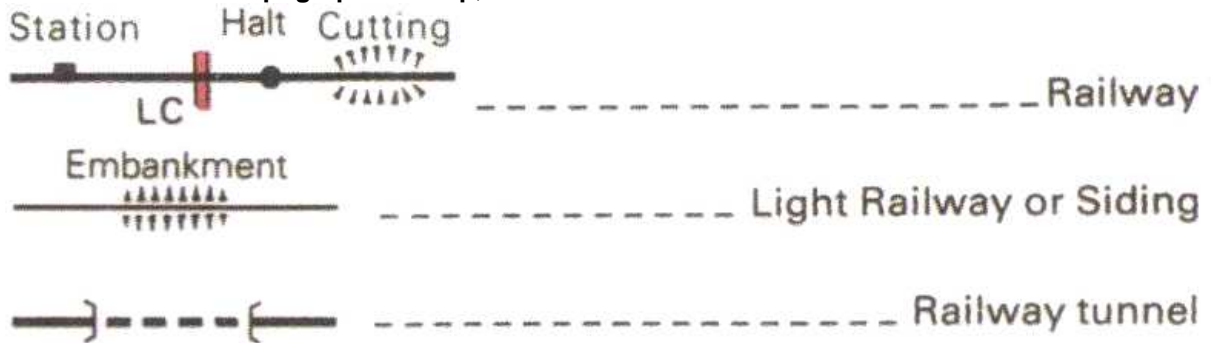


Physical Factor

Factors	Explanation
Physical relief	<ul style="list-style-type: none"> ✓ Roads and railways always avoid very steep hills. <ul style="list-style-type: none"> ○ Most motor vehicles cannot manage a gradient of more than 1:3. ○ Most railways cannot manage a gradient of more than 1:50. <p>Ways of locating Map evidences:</p> <ul style="list-style-type: none"> ✓ To overcome steep gradients, [Method 1] many roads go in a zigzag pattern. ✓ [Method 2] Hill slopes are cut to make roads and railways passable. ✓ Where there are alternatives nearby such as gap, roads and railways will be built through them. ✓ [Method 3] The roads are winded.
Floods and swamps (liable to flood)	<ul style="list-style-type: none"> ✓ Railways are built on levees [for floodplain] and embankments to minimize flooding liability. ✓ Along coastal districts, roads are often built away from the swamps or along higher inland to avoid possible floods.
Natural obstacles	<ul style="list-style-type: none"> ✓ Wooden or concrete bridges are built across the rivers and streams so that the traffic is not interrupted. ✓ Embankments are raised at suitable levels of deep valleys and gorges to bridge the gaps to smoothen the traffic flow.

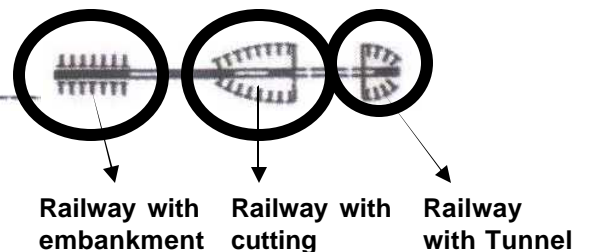
Examples of natural obstacles on the topographical map

In Savanna La Mar topographical map,



In Victoria Falls topographical map,

Railway, with Embankment, Cutting, Tunnel



Settlements and land use can affect the transport network

Factors	Explanation
Settlement are linked to one another	<ul style="list-style-type: none"> ✓ Farms, estates, mines have to be served by roads for their products to reach the market and for the daily food supplies and equipment to reach the farms or the mines. ✓ The larger the settlement and the greater the land use, a greater density of transport network is needed to serve the people and their economic activities
Different stages of development	<ul style="list-style-type: none"> ✓ Villagers are served by secondary roads, footpaths or motorable tracks, while large cities are served by multiple-track railway lines.

- ✓ Estates are served by better roads and a higher density of transport network.

Description of how transport (communication) network is related to relief

Prerequisite:

- ✓ Trace out route
- ✓ Study contour lines

Describe how transport (communication) network is related to relief

- ✓ Take note if the transport network goes around the highland or cuts through lowlands.
- ✓ Take note of the direction of the transport network and discuss its direction in relation to relief.
- ✓ Look out for physical features that might affect transport network (e.g. rivers, barriers, etc)

(d) Functions of settlements

- ✓ The function of settlements refers to the economic or social activities which are predominant in the area.
- ✓ The function is shown by the facilities and services available in the settlements.

Type of functions in a settlement

- ✓ **Commercial**
 - ✓ Residential
 - ✓ Agricultural
 - ✓ Recreational
 - ✓ Educational
 - ✓ Religious
 - ✓ Administrative
 - ✓ Medical
- ✓ As settlement develops and grows, the number and variety of facilities or services increase.
 - ✓ An important town would have large bold lettering on a topographic map whilst a small lettering is used to name a village.
 - ✓ A settlement that occupies a large area of land is usually a main (important) town or centre of control.
 - ✓ A populated town will indicate that the town is important.

(e) Land use

- ✓ Topographical maps provide a picture of the land use in an area.

In interpreting land use, take note of the following.

- ✓ Be familiar with all the symbols used to denote the various kinds of land use.
 - E.g. cultivated land, mining areas, built-up areas, transport networks and power lines.
- ✓ Land use is always related to **physical landforms**, e.g.
 - Low-lying areas- food crop cultivation
 - Undulating lands- plantation (e.g. oil palm, rubber)
 - Hilly areas- terraced hill slopes can grow padi
 - Mountainous regions- no crop cultivation except being terraced – market gardening

Note: We can even find out if any industrial activities are being carried out in the area.

There are generally two types of possible questions that Cambridge setters can set on.

- ✓ Describe the general land use
- ✓ Explain why land is used for agriculture or industry or tourism

For describing general land use question, it will likely give you a specific area of the map to describe the changes in land use.

Do remember to use words like 'At grid square xxxx, the land is used for

All these questions can only be done mostly with the help of map evidences.

Do not memorise!!! Every map has different focus or features.

It is important that we explain how human features such as agriculture, industry, tourism are influenced by the physical environment such as relief and drainage, and other human features.

It is important that the **interpretation** is supported by **map evidence at all times**

Note:

- ✓ Whenever you are asked to give map evidence especially for interpretation, do not forget to include the **grid square** where the feature (map evidence) is found.
- ✓ Grid square is not required if the feature (map evidence) is a line symbol such as railway, road.

Here are some lists of possible map evidences that you can write in order to explain on why land is used for agriculture or industry or tourism with the aid of map evidences.

Common mistake

Students are often confused between economic activities and features.

1. Identify the main **economic activities** that are practised in this region.

Possible **wrong** answers: sugar cane factory, sugar cane cultivation, etc

Possible **correct** answers: agriculture, education, tourism, industry, etc

2. Identify all the **features** from the map that indicate the presence of secondary economic activities.

Possible correct answers: sugar cane factory, sugar cane cultivation, etc

Common economic activities:

1. Agriculture

- Plantation

Features (Map Evidence)

- Efficient good transport → See if whether there is road and where it will link to → to the port?
→ To the airport, aerodrome?
- Undulating land (Provides well drained soil for tree crops) → Look at contour lines to observe the slope of the land → Deduce if it is suitable for plantation
- Self-contained system → Look at if there is houses, factory, school in a cultivation area for the labour and the investors → staff quarters, huts, compounds
- Planted in neat rows (if possible) → Signs of plantation
- Any Research center (if possible) → Signs of high tech plantation → E.g. Agriculture Experiment Station
- Large size??? (if necessary) → A few hectares? → Any holding name OR the word Estate?

- Factory (nearby? Or inside the plantation)??? → Plantation crops such as oil palm are not perishable.
- Rivers OR Dams? → To supply water needed for plantation

Map evidence of Presence of Large scale Mining activities

- Quarry, mine dumps, prospecting trench → Indicate that **huge** mining excavation has taken place in that area.
- Mines names or holding name → Important economic activities in that town/region → Indicate that **large** scale mining activities are carried out →
- Usage of dredges → the leftover mining pools have straight edges and are very **large** in size & usually level land
- Good transport network (e.g. Railways running into the mining area) → shows that production must be of a **very large scale** to benefit an expensive form of transport to be constructed.
- Power supply to the mining area → Indicates that a **large scale production** as mining uses a lot of energy for the sophisticated machines.
- Staff quarters, huts → Many workers are employed indicating a **large scale of production**

2. Industry

Features (Map Evidence)

- Houses nearby → To employ cheap labour → Convenient → Near their **house** → OR near **big towns**
- Good transport network → Well-distributed roads, railway lines (tracks)? → Easy transportation of goods and carry raw materials
- Transport along coastal region → deep water harbour, jetties → Easy transportation of goods and carry raw materials
- Existence of minerals → Quarry, mine dumps, prospecting trench? → Provide raw materials cheaply for manufacturing industries
- Energy source → power line? → Power station??? → (HEP)? → Dams? → Gasoline depot? → Electric lines → High amount of electricity is required to power up the industry
- Water (If possible) → water supply → Dams, rivers, pump house
- Flat land → Look at if there is contour lines → NO → Flat → Allow factories to be built easily and cheaply as well as expansion in future.
- Available raw materials → Any agricultural activities nearby which is a supplement of the processing industry → E.g. Palm oil cultivation & Palm oil processing / Soap industry → Yes → provide cheap inputs for industries → Reason: Saves transport cost

3. Tourism

Features (Map evidence)

- Airport, aerodrome → Make the area easily accessible to tourists
- Good transport network (railway, roads) → Make the area easily accessible to tourists
- Water fall → appreciate beauty of nature
- rapids → rafting and shooting rapids
- Hot spring- see the beauty of nature and go for therapeutic purpose
- Coral → Promote ecotourism
- Beaches → Long Sandy? → recreation or water sports; admire the coral habitat (ecotourism)
- Jungle, forest → appreciate the wildlife (flora and fauna) and jungle trekking (ecotourism)
- Mountain → trekking and mountain climbing
- Hotels, chalets, resort, motels² → give comfortable accommodation to tourists
- Sports Field, race course, Golf course → recreation for tourists
- Pistol range, Games field → recreation for tourists
- National monuments or places of historical interest → Learn the history & the culture of the country
- Safari
- Jetty³, Beacon, lighthouse⁴ → give accessibility to the coastal region
- Plantation, ranch → promote agro tourism

²Motel: A hotel intended for people who are traveling by car

³jetty: It is to let people get on or off, or to load or unload goods.

⁴lighthouse: It is used to guide ships or warn them of danger.

Common mistake:

✗ Candidates are confused between facilities and attractions.

Examples of facilities and attractions

Facilities	Attractions
✓ Viewing bridge	✓ Crocodile Park
✓ Caravan park	✓ Safari Park
✓ Hotel	✓ Victoria Falls
✓ Casino	✓ Waterfall
✓ Airport	✓ Gorge
✓ Railway	
✓ Roads	
✓ Motel	
✓ Aerodrome	
✓ Chalets	
✓ Golf courses	
✓ Sports areas	

4. Development

a) Growth of Town

Features (Map Evidence)

- Services? → Power line (Industry) , golf course (Tourism), security (Police station?)
- Presence of Transport (Wide tarred?) → Allow raw material to be transported → Allow people (tourist) to stay → Attractive to stay – work to do? → Secure → Crime rate is low?
- Jobs → Agriculture (Cultivation?), Tourism, Mining?

b) Growth of settlement

Features (Map Evidence)

- Existence of road system → HOW? → e.g. linear settlement to branch side roads?
- Relief → HOW? → growth of plantation → gentle → plantations need roads.