GERMANY

Germany is one of the countries found in Europe she is among the Rhine lands countries. Germany is known as the federal republic of Germany. In location, Germany lies between longitude 5 and 14 east of the Greenwich meridian, latitude 47 and 54 north of the equator.

Germany shares borders with nine countries namely;

Denmark in the north, Poland and the Czech Republic in the east, Austria and Switzerland in the south, France and Luxembourg in the south-west and Belgium and the Netherlands in the north-west. Germany has access to the North Sea there for she is not landlocked.

According to size i.e. land area, Germany covers 357,021 kms, 97.8% of which is land and only 2.2% water. Germany is the seventh largest country in Europe but the largest in the Rhine lands countries.

A map of Germany with her neighbors

Germany climate

Germany is found in the temperate regions of the world i.e. on the northern hemisphere. Germany therefor experiences the temperate type of climatic conditions. She there for goes through summer, winter, spring, and autumn.

The climate of Germany is mostly influenced by the humid westerly winds, the north Atlantic Drift. The north and north-west experience maritime climate with rainfall all the year round. This

rainfall is at its maximum during summer. In terms of temperatures, the winters are mild and the summers tend to be cool however, the maximum temperatures can go up to 30.
The eastern parts experience continental type of climate with very cold winters and warm summers.

GERMANY RELIEF

Germany as a country is divided in to three major physical regions namely;

- The northern lowlands. This region rises from a few meters below sea level to about 200m above sea level. The land in this area is generally flat. The area is made up of young rocks that were deposited by the sea before reclamation. The soils of this region are mainly sandy and only good for pasture hence used for dairy farming.
- The central uplands. This region covers much of central Germany and includes the Rhine rift valley, the Rhine gorge and the Black Forest Mountains. The Rhine rift valley cuts through the western part of this region. The central uplands continues east and north to merge with the Ore Mountains on the border with the Czech Republic. The region is largely not fertile except for river valleys.
- The southern highlands. This region is found in the southern parts of Germany.

A map of Germany showing the major physical regions.

The Rhine rift valley.
The Rhine Rift Valley, also known as the Upper Rhine Plain or the Rhine Graben, is a wide, low lying flat land between two mountain ranges. I.e. it is bounded to the west by the Vosges mountain ranges in France, and to the east by the Black Forest mountains in Germany.
The Rhine rift valley extends for about 200kms northward from Basel, in Switzerland and stretching for 32 to 40kms in width. The Rhine rift Valley forms a trough through which River Rhine flows.

A cross-section of the Rhine Rift Valley

Formation of the Rhine Rift Valley
According to the geologists the Rhine Rift Valley was formed 65 million years ago as a result of faulting. This is mainly in two major ways i.e. The Tensional and Compressional forces.

Formation of the rift valley through Tensional forces
The tensional forces cause the rocks of the earth's crust to crack and a result the central block sinks down leaving the side blocks standing above it, hence forming the rift valley as shown in the diagrams below.

Formation of the rift valley through compressional forces
The compressional forces in the earth's crust causes the rocks to crack and as a result there will be uplift of the side blocks leaving the middle block standing below as shown in the diagrams below.

The Rhine rift valley region is very important in Germany because there are many economic activities carried out here today. Some of these economic activities are the following;
-Crop growing (Arable farming)

-Animal rearing (livestock keeping)
-industrial development especially in towns like Manheim, Ludwigshafen, and Frankfurt.
-Transport especially via River Rhine
-Forestry e.g. from the Black forest mountains
-Fishing along River Rhine
-Tourism and mining.

AGRICULTURE IN GERMANY

Agriculture in Germany is divided into arable farming and livestock rearing.

Arable farming in the Rhine Rift Valley

The Rhine Rift Valley is one of the most important agricultural regions in Germany. Arable farming is the growing of crops i.e. food crops and some cash crops. Arable farming is dominated by Viticulture while livestock farming is dominated by dairy farming.

The common crops grown under arable farming are some of the following;

Grapes under viticulture, Tobacco, Sugar beet, potatoes, hops, wheat, rye, asparagus, maize, Rapeseed for its oil-bearing seeds, flowers, vegetables as well as fodder crops.

A sketch map of the Rhine rift valley showing arable farming regions and some selected features

The factors favoring arable farming in Germany

- Germany receives rainfall throughout the year. This facilitates crop growing all the year round.
- Germany experiences sunny summers which are good for the ripening of the grapes and other fruits.
- The Rhine rift valley regions are not affected by winter coldness which would hamper filed activities and crop performance on the farms.
- Germany is endowed with a variety of fertile soils. The rift valley region has alluvial soils which are very fertile.

- The rift valley bottoms are gently sloping so as to allow easy use of machines and they also limit soil erosion.
- The government of Germany does a lot of research on agriculture this is all to ensure high crop yields.
- The German agriculture is blessed with a lot of market for its products. This market is within and from other outside countries.
- Germany has the best transport network in the Europe. The rift valley region is not only served by river Rhine but also by roads and railways which connect the agricultural regions to the market centers.
- Advanced technology has also promoted agriculture in Germany. Technology has facilitated irrigation thereby agriculture possible when rain is not enough.
- The government policy of Germany supports the development of agriculture.
- Availability of agro-based industries which process the agricultural products.

The problems faced by the German farmers and measures taken to solve them

- ✓ The steep slopes of the southern parts and central Germany limit farming activities in the region. The steep slopes are prone to soil erosion and limit the use of the farm machinery. For this reason most of the steep slopes are left under forestry.
  Terracing and contour ploughing have been developed to enable cultivation.
- ✓ Flooding of rivers is another big problem faced. German rivers like Danube and Elbe flood causing damage to the crops grown. To avert this problem early warning systems have been put in place to warn the farmers of any impending floods.
- ✓ There are problems of crop pests and diseases .Pesticides and fungicides are used to control pests.Also biological methods are used.
- ✓ In some parts of Germany winter temperatures fall so low that they affect farming activities. The valley areas where most of the farming activities take place become very cold at night. Winter coldness for example affects Rapeseed stems, it also damages the leaves and fruits of vines. The common practice today is spraying water on vines to protect them from frost.
- ✓ There are problems of weeds which compete with the crops grown. The solution to this is by use of chemical herbicides and physical weeding by human labor or by machinery.
- ✓ There is a problem of shortage of labor during the busy harvesting season. This problem is being managed by attracting pat-time labor especially women during the busy harvesting season.
- ✓ There is a problem of soil exhaustion due to monoculture and intensive cultivation especially in the growing of vines. This is managed by encouraging the farmers to use fertilizers, and organic manure.
- ✓ There is a problem of the vines being perishable such that it goes bad in a short time. This problem is managed by on site processing to reduce the problem of perishability.

Livestock farming in Germany

This is an important agricultural activity in the Rhine rift valley region. Livestock keeping utilizes the biggest part of the agricultural land in Germany. The animals kept are cattle, sheep, goats, pigs, and poultry birds. Livestock farming is done everywhere in the country but cattle keeping is dominant in the northern regions where the soils are not good for crop growing.

Dairy farming is the most important animal rearing activity.

Factors favoring livestock keeping in Germany

- The temperate climate with cool temperatures favor the rearing of exotic breeds of cattle.
- The heavy rainfall and cool temperatures favor the growth of pasture and the growing of other fodder crops used for feeding the animals.
- The poor soils in the northern parts are not good for crop growing there for most of this region has been put aside for animal rearing.
- The government of Germany has invested large amounts of capital to develop livestock keeping.
- The government policy which supports the development of animal rearing as an important agricultural activity.
- There is high level of technology used in animal rearing e.g. artificial insemination, use of machine for spraying the animals, use of machines for milking, use of machines which hatch eggs.
- The formation of co-operative societies by the farmers. This help the farmers in marketing the products, giving loans, and the necessary equipment.
- The German government has developed many agricultural processing industries e.g. beef canning, milk processing, hides and skins.
- The use of modern preservation methods for meat and milk.
- There is a lot of research done on animal husbandry in order to develop high quality animals and birds.
- There are many agricultural services provided by the agricultural extension workers like veterinary officers who give advice and treat the animals.
- There is readily available market for the animal products from Germany and the neighboring countries.
- There are reliable forms of transport such as roads, railway lines, air and water transport connecting many industrial centers of Germany. The transport network facilitates the transportation of raw materials from where they are got to the industrial centers where they are processed and also the transportation of the manufactured goods to the market centers

The table below shows annual cattle population in selected countries of the Rhine lands (1992-1994)

Annual cattle population in the selected countries

Country	**Animal cattle population**
Belgium	3,391,000
Germany	16,307,000
The Netherlands	4,766,000
Switzerland	1,743,000
Total	**26,117,000**

(a) Calculate the percentage of cattle produced by each country between 1992-1994
(b) Draw a pie-chart to show the information shown on the table above
(c) State the country with the
    (i) Highest (ii) the lowest cattle population

(d) Explain the conditions that have favored the cattle rearing in the country with the highest cattle population.

GERMANY ENERGY/POWER

Germany is known to be having the most developed energy industry in the whole world. Germany has tried to develop her energy or power sector to levels above world average energy standards. The major energy or power sources are the following;

Nuclear power, Hydro-electric power, coal power, solar power, wind power,

Nuclear energy is one of the leading energy sources used in Germany. Germany has over 20 nuclear power stations in various parts of the country. Coal is another important source of power used in Germany. The well-known coal producing region is the Ruhr coal fields. This is the largest coal mine in the whole of Europe.

The table below shows the relative importance of energy/power sources in Germany

The major sources of energy/power	**percentage**
Coal	30
Natural gas	02
Nuclear energy	40
Hydro-electric power	12
Solar energy	06
Wind energy	10
Total	**100**

i. Draw a pie-chart to show the relative importance of the different sources of power used in Germany

ii. Draw a percentage bar graph to represent the above information about energy/power sources in Germany

A map showing the Ruhr coal fields

The coal in the Ruhr coal fields is divided in to two types/parts

(a) The concealed coal found in the north. This type of coal is found buried underground.

(b) The exposed coal fields in the south. This type of coal is found near or on the surface.

The uses of coal

-Bituminous coal has much gas and is there for used as a source of power for domestic and industrial use.

-Anthracite coal burns with great heat and there for used for heating boilers in heavy industries

-Choking coal is used in the smelting of iron and steel and in tar production.

The problems facing the Ruhr coal fields of Germany

- ✓ The coal is now getting exhausted because of overexploitation
- ✓ The cost of mining coal is now increasing because of the increasing depth
- ✓ There is increasing competition from other sources of power especially from oil
- ✓ The closing of many coal mines has led to unemployment
- ✓ There is competition from other coal producing countries like USA whose production costs are relatively lower.

Today there are other reasons for the decline in coal production in the Ruhr coal fields. Some of them are the following;

- There has been a discovery of new forms of power e.g. natural gas which is cheaper to mine and process
- There is now an increase in the use of nuclear power instead of coal
- There is also an increase in the use of crude oil as a form of energy
- The cost of mining coal are increasing because of the increasing depth
- The easily mined coal has got exhausted
- There is an improvement in technology which requires less coal to be burnt especially in the iron and steel industry
- Many of the coal miners have found better paying jobs in other industries. Many of them have left.

INDUSTRIAL DEVELOPMENT IN GERMANY

By the end of the 19^{th} century Germany was producing half of the world's electrical equipment and as per today she is known to be Europe's industrial giant. Today industry forms the backbone of the Germany economy.

Today Germany is the leading manufacturer of products like iron and steel, chemicals, cement, electronics, machinery and machine tools, optical instruments, vehicles, foods and beverages.

Germany is the world's third largest industrial power, behind the USA, and Japan.The major industrial concentrations of West Germany are the Rurh-westphalia complex, the upper Rhine valley, Bremen and Hamburg, mainly for shipbuilding, the southern region, with such cities as Munich and Augsburg, and the central region with such industrial cities as Salzgitter, Kassel, Hanover, and Brunswick. In the east, most of the leading industries are located in Berlin region or in such cities as Dresden, Leipzig, Dessau, Halle, Cottbus and Chemnitz

The German economy is essentially a processing economy. This was true of both West Germany and East Germany before unification. It will remain true in the future, although the detailed shares of GDP remain to be determined by unification and may not clearly evident until the mid- or late 1990s.

Before unification, 40% of the Germany workforce was involved in manufacturing, with the main industries being machine tools, automotive manufacturing, electrical engineering, iron, steel, chemicals, and optics.

Although the industrial sector in the former East Germany is still evolving, manufacturing in that part of Germany is expected to concentrate in the same industries over time. Thus, the future German economy will retain a powerful industrial component that will likely total well above 30 % of German GDP

Almost all areas of Western Germany have some industry. The main industrial areas are the Ruhr district in north Rhine –Westphalia, the traditional center of German coal, steel, and heavy industry, the concentration of industry around several large cities, such as Hanover, Munich. Frankfurt, Main, and Stuttgart; the chemical production areas that stretch mainly along the River Rhine in Baden- Wurttemberg and further north and the automotive manufacturing centers, increasingly concentrated in the southern Germany in Bavaria and Baden- Wurttemberg.

In eastern Germany, the main industrial manufacturing areas are in Saxony, Saxony-Anhalt, and Thuringia, principally concentrated in the Leipzig, Dresden, Halle, and Chemnitz regions. Before World War II, Saxony was the technology center of central Europe. The Elbe River, like the Rhine, attracted chemical and other industry along its shores. It is uncertain which eastern German industries will survive, but the firms in the southern part of the region appear to have better chances than those in the south than in the north. The districts in the northern East Germany had industrial employment below 25%, those around Berlin had industrial employment between 25% and 35%, and those south of Berlin had over 35%employment in industry. No such clear geographical delineation for sector employment existed in West Germany.

The glory of German industry is not in the firms that are well known around the world, such as Daimler- Benz, Volkswagen, Siemens, or Bayer. It is in the small-medium size firms that constitute what the Germans call the Mittelstand, although that term has political and social as well as management connotations, it has been widely accepted to mean companies that employ fewer than 500workers. Such firms constitute 98% of all German companies, hire 80% of all employees, are responsible for significant share of exports, and provide one of the firmest foundations of the middle class.

The best-known industry and the second largest with a turnover of 217 billion dollars in 1991, is automotive manufacturing. Such companies as Daimler-Benz, Volkswagen, and Bayerrische motorenwerke (BMW) are known throughout the world.

The chemical industry, with a total output of 166 billion dollars in 1991, is based mainly three large corporations that have been leaders in the field for 100 years

A map of Germany showing the major industrial centers

The most important industrial region in Germany is known as the Ruhr.

THE RUHR INDUSTRIAL REGION

This is the largest and most concentrated industrial region in the whole of Europe. It lies between river Lippe, River Rhine, and River Wupper and extends for over 72kms eastwards along river Ruhr. The Ruhr industrial region covers many towns which include the following;

Essen, Duisburg, Cologne, Dusseldorf, Dortmund, Wuppertal, Solingen, Remscheid, Frankfurt, and Mannheim.

The Ruhr region in Europe is largest producer of iron and steel and coal.it is also an important chemical and engineering center.

A Sketch map of the Ruhr industrial region (see page 102,259)

The common types of industries found in Germany

Germany has many types of industries some of the examples include the following;

- **The iron and steel industries**. These are concentrated in towns like Duisburg, Essen, Bochum, and Dortmund. The common products from these industries are steel bridges, motor vehicles, electricity generators, turbines, iron bars, railway locomotive engines and wagons, and other heavy steel products.
- **The engineering industries**. These are concentrated in towns like Essen, Dusseldorf, Dortmund, Duisburg, and Solingen. The common products from these are agricultural equipment, vehicles and vehicle parts, ship building, and the making of fire arms. The well-known vehicle companies are BMW, Daimler-Benz, and Volkswagen.
- **The chemical industries**. These are concentrated in Cologne, Essen, Dusseldorf, Stuttgart, Leverkusen and Marl. The common products here are dyes, plastics, fertilizers, detergents and soaps, pharmaceuticals, sulphuric acid and other chemicals.

- **The textile industry**. These make clothes for women, men and children, uniforms for the army and other forces other products in these industry are carpets. Most of these industries are found in towns like Krefeld, Dusseldorf, Wuppertal, and Gladbach.
- **Food processing**. These process all human food be it in form of floor, tinned or fresh.
- **Oil refining**. These process the oil and oil products.

The factors that have favored the development of industries in the Ruhr industrial region of Germany

- The presence of coal. There are large amounts of coal in the Ruhr coal fields. Coal is used as source of power in most of the industries.
- There are large reserves of iron ore. The Ruhr region produces all the steel in Germany and it has one of the largest iron and steel industries in the whole of Europe.
- There is a reliable cheap means of water transport. The presence of the navigable river Rhine with its tributaries such as the Wupper, the Ruhr, Emscher, and Lippe makes water transport very easy. Water transport is used for the transportation of bulky raw materials.
- There is a readily available market for the manufactured goods from within Germany, European countries and the rest of the world.
- The high level of technology used. Today most of the factories are automated i.e. using robots in the production. They use modern machinery in activities like mining, processing, manufacturing and transportation.
- There is readily available skilled, hardworking and dedicated labor force.
- There is readily available capital provided by the German government and other foreign companies.
- There is a wide variety of raw materials such as cheap wool, silk for the textile industries, coal-tar for the petro-chemical industry, grapes for the wine making industry, milk for the milk and milk products industries.
- There are wide varieties of power such as coal, HEP, Solar nuclear and wind energy.
- The government policy which supports the development of industries as a major economic activity.
- There are reliable forms of transport like roads railway lines and air transport. These connect the major industrial centers.

The benefits or contributions of industries to the development of Germany

- ✓ The German government today earns a lot of foreign exchange from the exports of her industrial products. Germany exports to the European countries, U.S.A, South America, Africa, India, Japan etc. Some of the exports include motor vehicles,machinery,electrical equipment's, chemicals, and many others

- ✓ The available industries today provide the people of Germany with many employment opportunities. The industrial sector employs more than 30% of the German labor force.
- ✓ These industries provide the German government with internal revenue by taxing them.
- ✓ Industry has facilitated the development of other infrastructure like roads railways canals and pipe lines.
- ✓ Industrial development has led to maximum exploitation of Germans natural resources like minerals, and agricultural resources.
- ✓ The agro-based industries provide market to the agricultural crops and animal products of the German farmers.
- ✓ Industrial development has led to the growth of many towns like Hamburg, Bremen, Duisburg, Mainz and many others.
- ✓ The industries are able to manufacture consumer goods used by the people of Germany.
- ✓ Through the export of manufactured goods to other countries, Germany has improved her relationship with those countries which import her industrial goods.
- ✓ As a result of employment from the industries people's standards of living have improved.
- ✓ Industrial development has helped in diversifying the economy of Germany instead of depending on only agriculture, mining, tourism, and other economic activities.

Problems resulting from the development of industries in the Ruhr region of Germany.

- The existing industries have led to the problems of environmental pollution.ie water, air and land pollution (accumulation of garbage). This problem is being minimized by encouraging the industries to recycle their waste or adopt proper ways of waste disposal.
- As a result of mechanization and automation in most of the industrial settings there is a problem of unemployment. The government has taken the task of creating more industries to absorb the unemployed people.
- Industrial development has led to urbanization and its associated problems like congestion, traffic jams, high crime rates, slum development and others.
- There is a problem of shortage of raw materials. Certain industries are declining and closing down due to shortage of raw materials such as iron ore and coal.
- There is a problem of competition from other industrial countries like Japan,China,Russia and U.S.A.This problem is being managed by producing high quality goods that can compete favorably for the international market.

Some trial questions under the topic of Germany from some pats papers

1. The table below shows Steel production in Germany (000 tons)1972-1983

1977	1978	1979	1980	1981	1982	1983
39000	45000	46000	44000	42000	40000	26000

(a) Draw a bar graph to show the information on the table
(b) State the year when steel production was
(i) Highest (ii) lowest
© describe the trend of steel production between 1977-1983 (see page 190).

2. The table below shows Germanys percentage imports and exports(2001)

Type of commodity	**Import (%)**	**Export (%)**
Fuel	08	01
Agricultural raw	02	01
Manufactured goods	70	89
Food	07	04
Ores and metals	03	02
Others	10	03
Total	**100**	**100**

(a) Draw a pie-chart to show Germany's imports in2001
(b) Mention the;
(i) Largest type of commodity exported from Germany,
(ii) Smallest type of commodity imported into Germany,
(c) (i) Name any two manufacturing centers in Germany,
(ii)Describe the factors which have favored the development of the manufacturing sector in Germany.
(d)Outline the conditions which have influenced the volume of Germany's exports.