MSCE QUICK REVISION NOTES

HUMAN & ECONOMIC GEOGRAPHY

1. WORLD AGRICULTURE
2. SETTLEMENTS
3. TRANSPORT AND TRADE
4. INDUSTRIES

CHAPTER 1

WORLD AGRICULTURE

FARMING AS A SYSTEM

A farm can be described as a system with inputs into the farm, processes taken place on the farm and outputs from the farm.

TYPES OF INPUTS

Physical or natural Inputs:

- Climate
- Relief
- Soil.

Human and Economics Inputs:

i.	Labour	ii.	Rent
iii.	Transport costs	IV.	Machinery
v.	Fertilizer and pests	VI.	Government control
vii.	Farm building	viii.	Energy
ix.	Consumables.		

Processes include:

i.	Shearing sheep	ii.	Making silage
iii.	Ploughing	IV.	Harvesting
v.	Spreading manure etc.		

Outputs depend on the type of farming e.g. wool, wheat, lamb meat, potatoes, rice etc.

FACTORS THAT INFLUENCE AGRICULTURE

1. PHYSICAL

A . Climate

- **Temperature** - the degree of warmth, duration and intensity of sunshine all may affect maturity of crops to a certain extent. For example wheat in the temperate regions requires 90 days frost free growing period and summer temperatures of over 16°c to enhance ripening
- **Amount and season of moisture**. Moisture may come from either the atmosphere (rain) or from the ground. The amounts of evaporation and conditions of relative humidity have influence at periods of sowing, growing and harvesting. For example in the tropics, crops are sown and grow through the rainy period to be harvested in the almost perfectly rainless conditions of the dry season.
- **Wind**: Wind may accelerate evaporation, and physically damage the crops. For example in West Africa strong winds may blow off fruits like cocoa pods that hang on the trunks and branches of the trees.

B. Topography

- Levelness of the ground eases cultivation and the extensive use of machinery. For example the grasslands of prairies have encouraged extensive mechanized wheat cultivation.
- Lowlands encourage flooding and padi (rice) cultivation e.g. in the Monsoon Lands.

- Some crops grow best on hill terraced slopes and at high altitude. For instance coffee and tea do well in these areas since they require well drained soils.

C. Soil

- Different crops require different chemical and physical properties of soils. For example rice cultivation requires the impervious subsoil of clay in order to stop water draining a way and fertile alluvial top soil.

2. BIOTIC FACTORS

- Dangerous weeds and parasitic plants reduce crop yields.
- Insect pests, fungi and diseases for instance the presence of tsetse flies in the tropics severely limits livestock farming.

3. SOCIAL FACTORS

a. Culture can affect the type of crops to be grown/and animals to be kept. For example, the Masai of Kenya, Nomadic Pastoralism is their type of lifestyle.
b. Ownership and inheritance of land e.g. in customary land, there are small holdings divided to children. This system discourages use of machinery. While private (estates) land ownership may encourage use of machinery and scientific methods.
c. Religious beliefs e.g. the Hindu veneration of cattle limits the full exploitation of the animals for meat.

4. ECONOMIC FACTORS

a. The farmers should be able to meet the operation costs such as purchase or rent of land, capital for buying farm inputs, purchase of farm machinery, money for farm improvements, and the marketing expenses.
b. Government policies. Some countries may encourage the productivity and efficiency of farming by a system of guaranteed prices and subsidies to farmers.
c. World price fluctuations may also discourage certain types of farming especially commercial ones.

5. TECHNOLOGICAL ADVANCEMENT

For example the aim of the Green Revolution was to use technology to increase food production to keep pace with the growing population. Four main approaches in Green Revolution are high yielding seeds, chemical inputs (fertilizers, pesticides, herbicides). Increased irrigation systems and finally increased use of machinery. So agricultural improvement may depend on the farmers if they could afford the improved feeds, fertilizers, machinery and irrigation techniques for example there is intensive use of irrigation in Israel.

WORLD AGRICULTURAL TYPES

There are three types of farming

a) Arable: Crop Production
b) Pastoral: Animal rising
c) Mixed: Crops and animals grown and raised on the same farm.

These three types of farming can be categorized into four major world agricultural types;

(a) Subsistence farming - out puts mainly produced for domestic use or prestige.
(b) Commercial farming - outputs mostly for sale.

(c) Extensive farming - involves use of very large land holdings usually estates.
(d) Intensive farming - involves use of small landholdings and the outputs are high per hectare

CASE STUDIES OF AGRICULTURAL SYSTEMS

A. SUBSISTENCE AGRICULTURE

The two chief types of subsistence agriculture are extensive and intensive.

1. Extensive Subsistence Agriculture

Can also be pastoral (animal) or crop.

I. NOMADIC PASTORALISM

- Involves the rearing of animals which are moved from place to place in search of water and pasture. It is influenced by seasonality of water and grass resources.
- This system is practiced by people such as: ¬Masai of Kenya (cattle) Tuaregs of Egypt (Cattle) Fulani of Chad/Senegal (cattle)

Characteristics of Pastoral Nomadism

- Large herds are kept but not of good quality
- Practiced in areas with less population and usually the people are primitive.
- Herds are kept for prestige or for paying lobola (marriage price)
- Seasonality of rain lead to poor pastures and later on overgrazing.
- It is declining due to lack of land and nationalism of countries

II. SHIFTING CULTIVATION

The farmers cut the trees, the cuttings are burnt, and then holes for planting crops such as maize, millet, rice, cassava, sugarcane are made.
Crops are grown for several years until the soil fertility is exhausted and new forest is also cut.
Areas where shifting cultivation is practiced:

Country	Local Name
Malawi	Chisoso
Srilanka	Chena
Brazil	Roca
Zaire(DRC)	Masole

Characteristics of shifting cultivation

- Virgin forests are selected
- No application of fertilizers, burnt ashes (as source of calcium) act as fertilizer
- Small landholdings i.e. 0.5-1.5 hectares
- Use of primitive tools e.g. sticks hoes, sickles, axes
- Deforestation usually occurs.
- Declining due to increasing population.

III. INTENSIVE SUBSISTENCE AGRICULTURE

This form is best developed and confined to the Monsoon Lands of Asia such as China, Japan, Korea, India, Pakistan, Sri Lanka.

Characteristics of Intensive Subsistence Agriculture

a. Very small land holdings about 6 hectares.
b. Double or treble cropping i.e. farming is very, intensive due to presence of rich, rivers such as the Ganges, Yangtze Kiang, etc.
c. Simple tools are used e.g. wooden ploughs drawn by water buffaloes.
d. Animal farming is little developed (it is mainly poultry that is kept).
e. General use of animal and plant manures.

Work to do

1. Draw the map of South East Asia and on it locate the following:
   (a) Major Rice producing countries in the region
   (b) Major rivers used for flood irrigation

2. Describe the farming year activities in relationship to seasons

B. COMMERCIAL AGRICULTURE

1. EXTENSIVE COMMERCIAL AGRICULTURE

- It involves very large farms (estates) from 240 - 16,000 hectares

- Done in areas where land is cheap
- Cultivation is highly mechanized
- It is monoculture **i.e.** one crop or animal is grown or kept.
- Generally low yield per acre but high yield per person.
- Tenant system is usually practiced.
- Influenced by market price fluctuations.
- Practiced where population densities are very low.

Prairies are the extensive grasslands in North America.

Three major provinces of Canada where wheat is grown are: Alberta, Saskatchewan, and Manitoba.

Favourable conditions for wheat growing in the prairies

(a) Extensive cheap land was available
This allowed wheat to be cultivated on a very large scale extensively by machines.

(b) Extension of railways into the Prairies mainly the Canadian Pacific Railway, and the Canadian National Railway plus numerous branch lines. These facilitated the immigration of farmers to the region and gave their products access to the world market.

(c) Fertile Prairie soils
- The dark brown chernozem type of soil which is well drained.
- The soil is less acidic.
- It contains a lot of potassium, phosphorus which are essential nutrients to cereals like wheat
- However fertilizers are also applied to conserve and improve the soil fertility.

(d) Undulating topography
The rolling and flat topography makes the soil well drained. Wheat does not tolerate water logged soils.
The flatness of the land allows extensive use of machinery. The tractors plough the land, the drillers sow the seed in spring, combine harvesters gather the wheat, thresh it and sack it for disposal.

(e) Suitable climate
- The Chinook winds melt snow down the eastern sides of Rockies mountains in spring. This gives the prairies 100 frost free days for wheat cultivation. Wheat grows matures within 90 days
- Warm summers temperatures of a round 15°c.
- Light spring showers assist seed germination and the grain ripens in sunny summers.

(f) Access to markets
Easy access to the world markets due to major railways and good roads. Most of the wheat is handled through rail foci at Winnipeg where wheat is stored in elevators, or Port Arthur and Fort William on the Great Lakes or westwards through Vancouver

Farming year in the Prairies

April -May	Sowing spring wheat and growing potatoes
June - July	Weeding and chemical sparring
August- September	Harvesting wheat and marketing potato harvesting
October	Ploughing fields and fertilizing
November - March	Repairs and general maintenance of farm structures and equipment. Since snow impedes work on the land

Work to do

-Draw a pie chart (using 5cm radius) to illustrate the farming year in the Canadian wheat growing area.

-Compare the activities done on the farm in relationship to the climatic data in the table for Winnipeg below:

MONTH	JAN	FEB	MAR	APR	MAY	JUNE	JULY	AUG	SEP	OCT	NOV	DEC
Temp	-19	-18	-10	13	17	20	20	17	12	0	-18	-17
PRECIPATATION	25	25	32	36	57	76	75	62	61	37	27	25

Problems faced by wheat farming in Canada

- Prone to diseases such as Rust
- Wheat price fluctuation of the world market
- Frost has far reaching effects on the growing of wheat.

(ii) EXTENSIVE ANIMAL FARMING (RANCHING)

Ranching refers to the process of rearing livestock on large farms called ranches for commercial purposes e.g. meat, wool, hides.

Characteristics of Ranching

- It is mainly practiced in the temperate grasslands of the world such as Prairies,(Canada). Steppes (Europe), Downs (Australia), Pampas (South America) Veldt (South Africa).
- The ranches have continuous vegetative cover since precipitation is almost distributed through out the year.
- Ranches are scientifically managed e.g. best breeds are used, artificial insemination, vaccination e.t.c.
- Improved pastures are available.
- Animals such as Cattle, sheep are raised for sale.
- They support the growth of towns e.g. Buenos Aires in Argentina.

Problems faced by ranching

-Threats of drought pose high risks

-World price fluctuations.

RANCHING IN ARGENTINA

- It is practiced in Pampas region
- The ranches are called Estancias
- Smaller cattle farms are called chakras
  - 50
- Herds of cattle are looked after by herd boys called gauchos

Conditions for Ranching in Argentina

- Mild winters allow out door grazing throughout the year
- The well distributed rainfall through out the year allows the growth of pastures through out the year.

- Rail way network for transporting cattle to the fattening camps.
- Access to internal and external markets.
- Development of refrigerated ships encouraged exportation of large quantities of beef, mutton, wool, hides.

BREEDS OF BEEF CATTLE KEPT

- Shorthorn
- Aberdeen Angus
- Hereford

RANCH ACTIVITIES IN AN ESTANCIA

Months	Estancia Activities
Jan-Feb	Ranch fences are repaired
Mar - May	Cattle dipping
May-Jun	Sheep dipping and branding
July - Aug	Lambing and lamb marking
Sept -Oct	Sheep -shearing
Oct - Dec	Hay making and fence repairing

Other Routine Activities

- Breeding (in artificial insemination plants)
- Fattening of calves at nine weeks in fattening campus.
- When fattened then cattle are sold to large butchers called Frigorificos.
- These major slaughter houses are located in urban centres such as Buenos Aires, Rosaria.
- The meat is exported in chilled/frozen or canned form.
- Other products produced are leather (from hides), margarine/ cooking oil (from fat), bone meal, fertilizer (bones), glues (from bones and hooves).

Importance of Ranching in Argentina

- Source of foreign exchange to Argentina.
- Boosted the growth of urban centres such as Buenos Aires, Bahia Blanca
- Source of employment.

Problems of Ranching in Argentina

- Droughts may disturb animal grazing
- Stony soils disturb use of machinery in production of pastures such as Alfalfa

BEEF INDUSTRY IN MALAWI

The main cattle breed raised is Zebu cattle - It is adapted to climate conditions in Malawi i.e. seasonal rainfall and high temperatures. The Zebu is also less tender.

Beef industry is affected by:

-Poor availability of pastures and water,

-Prevalence of diseases such as East Coast Fever, foot and mouth disease, trypanosominsis

-Prevalence of parasites such as tsetse flies (transmit trypanosomiasis), ticks

-Mostly kept on small scale by small holder farmers. Few are kept on ranches such as Dzalanyama Ranch.

-Less capital for beef industry development.

(iii) PLANTATION AGRICULTURE

- It is the specialized commercial cultivation of cash crops on large estates.
- It has been mainly initiated by European colonialists in the tropics such as Asia, Central America and tropical Africa.
- The major plantation crops grown are cocoa, tea, rubber, cotton, oil palm, coffee, bananas,

sugar cane, pineapples, jute.

Characteristics of plantation Agriculture

(a) Tree crops are raised on large estates sometimes smallholdings can take place.
(b) The estates are usually owned by foreigners but involve local labour.
(c) Farms are scientifically managed.
(d) Requires heavy capital outlay i.e. to build farm structures, road, sometimes factories processing the crops are constructed right there in the estates.
(e) The crops are usually perennial **i.e.** harvesting of crops may start after 2/3 years and end up to 50 years.

Problems of plantation Agriculture

-Climate hazards such as strong winds may damage the crops.
-Prevalence of diseases and insect pests may reduce yields, and increase costs on production.
-Rapid deterioration of tropical soil due to heavy down pours which may leach down important nutrients such as magnesium, potassium, calcium etc.
-Difficulties in clearing and maintenance
-Dense vegetative cover is difficult to clear.

1. COCOA FARMING IN GHANA

Cocoa is grown in the Southern part of Ghana where there is heavy rainfall through out the year. The main growing areas are: Kumasi, Awaso, Agogo.

Favourable conditions for cocoa growing in Ghana

(a) Well distributed annual rainfall of at least 2,000mm.
(b) High temperatures more than 21°c.
(c) Deep potash rich and well drained soils.
(d) Enough shade (from tall trees) that prevent direct sunlight.
(e) Forest a round the cocoa forms prevents strong winds from destroying cocoa pods

Farming Activities on a Cocoa Farm

Cocoa is cultivated by smallholder farmers on small sized farms.

Month	Activity
Jan – Feb	Cutting/burning the forest under growths and big trees are left to

	provide shade
March	Sowing cocoa seeds and other crops (yams, maize, cocoa yams) after that occasional weeding and manuring is done until harvesting
April - June	Cocoa pods develop on tree trunk during these months
October - January	The main harvesting period. First harvesting occurs in the 6th year
April - August	Second harvesting

Processing Cocoa

- Cocoa pods are split open by a sharp knife.
- The beans (embedded in the pulp) are removed by hand.
- The beans are fermented by piling them and covering them with fresh banana leaves for 3 - 7 days. The heat generated removes the pulp and this prevent the seeds from germinating
- The beans are then cleaned and then dried in the sun on tables or mats.
- The beans are then sacked and transported to the nearest port e.g. Tema, Takoradi and Accra for shipping overseas e.g. Britain, USA, Germany, France, Sweden, Netherlands, Italy.

Further processing involves the following:¬

1. Beans are cleaned and roasted
2. The husks are removed to produce Cocoa nibs
3. Expensive Machinery grind the Cocoa nibs into powder. The powder is finely ground to make a famous cocoa drink
   or
4. The powder is ground to great fineness and sugar and milk added or units and flavouring ingredients to produce chocolate of different tastes
   or
5. Fatty Cocoa butter is removed by great pressure in the process of grinding. It used in making cosmetics

Importance of Cocoa Farming in Ghana

- Main source of foreign exchange i.e. it accounts over 50% of Ghana's foreign earnings
- Source of employment to over 60% of Ghana's population

Problems faced by cocoa farming in Ghana

-Prevalence of pests and diseases
-Poor roads conditions especially during the rainy season
-World price fluctuations
-Replacement of cocoa trees is low

2. TEA PLANTATION IN MALAWI

The main tea growing areas in Malawi are:- Mulanje, Thyolo and Nkhatabay

Favourable Conditions for Tea Growing in these Areas

- Receive heavy rainfall of more than 1500mm per annum
- Experience high temperatures of at least 21°c with little or no frost.
- Have well drained loam soils usually on gentle and terraced slopes.
- High humidity (mist/dew) enables young tea leaves to grow quickly.
- Abundant supply of labour is available especially during harvesting.

Farming Activities on a Tea Plantation

- Land is prepared usually on hill slopes (as terraced slopes).
- The tea seedlings/cuttings are raised in a nursery and put under polythene tents which are taken out after root development.
- The plants are grown in the nursery beds for 18 months.
- During this time, they are cared for and fertilized.

- Then at a height of 20 cm, they are transplanted into the fields in rows of 1.5 metres a part.
- Weeding and manuring are carried out at regular intervals.
- Trimming/pruning encourages the rapid production of fresh leaves and also a spreading frame work forms close hedge to a height of 1.2m to create a plucking(harvesting) table.

Month	Activities
April - June	Pruning
July - August	Topping (cutting-tops) to level them off
Sept - Oct	Application of nitrate fertilizers
November - March	The main harvesting season

- Harvesting tea (tea picking or plucking) is done usually between November and March. The Two tender leaves and a bud (this part is called a flush) is plucked from each stem. This is where large concentration of tannic acid is found
- During this time tea estates employ a large work force and skilled one.

TEA PROCESSING

1. **WITHERING**
Tea leaves are withered or dried in the sun for 1 -2 days to reduce moisture

2 ROLLING
The leaves are rolled mechanically in steel rollers to cut them into small *pieces*

4. FIRING
Tea leaves are dried by warm air in an oven This stops fermentation, and reduces moisture copper content to 3.5% and also fixes the flavour of tea

3. FERMENTING
The pieces are put in Fermenting driers. the machine changes green colour to and gives the tea its flavour

5. SORTING
Tea pieces are sorted over machines with different mesh sizes. This produce different grades of the black tea, stems are also eliminated

6 PACKING
Tea is packed in plywood chests which are lined with tissue paper and aluminium foil to prevent taint (moisture spoiling the tea) and loss of flavour. The grades are sold at Limbe Auction and then shipped overseas. Some tea is packed in local brands such as Chombe, Chisangalalo, Banja e.t.c.

7. BLENDING
Various grades of tea are blended by expert. Blenders/tea tasters make much quality brands

SMALLHOLDER TEA INDUSTRY IN MALAWI

- Before 1964, the tea industry in Malawi was monopolized by Europeans (Colonialists) in large estates.
- The Malawi Government opened doors to Malawian farmers who were encouraged to grow tea.

- Reasons why these smallholder farmers were allowed to grow tea include:
  (a) The farmers had the tea growing knowledge because they had already worked on the estates before
  (b) To provide these farmers with alternative source of income.
  (c) Tea does not necessarily require large pieces of land since it is high yielding.
- And in 1967, the Malawi Smallholder Tea Authority was formed and registered in order to take care of Malawian Tea Farmers.

SUCCESSES
- Increased number of tea growers in Malawi
- Increased green leaf production for export
- In 1975, the authority formed The Malawi Tea Factory Company Limited (MATECO) in Mulanje to process tea leaf from smallholder farmers.
- The company acquired more land from the RUO Tea Estates for a second tea factory at Njola in Mulanje in 1981.
- The Authority has consistently commanded top prices from Malawi Tea on the world market.
- The Authority used to give bonuses to the members (in Mulanje, Thyolo, Nkhatabay).

FAILURES
In mid 1990's the bonuses have been scrapped and payments to farmers were very difficult. As a result some farmers stopped growing tea.
The MATECO tea factory is now extremely under utilized.

Importance of Tea Industry in Malawi
- Source of foreign exchange. Tea is the second largest foreign earner after tobacco: 2% of tea is consumed in Malawi under local brands and 98% of tea is exported to South Africa, Britain, Canada, USA and Continental Europe.
- It provides employment.
- Estate owners provide social services to people living around their estates.

B. INTENSIVE COMMERCIAL MIXED FARMING

1. DAIRY FARMING
It is highly intensive type of livestock farming.
Animals are reared solely for producing milk.
The main breeds of cattle for diary purposes are Friesian, Jersey, milking Shorthorn, Aryshire, Guernsey, Brown Swiss.
Dairy farming is intensively practiced in Denmark, Netherlands, New Zealand, South Africa, France, Switzerland.

Factors Favourable for Diary Farming
- Mild conditions for the growth of folder crops and natural pasture.
- Markets should be large enough
- Good transport since milk is perishable
- Green and high grade pasture for good milk.

Work to do
-Locate Denmark on the world map.
- Draw the Map of Denmark and locate the following: North sea Jutland, Fyn Island, Zealand Island, Lolland Island, Falster Island, Copenhagen City

Dairy Farming products
butter, cheese, fresh milk.

Work to do
Explain with the aid of a flow diagram how dairy products are obtained

Breeds of Cattle in Denmark
- The Red Danish Dairy Breed is dominant
- Others: Friesian, Jersey etc.

Types of crops grown for Dairy farming
Barley, pats, grass
- The grass is grazed or used for making hay or silage.

Farming Activities

Month	Farm Activities
Nov. - Jan.	Due to poor weather, animals are stall fed
March - April	Ploughing and sowing seeds.
May - July	Weeding and manning the fields
August	Harvesting cereals
September	Harvesting root crops
October	Ploughing and sowing seeds

Management of Dairy Farming in Denmark
-It is managed through cooperatives.
-Each cooperative society is made of a number of individual dairy farms.

Importance of cooperatives
- Collect, grade and store farm produce and sells these later.
- Buy farm inputs in BULK at lower rates. This reduces farms production costs.
- Give loans to farmers when need arises.
- Have facilities which enable farmers to get profits they could not on their own.

High Folk School
-Provide adult education on agriculture (including dairy farming).
-Teach home economics especially to women.

Importance of Dairy Industry in Denmark
-Provides employment to many people.
-Source of foreign exchange earnings.

(ii) POLDER CULTIVATION IN NETHERLANDS
A Polder refers to the land that is reclaimed from the sea.

Process of Land Reclamation

1. The land is first ringed with dykes and sea walls which keep out the water.
2. Then the water is pumped out by means of wind wills (in the past) or diesel pumps
3. When the land is dry, it is flushed with fresh water to remove salt from the soil
4. Firstly reclaimed land is planted with beans (to give life to the soil by fixing nitrogen in the soil) or grass/special reeds are grown in order to bind the soil together
5. Then the land can be used for several purposes such as Arable farming (wheat oats, barley), horticulture, dairy farming, industrial development and recreation facilities e.g. fresh lake called L Ijssel in the Zuiderzee project.

Today 14% of the Netherlands is reclaimed land. The Dutch decided to start reclaiming land from the sea due to lack of fertile land in the country. The land has been reclaimed from the North Sea.

Nature of Landscape of polders
- The land is far below sea level.
- High dykes are common.

- The land is geometrically planned.
- The polders are flat.

Problems of land reclamation

- Costs are high due to constant pumping of water and building of the dykes and their maintenance.
- Land subsidence is common when the polder dries out.
- Risks of frequent flooding and salinisation of land as it dries out.
- Aquatic life is destroyed due to the damage of water bodies.

NB: Soil fertility in the polders is maintained by constant application of chemical fertilizers and organic manure. The main reclamation projects in Netherlands:

1. Zuider Zee: five polders were reclaimed and a fresh water lake called L. Ijssel was also created.
2. Rhine Delta project

(iii) IRRIGATION FARMING

- Irrigation refers to the supplying of water onto the land through artificial channels.

Major Areas of Irrigation farming in the world

- In dry areas e.g. Sahara desert (Africa), California desert (USA).
- Regions with low or variable rainfall.
- Areas which receive winter rainfall such as those with Mediterranean climate.
- In areas with dense population and where double cropping is necessary to feed the large population e.g. South East.

Factors necessary for Irrigation

-Regular and reliable supply of water.
-Flatness of the land not to permit water to flow a way
-Impervious clayey soils to prevent percolation.

Work to do

Discuss the following basic methods of irrigation in Agriculture

(a) Sprinkler Irrigation
(b) Drip Irrigation
(c) Canal Irrigation

Irrigation farming is intensive because:¬

- Continuous cultivation is possible (double or treble cropping).
- High yields per hectare is achieved.
- In most cases land holdings are smaller.

Problems of Irrigation Farming

(a) Salinity of the soil due to salts in the irrigation water. This encourages the formation of hard-pans.
(b) Loss of soil fertility which is caused by leaching.
(c) Silting of dams.
(d) High energy costs for pumping the water.
(e) Encourages the spread of waterborne diseases such as cholera.

1. IRRIGATION IN ISRAEL

Conditions for Irrigation Farming in Israel

(a) The southern part of Israel is a desert (Niger desert). This region receives less than 250mm of rainfall per year and this irrigation is necessary.
(b) The northern part of Israel experiences Mediterranean climate i.e. dry summers and wet winters. So cultivation is necessary during the dry season and this irrigation is necessary.
(c) The central part of Israel experiences short wet season and it is semi desert as such irrigation is also necessary

Sources of Water for Irrigation in Israel
- Yarkon river
- River Jordan
- Lake Kinneret (Sea of Galilee/ Lake Tiberius)
- Sometimes water is obtained from the Mediterranean Sea (although it is salty)

Crops Grown under Irrigation in Israel
- Tomatoes, sunflower, apples, cotton, spring tomatoes, sugar beet and others.

Challenges/Problems of Irrigation in Israel and their solutions.
- High annual evaporation refers especially in the Southern Israel. To solve this problem the system of pipelines area used rather than canals, in order to bring water to the south and Drip Irrigation is widely used.
- Water sources are below sea level e.g. Lake Tiberius is 210m below sea level so it is difficult to irrigate the hilly and upland areas.
- Insufficient source of water. So water is being collected from the sea which is salty. To solve this problem water is desalinated at desalination plants at Haifa and Eliat.
- Hostile Arabs limit the Israelis from using the Jordan river as a source of water for irrigation

Work to do
Discuss how water is desalinated by the following ways:¬
(a) Vacuum freezing
(b) Distillation
(c) Electro - dialysis

2. NCHALO SUGAR IRRIGATION SCHEME
- Nchalo Sugar Estate is located on the very flat terrain to the west of Shire River.
- The area receives low rainfall of about 800mm per annum. Therefore irrigation is necessary.
-The soil is deep and clay which easily retain water.
- The area has abundant labour.
- The area is hot with temperatures ranging from 20 - 32 degrees.

Cultivation of Sugar Cane
- The land is ploughed and contour ploughing is necessary i.e. forming different strips of cane fields to be grown.
- Cuttings from old plants are planted and roots develop In the following years ratoon crops sprout after cutting the main cane.
- Weeding and fertilizing is done periodically.
- During harvesting, the canes are cut using long knives and then loaded on light railways or tractors. Before any cane is cut the sugar cane fields are set on fire to drive a way animals and ease harvesting.

Processing Sugar Cane into sugar
1. The canes are chopped into smaller pieces.
2. Then the pieces are passed through rotating rollers in a milling machine, which squeezes out the juice - The fibrous waste (bagasse) is used to fire the mill's boilers.
3. Lime is added to help purify it and to prevent fermentation then the thick syrup is

formed.

4. The syrup is boiled and water evaporates, until sugar crystals are produced. This is brown sugar. The remaining part is called molasses which is used as stock feed, fertilizer or in the manufacture of alcohol.

5. To obtain white sugar - the process of crystallization into brown sugar is by-passed and the syrup is put in boiling water and filtered to remove solid impurities.

6. The juice run into cylinders packed with bone charcoal which absorbs the brown colour. The juice is then evaporated and condensed and white sugar crystals are produced. The residue is made into golden syrup.

NB: Source or water for irrigation is the Shire River.

-The main methods of irrigation are Canal and Sprinkler.

Problems faced by the Scheme

-Widespread theft of aluminum pipes which are used for irrigation.
-Rising costs of production materials.
-The disposal of effluent pollutes the Shire river.

Importance of Nchalo Scheme

-Source of foreign exchange earnings
-Source of employment to the local people
-Easy source of sweetening agent to Malawians
-Encourages small scale business to Malawians involved in selling Sugar.

CHAPTER 2

SETTLEMENTS

A settlement refers to the place where people live or work.

Types of settlements

Settlements are characterized by their lifestyles and activities of the people in an area.

(a) Rural settlements

- People are engaged in agriculture (unfunctional).
- People are homogenous.
- Most of the people are superstitious.
- Hamlets, villages and other smaller settlements are considered rural places.

(b) Urban settlements

Urban means "characteristic of city"
- It is a well built up.
- Most inhabitants have non-agricultural jobs (multifunctional) .
- People are heterogeneous.

Towns, cities, conurbation, metropolis, megalopolis are classes of urban settlements.

Work to do

Explain the meanings of the following; hamlet, village, town, city, conurbation, metropolis, megalopolis.

SETTLEMENT PATTERNS

-This refers to the shapes of the settlement i.e. how individual buildings are grouped.

(a) Nucleated settlement

- The buildings are compact (close together) round a central point such as a market crossroads, church, school, post office etc.
- The settlement usually has a definite boundary.

(b) Linear Settlement

The buildings follow a line. This line could be a road (for communication) or a river.

(c) Dispersed Settlement

-The buildings are scattered from each other.
-The buildings may either be:

(i) randomly dispersed i.e. no apparent pattern to distribution. This usually occurs on plain areas.

(ii) dispersed with loose clusters
Usually occurs in hilly areas and people live in small clusters in areas where land is cultivatable.

Factors Influencing Settlement Patterns

(a) **Closeness to lines of communications** particularly roads influences either nucleated or linear patterns.

(b) **Nearness to economic development.** Schools, hospitals, markets, post offices encourages nuclear patterns.

(c) **Relief**
- In hilly areas arable land is scarce and settlers are scattered in few areas which they may find land cultivatable. This encouraged dispersed settlement with loose clusters.
- Flat lands (plains) may encourage both Nuclear and Dispersed (random) settlement since flatlands are easy to cultivate and many people may settle there. Where there are few people, settlements may be randomly scattered.

(d) **Land Ownership**
-Private land ownership encourages dispersed settlements mainly estate farming.
-Customary land ownership way encourages cluster settlement in some villages.

Work to do

Discuss the advantages and disadvantages of dispersed and nucleated settlements

FUNCTIONS OF SETTLEMENTS

A. Rural settlements

- Agricultural
- Minor shopping centres, social centres, social services such as a church, museum, post office and minor administrative centres area.

B. Urban settlements (see also functional zones of the city)

- They are commercial, social, administrative, communication centres of the country. Therefore they help in the economic growth of the country.
- Cities are places where development begins in a country.

URBANISATION

Urbanisation is the process by which an ever-increasing percentage of the total population of the total population of the country is accommodated in urban rather than rural settlements.

Factors Responsible for Urbanisation

1. Rural - Urban migration

a) **Push factors from the rural areas** (why people run away from rural areas).
- Lack of land to farm.
- Loss of farm labouring jobs due to mechanization (especially in developed areas).
- Lack of other forms of employment.
- Poverty.
- Drought.
- Witchcraft.
- Freedom from traditional customs.
- Lack of social opportunities such as Casinos.
- Lack of social services such as good schools, hospitals.

b) **Pull factors in the urban area** (what attract people in towns)

- Expectation of good jobs with high pay.
- Expectation of improved housing with piped drinking water, sanitation, electricity.
- Expectation of more hospitals and doctors.
- Expectations of more leisure.
- More facilities/ entertainment centres.
- Expectations of more schools with improved facilities and more highly qualified teachers.

2. High fertility rates in the urban areas since most of the people migrating into them are in the child¬bearing ages

RESULTS/EFFECTS OF URBANISATION

A. To rural areas

- Lack of development in the rural areas since the economic base (youth) is taken a way from the rural areas.
-When urban expansion takes place, agricultural areas are taken over and thus reducing agricultural development..

B. To urban areas

1 Lack of good housing.
Urbanisation encourages the development of shanty towns (temporary collection of shacks), squatter settlements and slums. In these settlements there is no tap water, no electricity and poor sanitation. Over crowding, poor health, poor waste disposal are common problems.

2 Unemployment
Many people are unemployed due to closing down of older industries and high immigration.

3 Lack of the social services such as school places, medical facilities.

4 Traffic congestion especially when travelling to the Central Business Districts (CBDs). Traffic congestion is common at peak hours such as morning, lunch hour, and late afternoon and in some cases in the evening when people are going to entertainment areas.

5 Urban decay i.e. old buildings are abandoned and look destroyed.

6. Rise in social problems such as crime rate, prostitution, drug abuse.

7 Urban sprawl/expansion.

8. Environmental degradation.
Pollution caused by smoke from factories, home, fumes from cars exhausts, pollution of rivers by effluent from factories, rubbish from home, noise from cars, aircraft etc.

Solutions to problems caused by Urbanization

Unemployment
- Authorities should offer attractive terms and economic stability for foreign investors to channel their investments in the cities.
- Providing facilities to train the people in various stalks in the industrial and commercial field to ensure self employment.

Housing
- Government should encourage settlement schemes to help in low cost improvements (housing).
- Establishing codes and strict building laws.

Traffic congestion
- Proper town planning for wider roads.
- Encouraging packing areas outside the CBD.
- One way traffic route ways.
- Traffic lights.

Environmental degradation
- Enforcing strict environmental laws.
- Establishing proper and efficient waste disposal facilities.

N.B. Establishment of new towns may discourage people from visiting towns and would opt to use the social services available in the new towns (discourages rural - urban migration).

Urbanisation in Malawi

The principal urban centres in Malawi are Mzuzu, Lilongwe, Zomba and Blantyre.

Factors that influenced the growth of the Urban Centres in Malawi

(a) **Blantyre**
- It is on the road foci, with such a good communication, transportation has been easy.
- Railroad from Beira to Nsanje to Limbe - Blantyre and Nacala through Balaka to Mozambique has facilitated the easy transport for industrial and commercial concerns.
- Nkula falls within the hinterland (boundary) of Blantyre provide electricity to power machines in industries.
- Establishment of the industrial site in Makata encouraged the increase in population of people.
- This is where missionaries settlers first lived, and had also established tea estates in Thyolo, Mulanje. These people started to visit Blantyre as their town.

(b) **Lilongwe.**
- It was established a capital city in 1975. The capital was moved from Zomba. So many people flocked to Lilongwe.
- The area is centrally located to all parts of the Malawi, and it has a good road and rail link. This has helped the growth of the industrial site in Kanengo.
- Lilongwe is a plain and has good agricultural land used for agricultural production to feed the people living in town.
- Kamuzu International Airport boosted the hotel and tourism industry.

(c) **Mzuzu**
- It is the main urban centre in the northern region.
- It was declared a city in 1985 and facilities begin to be provided for the city.
- It is a centre of administration.
- New industries are being opened.
- Trade, commerce, banking has also increased especially with the people of neighbouring Tanzania.

Urban Land Use (Functional zones of an Urban area)

The figure below shows concentric zone land use model.

- It shows that there are three main areas in a city: The industrial area, the Commercial area and the Residential area.
- The concentric model shows successive of growth of bands/rings of development centred on the CBD.

1 CBD (Central Business District)

- It is at a focus of routes i.e. high accessible.
- High land values.
- Has concentration of shops, traffic congestion.
- Tall buildings are common to maximize space.
- Little residential use.
- Some hotels and entertainment use.
- Population densities extremely high during the day but very low at night (i.e. it is referred to as ghost town)

2 Transitional Zone (wholesale, light manufacturing)

- Consist of some commercial functions requiring large floor space e.g. for packing.
- Some hotels, supermarkets, public buildings e.g. courts, government buildings, some industries.
- Little residential use.
- Population density is moderately low.
- Land values are moderate.
- Occupied by older buildings.

3 Industrial/ and Lower Class Residential.

- Houses are usually older.
-. -Industrial plants are near by.
- Consist of people with lower incomes who live here to avoid the cost of commuting to the CBD.
- Density of population is high.
- Land values moderately low.
- Streets are narrow and crowded.
- A lot of noise (from both people and industries).

4 Medium Class Residential

- Consist of better middle class housing with gardens, tree lined streets.
- Occupy the inner suburban.
- High land values.
- Inhabited by middleclass to wealthier citizens.

5 High Class Residential (outer suburban) counter zone

- It is an isolated residential suburb.
- It has low density.
- Consist of wealthy people living at the edge (urban fringe) of the city and who can afford commuting to the CBD.

Some Important Definitions in Settlement Studies.

- **Site** - the land on which a settlement is built. For example, Capital Hill is built on hilly rocky ground in the city centre in Lilongwe.
- **Location/situation** means the relationship of the settlement to the region and other settlements that surround it e.g. Lilongwe City is located in central region (at the centre of the country).
- **Pattern** - This is the situation of buildings with respect to the other.
- **Sphere of influence** - the boundary or the limits which the urban centre serves.
- **Rural** - **Urban fringe** is where the edge of the built up area of the town meets the surrounding country.

A **Commuter** - is a person who lives in one settlement and travels everyday to work in another.

Wholesale light manufacturing transitional low-class residential told inner city areas) medium class residential linter war areas) high-class residential (modern suburbia)

CHAPTER 3

TRANSPORT AND TRADE

Transport is the physical movement of people and goods from one place to another.

TYPES (MODES) OF TRANSPORT

A. Land Transport

1. Road Transport

Advantages

- Roads can be built almost over many different types of terrain
- Carry goods or people from door to door unlike other modes which are fixed e.g. railways
- Provide a fairly cheap, extremely convenient way of travel for work or pleasure
- Adopted to carrying light loads over short distances within a short time.

Disadvantages

- The costs of maintaining roads can be great
- In temperate regions, snow and frost make roads impassable.
- Traffic congestion especially in cities can slow down the speed at which vehicles can travel.
- Exhausts fumes pollute the air.
- Inadequate for making heavy volumes of bulk materials since lorries have only limited capacity (space) for carrying the goods.

2. Rail Transport

Advantages

- Can carry heavy, bulky goods over long distances at one time.
- Rail trucks can travel much faster over longer distances than sea and road transport.
- Under ground trains in the developed countries that transport passengers to various parts of the cities reduce severe congestion on the roads.
- Trains can often travel through adverse weather conditions.

Disadvantages

- Trains travel on fixed tracks which determine where they should go.
- Rails are expensive to build and maintain.
- Rail damages can take long time to repair.
- Railways are only possible where the land is flat.

3. The Pipelines.

The pipelines are used to carry oil and gas from oil and gas fields around the world, to ports and storage depots.
Pipelines are either laid under water on the sea bed or above ground or below depending on the terrains.
The force of gravity or series of pumps stationed at intervals to help move the fluid commodities along the pipeline.

Advantages
- Can transport oil and gas across great distances quicker than if the oil/gas had to be transported by rail or tanker.
- Can transport hung amount of oil which would require many tankers to carry them.
- Can be build across even on the most hostile terrain (relief).

Disadvantages
-Pipelines are costly to construct.
-Follow fixed routes.
-They are unreliable (they are liable to damage) especially if they are built above ground as most of them are in the Arab world. This may disrupt the flow of oil.
- Owned by specific companies i.e. limited to use.

NB Pipelines are common in oil and gas producing regions especially the Middle East (Iran, Iraq, Saudi Arabia) to several areas.
Other pipelines are found in Netherlands to Germany, Russia to Poland and Hungary; Dar es salaam (Tanzania) to Zambia, Nigeria oil fields to port of Lagos.

B. Water Transport

There are two types:
1. Inland water ways (i.e. in canals, rivers, lakes).
2. Ocean or sea ships which include passenger ships (carry passengers), Cargo liners (carry people and freight), packets (for crossing narrow straits), Cargo ships (freight-refrigerator ships, container ships, whalebacks, colliers), Dredgers, icebreakers.

Advantages
- It uses existing routes i.e. needs no special tracks
- It is the cheapest form of transport for large bulky loads.
- Water carriers bear only a few costs for their route ways.

Disadvantages
- It is comparatively slow.
- It is unsuitable for short distances.
- Indirect routes have to be taken to get from one region to another.
- Construction and maintenance of ports are costly.
- Adverse weather such as storm, ice, fog, icebergs interfere with the movement of ships in some areas of the world.

C. Air Transport

This mode is mostly used to carry people (business executives) and high value goods.

Advantages
- Faster and more convenient especially for business executives.
- Direct routes can be used and followed.
- It is relatively independent from physical barriers such as mountains.

Disadvantages
- very expensive.
- has limited carrying capacity.
- Less freedom of the air by several countries for security purposes. Foreign planes have to pay

fees for passing or landing rights.

Factors that Influence the Type of Transport to be used.

- The nature of the item to be transported (i.e. bulkiness, heaviness, high value, fragile or perishable)
- The speed at which the item is to be transported.
- The actual distance to be covered in moving the goods.
- The costs of transporting the item. See graph which shows comparative costs of different, modes of transport i.e. road transport is cheaper in short distances but expensive on long distances.

Air transport is expensive even in shorter distances
Road transport could be very expensive over very long distances.
Water is the cheapest mode of transport over long distances.

MAJOR WORLD TRANSPORT ROUTES

A. MAIN SHIPPING (SEA) ROUTES.

1. North Atlantic Route.

- It is important for trade between Western Europe and the United States of America.
- Major goods transported are textiles, chemical, wine from Europe and wheat, cotton, steel from North America.

Major ports in Europe are: Rotterdam (Netherlands), London and Liverpool in England: And in America are New York and Boston.

2. The Panama Canal Route

- Opened in 1914.
- It connects East and West coasts of the USA, as well as Caribbean countries such as Mexico, Venezuela and Central American States, plus Peru and Chile.
- Main goods handled are: oil, cotton, ores and manufactured goods.
- The route has replaced the long South Atlantic that pass through Cape Horn.

3. The East - Pacific Route

- It is the longest route.
- Connects Western USA and Far East countries such as China, Japan, Australia and New Zealand.
- Wheat, meat, dairy products, wool and manufactured goods are transported through this route.

4. The Cape Route (Cape of Good Hope Route)

- Connects West Europe and East and Far East countries.
- It was first used by the explorer called Ferdinand Magellan.
- It is also a very long route.
- Its importance grew when the Suez Canal route was closed.
- This route also boosted the trade with Southern African States.
- The route can accommodate larger ships than the Suez.
- Main goods include minerals, cash crops, oil.

5 The South Atlantic Route

- It connects South America and Europe
- Most goods come from Brazil and Argentina (wheat, meat, dairy products) to Europe and Europe gives out industrialized goods.

6. The Suez Canal Route

- Links Europe with Asia.
- Carry heavy goods such as raw materials, oil and manufactured goods.
- It was opened in 1869 and closed in 1967 due to the Arab - Israel war.
- Political instability limits the use of this route although it was shorter than the Cape route.
- In addition to that, the canal is narrow and cannot accommodate very large cargo ships.

7. Great Lakes - St Lawrence Water way.

- This in- land water way provide a route for ocean shipping to the heart of the North American continent.
- The Great Lakes (Superior, Huron, Erie, Ontario (SHEO) are connected by Eland and canals and St. Lawrence waterway.
- The water way has been improved by construction of dams and locks which help to maintain a uniform depth of water. The lock gates at each end of the lock allow water to be either pumped in to raise the ship or pumped out to lower the ship as the lakes are situated at different levels, then the gates are opened and the ship can sail forward.

Advantages of Canals

- Open up areas where no natural navigable water exists.
- They are not influenced by hazards such as seasonal fluctuations in depth since the flow of water is controlled.
- Shorten longer distances by creating shorter routes.

Disadvantages

- carry through them very small and limited amount of goods.

Work to do

Draw the map to show the Great Lakes and the St Lawrence Water Way and explain how the locks operate

B. TRANSCONTINENTAL RAILWAYS

NORTH AMERICA

Trans-continental railways of Canada

1 Canadian National

From Prince Rupert then Edmonton, Saskatchewan, Winnipeg, Quebec and Halifax at the coasts.

2 Canadian Pacific

- From Vancouver then to Calgary, Winnipeg, Port Arthur, Sudbury, Montreal up to St. Johns at the coast.
- These two railways opened up the wheat prairies lands, and also used for passenger ship.
- Winnipeg is the main focal point where wheat is collected for shipping for both Southern continents and United States of America.

DISTRIBUTION OF RAILWAYS IN AFRICA

a. North Africa

Has lowest railway connectivity. **Reasons:**

- It is largely unproductive (there is a Sahara Desert)
- Harsh climate and sandstorms which usually cover railways to great depth.

b. North East Africa

-Low railway connectivity **Reason:**

- Rugged topography and i.e. highlands and great valleys

c. Central Africa

- Low rail density. **Reasons**
- Dense forests (due to equatorial climate).
- Frequent thunder storms and landslides.
- Less economic activities.
- Less number of people live here.
- To the East, Kilimanjaro and Ruwenzori mountains restrict the railway construction.

d. Southern Africa

- Has highest density of railways on the continent. **Reasons**
- Has a lot of economic activities takeing place e.g. tea/tobacco (Malawi), mining (Zambia, Zimbabwe, South Africa), manufacturing in South Africa
- Consist of a lot of people.

MAJOR AIR ROUTE FOCI OF THE WORLD

Heathrow (in London) JKF (New York) Cairo, San Francisco, Johannesburg, Lilongwe, Lagos, Accra etc. From these airports Aero planes can fly to any part of the world

Important Railways in Southern Africa

1. Tanzam (Tazara) Railway

- From Dares Salaam to Mbeya (Tanzania), Kasama, Kapirimposhi to Lusaka(in Zambia).
- This line carries 90% of Zambia exports including copper.

2. Nacala Railway

- Starts from the Nacala (Mozambique) to Bilila then divert to the North to Balaka- Salima then Lilongwe and Mchinji.
- It helps in exporting and importing goods from and to Malawi.

TRADE

REGIONAL ECONOMIC GROUPINGS AND THEIR IMPORTANCE:

- In order to protect local and regional industries and the desire to compete effectively internationally has led to the creation of trading blocks.
- Members give each other preferential treatment or duty is more relaxed

Examples

1. Southern Africa Development Community (SADC)

- Members include; Malawi, DRC, Lesotho, Zambia, Zimbabwe, South Africa etc

AIMS

- Reduce the economic dependence especially on South Africa.
- To secure international cooperation.
- Pooling resources to encourage regional development policies.

Advantage

- The states are connected by an extensive railway network system and have rich

resources which could be easily exported.

Disadvantages
- Different political ideologies amongst member states.
- Economic dependence on South Africa e.g. in transport, mining, manufactured goods.
- Individual countries are very poor
- There is no free market approach in the region.

2. Common Market for Eastern and Southern Africa (COMESA)

Membership
- Include some SADC members and Eastern States such as Sudan Uganda, Tanzania, Kenya, Rwanda etc.

Aims
- Improve commercial and economic cooperation in the region.
- Provide regional trade.
- Promote development of basic and strategic industries.
- Promote cooperation in agricultural development.
- Create a regional common market.

Important features
- COMESA travellers cheques.

3 Economic Community for West African States (ECOWAS)

Membership

Nigeria, Chad, Algeria, Cameroon, Mali, Ivory Coast, Liberia, Sierra Leone, Senegal, Mauritania, Ghana, Togo, Benin, Guinea Bissau, Gambia and Upper Volta.

AIMS
- To develop complete customs union.
- Increase trade among members states.
- To improve communications.
- To finance farm projects and mineral extraction.
- To establish a common currency eventually.

Weaknesses/problems
- Poor nations which depend mainly on Nigeria.
- Nigeria as member of OPEC, can not give ECOWAS members cheaper oil.
- Railways in the regions have different gauges (widths).

CHAPTER 4

INDUSTRY

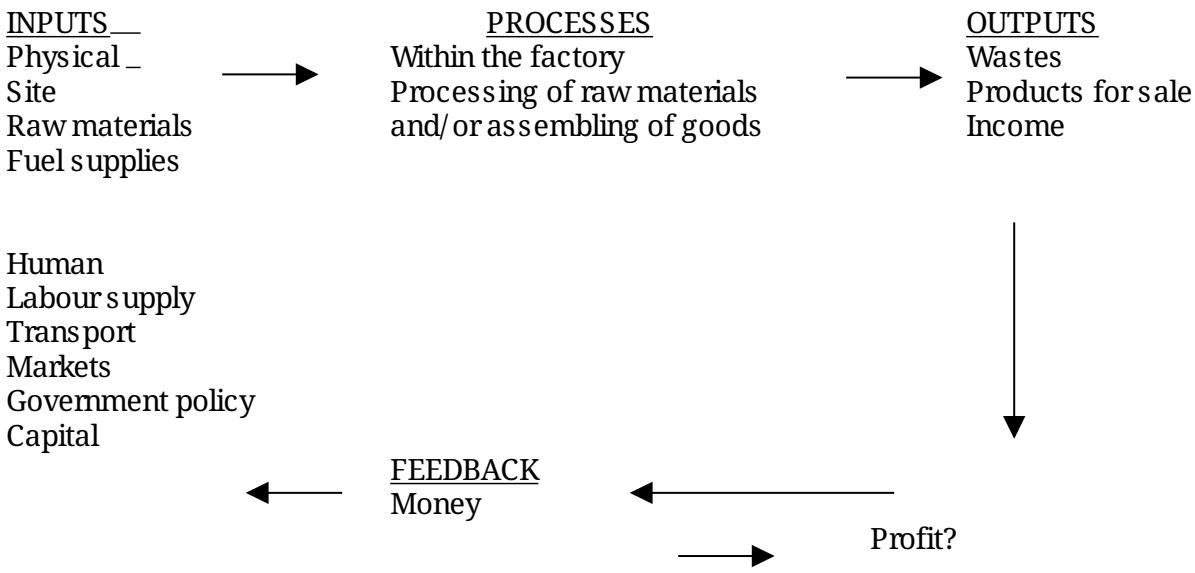
An industry is any work done for gain or work and processes involved in turning raw materials into new products.

Types of Industry
a. Primary
b. Secondary
c. Tertiary
d. Quaternary

Definition
Is the extraction of raw materials from the ground and sea.
Is the processing of raw materials into manufactured goods.
Is the provision of services.
Is the provision of information and administrative services.

Examples
- Fishing, mining, farming, forestry
- Beer brewing, soap making, bread making, car manufacturing, cement making.
- Transport, teaching, banking, policing, tourism Advertising, research.

Manufacturing Industry as a System
An industry receives inputs or energy from the environment.
It converts these inputs into outputs.
And discharges its inputs into the environment (see figure below).



Factors influencing the location of Industries
1. Raw Materials
Raw Materials are items used to make finished products.
Raw materials that are bulky and heavy attract industries that process them for example sugar processing industries. This is because transporting them on longer distance would be uneconomical and also most of their weight is lost in the manufacturing process.
On the other hand industries processing light materials such as cotton can be located at some distance.

2. Market
This where the products are sold. Many modern industries locate to urban areas where there are many people who can afford their goods. This is more important factor on perishable goods such as bread, milk, news papers.

3. Labour Supply
- Labour is the human activity that provides goods and services.
- Older industries tended to be labour intensive. So factories requiring a large labour force tended to be attracted to areas where a large labour force is potentially plenty and of low cost.
- Where the industry require highly skilled labour force, then the factory is located where this type the labour is found e.g. near university

4 Transport
- Bulky, non - perishable raw materials e.g. iron ore are cheaper to move by rail or water. So factories processing this type of raw materials are located near railways or ports.
- A port can also act as a Break of Bulk - Point i.e. a place where the raw material is imported in bulk and then broken into smaller units e.g. crude oil is usually broken into different parts at a port where the refinery is located.
- Road transport (motor way junctions), become attractive locations, as lorries can easily supply the raw materials and distribute the product to the market.

5 Power or fuel supply
- Early industries used coal to power the process in a factory. This was bulky and expensive to transport, so the factories were built near the coal mines.
- However these days most factories are powered by electricity (electrical power in a National Grid that is to say which made it available through out the country). Therefore fuel sources have a much weaker effect on the location of modern industries.

  NB: Footloose industries are those industries which have a relatively free choice of location since they are not tied to raw materials or fuel supplies. Examples: Electronic equipment, (computers, washing machines, telecommunication), consumer electronics (television receives, video cassette recorders etc).

6. Government policy
- Government tries to attract industries to particular areas by providing incentives such as grants towards the cost of building the factories and training the workers.
- In addition the government may invest in road improvement which can attract new development and industries.

7. Capital
- Capital is a mobile factor and where there is industrial potential is good (even in adverse geographical areas) financiers will invest there.

  For example, the majority of tropical plantations, mines, large firms are in the hands of European foreigners, because these are the people who had the capital.

8. Site
- Most factories require flat land since it is easier to build on. The site should also have access to the road, rail or water links.

9 Other factors
- Stable government
- Stimulating climate which is comfortable to work in e.g. temperate climate and humid atmosphere is conducive for cotton spinning.

Major Industrial Areas of the World
1 Western Europe
This is the greatest industrial region of the world.
Reasons for industrial development include:¬

(a) High level of technological advancement in engineering, chemicals electronics etc
(b) Abundant power (fuel) supply i.e. nuclear, coal, and HEP.
(c) Town based population which provides a market for industrial products.
(d) Abundant raw materials e.g. iron, steel or coal etc.

2. North America
Reasons:¬
- Has rich raw materials e.g. diamond, gold etc.
- Proximity to Europe (using the North Atlantic Sea Route) which has stimulated trade.

- Growing world markets have also led to industrial expansion.
- Cheap transport in the Great Lakes Region.

3. Japan

Reasons:¬
- Large hydro power resources.
- Large ports helps import large amount of raw materials from all over the world.
- Mainland Asia population provide the market.
- Has technically based education system.

4. South Africa

Reasons
- A gold rich strip which stretches east - west across the Witwatersrand.
- Large power supply mainly coal.
- Johannesburg (the heart of Rand) is a central place with a large population which provides market and work force. South Africa also imported labour from other Southern African countries like Malawi to work in the mines.
- Presence or discovery of other minerals e.g. aluminum, diamonds, platinum, chrome, manganese, nickel, asbestos etc.

5. Other Areas

Brazil, South Korea

Work to do

Draw the map of the world. On it locate and name these industrialized regions

Environmental Problems of Industries

- Air and water pollution because of toxic fumes and effluent (wastes from factories) respectively.
- Creation of towns due to industries destroys forests, forms for building, roads and other land uses.
- Erosion of traditional values.

CEMENT INDUSTRY IN MALAWI

It is located in Blantyre

Factory for the Location Cement Factory in Blantyre

- A large market is available
- Storage facilities are present
- Blantyre is more accessible i.e. railway through Changalume/or Balaka to transport raw material and good road transport to transport cement to all parts of the country.

Stages Involved in Cement Making

1. Limestone in broken up and crushed.
2. Shale or clay is also crushed and mixed with limestone and water.
3. The mixture is heated in an equipment called Kiln at high temperatures i.e. 1500 ^{o}c to evaporate the water.
4. The result is the clinker. Clinker is transported to Blantyre for final process.
5. Gypsum (imported from Canada) is added to clinker. Then the mixture is ground to fine powder called cement.

IMPORTANCE OF CEMENT INDUSTRY IN MALAWI

- Source of employment to a good number of people.
- Has contributed to the building and construction industry in Malawi.

ENVIRONMENTAL IMPACT OF THE CEMENT MAKING INDUSTRY

- Cause land pollution due to dust from clinker.
- Causes air pollution since carbon dioxide is released into the atmosphere during its manufacturing.
- A lot of pits (depressions) form where limestone and shale are quarried. Trees are cut in large areas.

Solutions to the Environmental Pollution
- Planting trees around the area will act as carbon sink i.e. the trees will absorb the carbon dioxide from the atmosphere.
- Refilling the holes and trees should be planted.
- Proper disposal of wastes.

MOTOR VEHICLE INDUSTRY IN USA
Car making industry largely requires iron and steel as its main raw materials. These materials are mainly available in the following regions:

1. Pittsburg: main centres are Youngtown and Pittsburg.
2. The Great Lakes: Detroit, Cleveland, Buffalo, Gary, Chicago.
3. Atlantic coast: Sparrow's Point, and Bethlehem.

Factors for the growth of Motor Vehicle Industry in USA
- Location of high quality iron ore deposits.
- Historical incident because it is the home of people (pioneers) who started car manufacturing such as Henry Ford.
- Skilled labour from Europe.
- Excellent natural communication of the Great Lakes and the St. Lawrence River. Abundant power supply.
- Large market for the cars.
- Presence of oil fields.

IMPORTANCE OF MOTOR INDUSTRY IN USA
- has increased other associated industries e.g. filling stations, tourism.
- Increased job opportunities.
- Expanded job housing location and alternatives.
- Greatly expanded opportunities to enjoy leisure time.
- Provided convenient, comfortable and relatively cheap personal transport over both long and short distances.

Problems Associated with Motor Vehicle Industry in USA
- Has greatly contributed to air pollution
- Has increased accidents, injuries and death on the roads
- Has caused decline in public transport.
- Facing competition with other countries such as Japan which produce cheap, equally good

and less oil consumption cars.

Other Important Facts

The industries is dominated by the companies (called The Big Three)

a. General Motors Corporation
b. Ford Motor Company
c. Chrysler motor company.

In early 1906, there were more than 100 companies, but they were reduced in number with passing years since they could not withstand competition with these three companies.
However car production has been increasing since 1900 although late in 1920's production declined because of the Great Depression. In 1940 -1945 car production almost ceased because the companies manufactured war weapons instead of cars. After the war, car manufacturing resumed.
Car ownership is great than any other country in the world. Although Japan produces a lot of cheap cars, car ownership is low because of:

(i) rugged topography
(ii) lack of oil fields
(iii) Has very narrow roads.

The world leading car manufacturing centre is Detroit (in the Great Lakes Region)

Work to do

Discuss the assembly technique in car manufacturing.

TOURISM

Tourism refers to the activities which involve people travelling and staying in places outside their usual surroundings for leisure, business, education and other reasons¬.

Factors that promote Tourism in Africa

A. Physical Factors

1. Pleasant climate: especially sunny conditions which appeal to people from cooler northern continents.
2. Attractive scenery: e.g. mountains, lakes, forests, coastal scenes. Some of these attractions in Africa include: Lake Malawi, Great Zimbabwe, Victoria Falls (Zambia) Mount Kenya (Kenya) Darkens berg mountains (South Africa).

Work to do

Draw the map of Malawi. On it locate and name areas of:

a. angling b. mountaineering
c. game viewing d. historical sites
e. swimming

B. Economic factors

Infrastructure

(i) Good infrastructure is required such as high class hotel accommodation with efficient staffing, good restaurants and entertainment such as casinos, cinemas, facilities for golf, fishing and game viewing.
(ii) Good communication by roads, rail and internal flights and also direct links with overseas countries especially those in Europe, Britain, North America.¬

C. Cultural Factors

- Places of historic or architectural interest such as churches, mosques, temples, places of art galleries and especially buildings such as the pyramids of Egypt.

Tourist Centres in Africa

World Heritage sites such as Carthage (Tunisia) pyramids in Egypt, Great Zimbabwe ruins, Timbuktu (Mali) National Parks: Mount Kenya N. P. (Kenya) Kilimanjaro N.P, (Kenya) Kruger N.P. (South Africa), Kalahari N.P. (Botswana). Others: Lake Malawi, Lake Victoria (Tanzania and Uganda) Victoria Falls (Zimbabwe).

Work to do

Draw the map of Africa and locate these places.

Impact of Tourism

A. Positive effects¬

1. Offers employment to many people such as hotel staff, tourist guides, transport workers, travel agency workers, people engaged in sales of items such as postcards, souvenirs, local handicrafts etc.
2. It brings large quantities of foreign exchange into the country visited.

B. Negative effects

1. Traditional cultural traits are destroyed especially those of dress and behaviour.
2. Provides seasonal employment.
3. Can encourage unbecoming social problems such as theft, crime and prostitution.
4. Environmental degradation by visitors e.g. can contaminate water bodies or foot paths to the mountain may encourage erosion.

ECOTOURISM

Ecotourism refers to the tourism focused on the attractive and interesting features of the natural environment. Examples are: Lake Malawi, Ruwenzori mountains (Kenya) Amazon or Zaire rainforests etc.

Importance of Ecotourism

-Encourages environmental conservation
-Respect local cultures and customs
-Encourages research finding.