Geography

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THE WORLD POPULATION

DISTRIBUTION, DENSITY AND GROWTH

- The term population distribution refers to the way people are spaced over the earth's surface.
- Broadly, 90 percent of the world population lives in about 10 percent of its land area.
- 10 most populous countries of the world contribute about 60 percent of the world's population and of these 10 countries, 6 are located in Asia.
- Each unit of land has limited capacity to support people living on it and hence, it is necessary to understand the ratio between the numbers of people to the size of land.
- This ratio is the density of population and is usually measured in persons per sq km.

FACTORS INFLUENCING THE DISTRIBUTION OF POPULATION

1. Geographical Factors

(a) Availability of Water:

- Water is the most important factor for life and so, people prefer to live in areas where fresh water is easily available.
- Water is used for drinking, bathing and cooking – and also for cattle, crops, industries and navigation.
- It is because of this that river valleys are among the most densely populated areas of the world.

(b) Landforms

- People prefer living on flat plains and gentle slopes because such areas are favourable for the production of crops and to build roads and industries.
- The mountainous and hilly areas hinder the development of transport network and hence initially do not favour agricultural and industrial development and hence areas tend to be less populated.
- The Ganga plains are among the most densely populated areas of the world while the mountains zones in the Himalayas are scarcely populated.

(c) Climate

- An extreme climate such as very hot or cold deserts are uncomfortable for human habitation. Areas with a comfortable climate, where there is not much seasonal variation attract more people and areas with very heavy rainfall or extreme and harsh climates have low population.
- Mediterranean regions were inhabited from early periods in history due to their pleasant climate.

(d) Soils

- Fertile soils are important for agricultural and allied activities and therefore, areas which have fertile loamy soils have more people living on them as these can support intensive agriculture.

2. Economic Factors

(a) Minerals

- Areas with mineral deposits attract industries activities in these areas generate employment.
- Katanga Zambia copper belt in Africa is one such good example.

(b) Urbanisation

- Cities offer better employment opportunities, educational and medical

facilities, better means of transport and communication.
- Good civic amenities and the attraction of city life draw people to the cities. It leads to rural to urban migration and cities grow in size.
- Mega cities of the world continue to attract large number of migrants every year.

(c) Industrialisation
- Industrial belts provide job opportunities and attract large numbers of people.
- These include not just factory workers but also transport operators, shopkeepers, bank employees, doctors, teachers and other service providers.
- The Kobe-Osaka region of Japan is t hickly populated because of the presence of a number of industries.

3. Social and Cultural Factors
- Some places attract more people because they have religious or cultural significance.
- In the same way – people tend to move away from places where there is social and political unrest.
- Many a times governments offer incentives to people to live in sparsely populated areas or move away from overcrowded places.

POPULATION GROWTH
- The population growth or population change refers to the change in number of inhabitants of a territory during a specific period of time that may be positive as well as negative.
- It can be expressed either in terms of absolute numbers or in terms of percentage.
- Population change in an area is an important indicator of economic development, social upliftment and historical and cultural background of the region.

Components of Population Change
- There are three components of population change – births, deaths and migration.
- The crude birth rate (CBR) is expressed as number of live births in a year per thousand of population.
- Death rate plays an active role in population change.
- Population growth occurs not only by increasing births rate but also due to decreasing death rate.
- Crude Death Rate (CDR) is a simple method of measuring mortality of any area and is expressed in terms of number of deaths in a particular year per thousand of population in a particular region.
- By and large mortality rates are affected by the region's demographic structure, social advancement and levels of its economic development.

Migration
- When people move from one place to another, the place they move from is called the Place of Origin and the place they move to is called the Place of Destination.
- The place of origin shows a decrease in population while the population increases in the place of destination.
- Migration may be interpreted as a spontaneous effort to achieve a better balance between population and resources.
- Migration may be permanent, temporary or seasonal and may take place from rural to rural areas, rural to urban areas,

urban to urban areas and urban to rural areas.

- *Immigration:* Migrants who move into a new place are called Immigrants.
- *Emigration:* Migrants who move out of a place are called Emigrants.
- People migrate for a better economic and social life and there are two sets of factors that influence migration – Push factors and Pull factors.
- The Push factors make the place of origin seem less attractive for reasons like unemployment, poor living conditions, political turmoil, unpleasant climate, natural disasters, epidemics and socio-economic backwardness.
- The Pull factors make the place of destination seem more attractive than the place of origin for reasons like better job opportunities and living conditions, peace and stability, security of life and property and pleasant climate.

TRENDS IN POPULATION GROWTH

- The population on the earth is more than seven billion and has grown to this size over centuries.
- In the early periods population of the world grew very slowly but it is only during the last few hundred years that population has increased at an alarming rate.
- After the evolution and introduction of agriculture about 12,000 to 8,000 years ago, the size of population was small – roughly 8 million and in the first century A.D. it was below 300 million.
- The expanding world trade during the sixteenth and seventeenth century, set the stage for rapid population growth.
- Around 1750, at the dawn of the Industrial Revolution, the world population was 550 million and world population exploded in the eighteenth century after the Industrial Revolution. Technological advancement achieved so far helped in the reduction of birth rate and provided a stage for accelerated population growth.
- It took more than a million years for the human population to attain the one billion mark. But it took only 12 years for it to rise from 5 billion to 6 billion.
- Developed countries take more time to double their population as compared to developing countries.
- Most of the population growth is taking place in the developing world, where population is exploding.
- The growth of population is low in developed countries as compared to developing countries. There is negative correlation between economic development and population growth.
- Although the annual rate of population change (1.4 per cent) seems to be low, it is actually not so. This is because:
  When a small annual rate is applied to a very large population, it will lead to a large population change.
  Even if the growth rate continues to decline, the total population grows each year. The infant mortality rate may have increased as has the death rate during childbirth.

IMPACT OF POPULATION CHANGE

- A small increase in population is desirable in a growing economy.
- However, population growth beyond a certain level leads to problems. Of these the depletion of resources is the most serious.

- Population decline, which is a matter of concern, indicates that resources that had supported a population earlier are now insufficient to maintain the population.
- The deadly HIV/AIDS epidemics in Africa and some parts of the Commonwealth of Independent States (CIS) and Asia have pushed up death rates and reduced average life expectancy slowing population growth.

DEMOGRAPHIC TRANSITION

- Demographic transition theory can be used to describe and predict the future population of any area.
- The theory tells us that population of any region changes from high births and high deaths to low births and low deaths as society progresses from rural agrarian and illiterate to urban industrial and literate society.
- These changes occur in stages which are collectively known as the demographic cycle.
- The first stage has high fertility and high mortality because people reproduce more to compensate for the deaths due to epidemics and variable food supply.
- The population growth is slow and most of the people are engaged in agriculture where large families are an asset.
- Fertility remains high in the beginning of second stage but it declines with time and is accompanied by reduced mortality rate.
- Improvements in sanitation and health conditions lead to decline in mortality and because of this gap, the net addition to population is high.
- In the last stage, both fertility and mortality decline considerably and the population is either stable or grows slowly.
- The population becomes urbanised, literate and has high technical knowhow and deliberately controls the family size.
- This shows that human beings are extremely flexible and are able to adjust their fertility.
- In the present day, different countries are at different stages of demographic transition.

POPULATION CONTROL MEASURES

- Family planning is the spacing or preventing the birth of children. Access to family planning services is a significant factor in limiting population growth and improving women's health.
- Propaganda, free availability of contraceptives and tax disincentives for large families are some of the measures which can help population control.
- Any further increase would result in a population crash caused by famine, disease and war.
- The preventive checks are better than the physical checks and thus, for the sustainability of our resources, the world will have to control the rapid population increase.

POPULATION COMPOSITION

- People can be distinguished by their age, sex and their place of residence.
- Some of the other distinguishing attributes of the population are occupation, education and life expectancy.

SEX COMPOSITION

- The number of women and men in a country is an important demographic characteristic.
- The ratio between the number of women and men in the population is called the Sex Ratio.
- In some countries, the sex ratio is calculated by or the number of males per thousand females while in India, it is worked out as the number of females per thousand males.
- The sex ratio is an important information about the status of women in a country.
- In regions where gender discrimination is rampant, the sex ratio is bound to be unfavourable to women where the practice of female foeticide, female infanticide and domestic violence against women are prevalent.
- On an average, the world population reflects a sex ratio of 102 males per 100 females.
- The highest sex ratio in the world has been recorded in Latvia where there are 85 males per 100 females. In contrast, in Qatar there are 311 males per 100 females.
- The world pattern of sex ratio does not exhibit variations in the developed regions of the world.
- In general, Asia has a low sex ratio and countries like China, India, Saudi Arabia, Pakistan, Afghanistan have a lower sex ratio.
- On the other extreme is greater part of Europe (including Russia) where males are in minority.
- A deficit of males in the populations of many European countries is attributed to better status of women, and an excessively male-dominated out-migration to different parts of the world in the past.

AGE STRUCTURE

- Age structure represents the number of people of different age groups.
- This is an important indicator of population composition, since a large size of population in the age group of 15-59 indicates a large working population.
- A greater proportion of population above 60 years represents an ageing population which requires more expenditure on health care facilities.
- Similarly high proportion of young population would mean that the region has a high birth rate and the population is youthful.

Age-Sex Pyramid

- The age-sex structure of a population refers to the number of females and males in different age groups.
- A population pyramid is used to show the age-sex structure of the population.
- The shape of the population pyramid reflects the characteristics of the population wherein the left side shows the percentage of males while the right side shows the percentage of women in each age group.
- The age-sex pyramid of Nigeria is a triangular shaped pyramid with a wide base and is typical of less developed countries.

- These have larger populations in lower age groups due to high birth rates. If you construct the pyramids for Bangladesh and Mexico, it would look the same.
- Australia's age-sex pyramid is bell shaped and tapered towards the top showing birth and death rates almost equal leading to a near constant population.
- The Japan pyramid has a narrow base and a tapered top showing low birth and death rates. The population growth in developed countries is usually zero or negative.

RURAL URBAN COMPOSITION

- The division of population into rural and urban is based on the residence which is necessary because rural and urban life styles differ from each other in terms of their livelihood and social conditions.
- The age-sex-occupational structure, density of population and level of development vary between rural and urban areas.
- The criteria for differentiating rural and urban population vary from country to country. In general terms, rural areas are those where people are engaged in primary activities and urban areas are those when majority of the working population is engaged in non-primary activities.
- The rural and urban differences in sex ratio in Canada and West European countries like Finland are just the opposite of those in African and Asian countries like Zimbabwe and Nepal respectively.
- In Western countries, males outnumber females in rural areas and females outnumber the males in urban areas and in countries like Nepal, Pakistan and India the case is reverse.
- Farming in developed countries is also highly mechanised and remains largely a male occupation.
- By contrast the sex ratio in Asian urban areas remains male dominated due to the predominance of male migration.
- It is also worth noting that in countries like India, female participation in farming activity in rural area is fairly high.
- Shortage of housing, high cost of living, paucity of job opportunities and lack of security in cities, discourage women to migrate from rural to urban areas.

Literacy

- Proportion of literate population of a country in an indicator of its socio-economic development as it reveals the standard of living, social status of females, availability of educational facilities and policies of government.
- Level of economic development is both a cause and consequence of literacy.
- In India – literacy rate denotes the percentage of population above 7 years of age, who is able to read, write and have the ability to do arithmetic calculations with understanding.

Occupational Structure

- The working population (i.e. women and men of the age group – 15 to 59) take part in various occupations ranging from

agriculture, forestry, fishing, manufacturing construction, commercial transport, services, communication and other unclassified services.

- Agriculture, forestry, fishing and mining are classified as primary activities manufacturing as secondary, trade, transport, communication and other services as tertiary and the jobs related to research, information technology and developing ideas as quaternary activities.
- The proportion of working population engaged in these four sectors is a good indicator of the levels of economic development of a nation.
- This is because only a developed economy with industries and infrastructure can accommodate more workers in the secondary, tertiary and quaternary sector.
- If the economy is still in the primitive stages, then the proportion of people engaged in primary activities world be high as it involves extraction of natural resources.

HUMAN DEVELOPMENT

GROWTH AND DEVELOPMENT

- Both growth and development refer to changes over a period of time.
- The difference is that growth is quantitative and value neutral having a positive or a negative sign which means that the change may be either positive (showing an increase) or negative (indicating a decrease).
- Development means a qualitative change which is always value positive which means that development cannot take place unless there is an increment or addition to the existing conditions.
- Development occurs when positive growth takes place but positive growth does not always lead to development.
- However, Development occurs when there is a positive change in quality.
- For example, if the population of a city grows from one lakh to two lakhs over a period of time, we say the city has grown. However, if facilities like housing, provision of basic services and other characteristics remain the same, then this growth has not been accompanied by development.
- For many decades, a country's level of development was measured only in terms of its economic growth.
- The idea that the quality of life people enjoy in a country, the opportunities they have and freedoms they enjoy, are important aspects of development, is not new.
- The concept of human development was introduced by Dr Mahbub-ul-Haq who described human development as development that enlarges people's choices and improves their lives.
- People are central to all development under this concept and these choices are not fixed but keep on changing.
- The basic goal of development is to create conditions where people can live meaningful lives and a meaningful life is not just a long one but must be a life with some purpose.

- Leading a long and healthy life, being able to gain knowledge and having enough means to be able to live a decent life are the most important aspects of human development.
- Therefore, access to resources, health and education are the key areas in human development.
- Very often, people do not have the capability and freedom to make even basic choices which may be due to their inability to acquire knowledge, their material poverty, social discrimination, inefficiency of institutions and other reasons.
- Building people's capabilities in the areas of health, education and access to resources is therefore, important in enlarging their choices and if people do not have capabilities in these areas, their choices also get limited.
- For example, an uneducated child cannot make the choice to be a doctor because her choice has got limited by her lack of education. Similarly, very often poor people cannot choose to take medical treatment for disease because their choice is limited by their lack of resources.

THE FOUR PILLARS OF HUMAN DEVELOPMENT

- Just as any building is supported by pillars, the idea of human development is supported by the concepts of equity, sustainability, productivity and empowerment.
- Equity refers to making equal access to opportunities available to everybody and the opportunities available to people must be equal irrespective of their gender, race, income and in the Indian case, caste.
- In India, a large number of women and persons belonging to socially and economically backward groups drop out of school that shows how the choices of these groups get limited by not having access to knowledge.
- Sustainability means continuity in the availability of opportunities and to have sustainable human development, each generation must have the same opportunities.
- All environmental, financial and human resources must be used keeping in mind the future and misuse of any of these resources will lead to fewer opportunities for future generations.
- A good example is about the importance of sending girls to school. If a community does not stress the importance of sending its girl children to school, many opportunities will be lost to these young women when they grow up.
- So each generation must ensure the availability of choices and opportunities to its future generations.
- Productivity here means human labour productivity or productivity in terms of human work and such productivity must be constantly enriched by building capabilities in people.

- Effort to increase their knowledge, or provide better health facilities ultimately leads to better work efficiency.
- Empowerment means to have the power to make choices that comes from increasing freedom and capability.
- Good governance and people-oriented policies are required to empower people.
- The empowerment of socially and economically disadvantaged groups is of special importance.

APPROACHES TO HUMAN DEVELOPMENT

There are many ways of looking at the problem of human development.
Some of the important approaches are: (a) The income approach; (b) The welfare approach; (c) Minimum needs approach; and (d) Capabilities approach.

MEASURING HUMAN DEVELOPMENT

- The human development index (HDI) ranks the countries based on their performance in the key areas of health, education and access to resources and these rankings are based on a score between 0 to 1 that a country earns from its record in the key areas of human development.
- The indicator chosen to assess health is the life expectancy at birth and a higher life expectancy means that people have a greater chance of living longer and healthier lives.
- The adult literacy rate and the gross enrolment ratio represent access to knowledge where the number of adults who are able to read and write and the number of children enrolled in schools show how easy or difficult it is to access knowledge in a particular country.
- Access to resources is measured in terms of purchasing power (in U.S. dollars) and each of these dimensions is given a weightage of 1/3.
- The human development index is a sum total of the weights assigned to all these dimensions where the closer a score is to one, the greater is the level of human development.
- A score of 0.983 would be considered very high while 0.268 would mean a very low level of human development.
- The human development index measures attainments in human development that reflects what has been achieved in the key areas of human development but it is not the most reliable measure because it does not say anything about the distribution.
- The human poverty index is related to the human development index that measures the shortfall in human development and which is a non-income measure.
- The probability of not surviving till the age of 40, the adult illiteracy rate, the number of people who do not have access to clean water, and the number of small children who are underweight are all taken into account to show the

shortfall in human development in any region. Often the human poverty index is more revealing than the human development index.

- The ways to measure human development are constantly being refined and newer ways of capturing different elements of human development are being researched..

INTERNATIONAL COMPARISONS

- International comparisons of human development are interesting wherein the size of the territory and per capita income are not directly related to human development.
- Often smaller countries have done better than larger ones in human development and relatively poorer nations have been ranked higher than richer neighbours in terms of human development.
- Countries can be classified into four groups of very high, high, medium and low on the basis of the human development scores earned by them.
- Countries with very high human development index are those which have a score of over 0.800 providing education and healthcare is an important government priority and according to Human Development Report of 2018, this group includes 59 countries.
- Countries with higher human development are those where a lot of investment in the social sector has taken place.
- Altogether, a higher investment in people and good governance has set this group of countries apart from the others.
- Many of the countries, totaling 53, with a high human development score are located in Europe and represent the industrialised western world and yet there are striking numbers of non-European countries also who have made it to this list.
- Countries with medium levels of human development form the largest group and there are 39 countries, most of them emerged in the period after Second World War, are in this level. Most of these are countries which have emerged in the period after the Second World War.
- Many of these countries have been rapidly improving their human development score by adopting more people-oriented policies and reducing social discrimination.
- Most of these countries have a much higher social diversity than the countries with higher human development scores and have faced political instability and social uprisings at some point of time in their recent history.
- As many as 38 countries record low levels of human development with a large proportion of these are small countries which have been going through political turmoil and social instability in the form of civil war, famine or a high incidence of diseases.

- There is an urgent need to address the human development requirements of this group through well thought out policies.
- To understand why a particular region keeps reporting low or high levels of human development it is important to look at the pattern of government expenditure on the social sector besides the political environment of the country and the amount of freedom people have is also important.
- Countries with high levels of human development invest more in the social sectors and are generally free from political turmoil and instability.
- On the other hand, places with low levels of human development tend to spend more on defence rather than social sectors that shows that these countries tend to be located in areas of political instability and have not been able to initiate accelerated economic development.

PRIMARY ACTIVITIES

- Human activities which generate income are known as *economic activities* that are broadly grouped into primary, secondary, tertiary and quaternary activities.
- Primary activities are directly dependent on environment as these refer to utilisation of earth's resources such as land, water, vegetation, building materials and minerals.
- Primary activities includes, hunting and gathering, pastoral activities, fishing, forestry, agriculture, and mining and quarrying.

HUNTING AND GATHERING

- The earliest human beings depended on their immediate environment for their sustenance and they subsisted on: (a) animals which they hunted; and (b) the edible plants which they gathered from forests in the vicinity.
- Primitive societies depended on wild animals wherein people located in very cold and extremely hot climates survived on hunting while the people in the coastal areas still catch fish though fishing has experienced modernisation due to technological progress.
- Many species, now have become extinct or endangered due to illegal hunting (poaching).
- The early hunters used primitive tools made of stones, twigs or arrows and so the number of animals killed was limited.
- Gathering and hunting are the oldest economic activity known that are carried out at different levels with different orientations.
- Gathering is practised in regions with harsh climatic conditions often involving primitive societies, who extract, both plants and animals to satisfy their needs for food, shelter and clothing.
- Gathering requires a small amount of capital investment and operates at very low level of technology and the yield per person is very low and little or no surplus is produced.
- Gathering is practised in: (i) high latitude zones which include northern Canada,

northern Eurasia and southern Chile; and (ii) Low latitude zones such as the Amazon Basin, tropical Africa, Northern fringe of Australia and the interior parts of Southeast Asia.

- Gatherers collect valuable plants such as leaves, barks of trees and medicinal plants and after simple processing sell the products in the market.
- They use various parts of the plants, for example, the bark is used for quinine, tanin extract and cork— leaves supply materials for beverages, drugs, cosmetics, fibres, thatch and fabrics; nuts for food and oils and tree trunk yield rubber, balata, gums and resins.
- Gathering has little chance of becoming important at the global level and products of such an activity cannot compete in the world market.
- Moreover, synthetic products often of better quality and at lower prices, have replaced many items supplied by the gatherers in tropical forests.

PASTORALISM

- At some stage in history, with the realization that hunting is an unsustainable activity, human beings might have thought of domestication of animals.
- People living in different climatic conditions selected and domesticated animals found in those regions.
- Depending on the geographical factors, and technological development, animal rearing today is practised either at the subsistence or at the commercial level.

Nomadic Herding

- Nomadic herding or pastoral nomadism is a primitive subsistence activity, in which the herders rely on animals for food, clothing, shelter, tools and transport moving from one place to another along with their livestock, depending on the amount and quality of pastures and water and each nomadic community occupies a well-identified territory as a matter of tradition.
- In tropical Africa, cattle are the most important livestock, while in Sahara and Asiatic deserts, sheep, goats and camel are reared while in the mountainous areas of Tibet and Andes, yak and llamas and in the Arctic and sub Arctic areas, reindeer are the most important animals.
- Pastoral nomadism is associated with three important regions – the core region extends from the Atlantic shores of North Africa eastwards across the Arabian peninsula into Mongolia and Central China; the second region extends over the tundra region of Eurasia; and in the southern hemisphere there are small areas in South-west Africa and on the island of Madagascar.
- The process of migration from plain areas to pastures on mountains during summers and again from mountain pastures to plain areas during winters is known as *transhumance.*
- In mountain regions, such as Himalayas, Gujjars, Bakarwals, Gaddis and Bhotiyas migrate from plains to the mountains in

summers and to the plains from the high altitude pastures in winters.

- Similarly, in the tundra regions, the nomadic herders move from south to north in summers and from north to south in winters. The number of pastoral nomads has been decreasing and the areas operated by them shrinking which is due to (a) imposition of political boundaries; (b) new settlement plans by different countries.

Commercial Livestock Rearing

- Unlike nomadic herding, commercial livestock rearing is more organised and capital intensive.
- Commercial livestock ranching is essentially associated with western cultures and is practiced on permanent ranches that cover large areas and are divided into a number of parcels, which are fenced to regulate the grazing.
- When the grass of one parcel is grazed, animals are moved to another parcel and the number of animals in a pasture is kept according to the carrying capacity of the pasture.
- This is a specialised activity in which only one type of animal is reared and important animals include sheep, cattle, goats and horses.
- Products such as meat, wool, hides and skin are processed and packed scientifically and exported to different world markets.
- Rearing of animals in ranching is organised on a scientific basis with the main emphasis on breeding, genetic improvement, disease control and health care of the animals.
- New Zealand, Australia, Argentina, Uruguay and United States of America are important countries where commercial livestock rearing is practiced.

AGRICULTURE

- Agriculture is practised under multiple combinations of physical and socio-economic conditions, which gives rise to different types of agricultural systems.
- Based on methods of farming, different types of crops are grown and livestock raised. The following are the main agricultural systems.

(a) Subsistence Agriculture

- Subsistence agriculture is one in which the farming areas consume all, or nearly so, of the products locally grown and are be grouped in two categories — Primitive Subsistence Agriculture and Intensive Subsistence Agriculture.

Primitive Subsistence Agriculture

- Primitive subsistence agriculture or shifting cultivation is widely practised by many tribes in the tropics, especially in Africa, south and central America and south east Asia.
- The vegetation is usually cleared by fire, and the ashes add to the fertility of the soil and the cultivated patches are very small and cultivation is done with very primitive tools such as sticks and hoes.
- After 3 to 5 years, the soil looses its fertility and the farmer shifts to another parts and clears other patch of the forest for cultivation.

- One of the major problems of shifting cultivation, also called slash and burn agriculture, is that the cycle of *jhum* becomes less and less due to loss of fertility in different parcels.
- It is prevalent in tropical region in different names, e.g. Jhuming in North eastern states of India, Milpa in central America and Mexico and Ladang in Indonesia and Malaysia.

Intensive Subsistence Agriculture

This type of agriculture is largely found in densely populated regions of monsoon Asia. Basically, there are two types of intensive subsistence agriculture.

(i) *Intensive subsistence agriculture dominated by wet paddy cultivation:*

- This is characterised by dominance of the rice crop where the land holdings are very small due to the high density of population.
- Farmers work with the help of family labour leading to intensive use of land and use of machinery is limited and most of the agricultural operations are done by manual labour.
- Farm yard manure is used to maintain the fertility of the soil. In this type of agriculture, the yield per unit area is high but per labour productivity is low.

(ii) *Intensive subsidence agriculture dominated by crops other than paddy:*

- Due to the difference in relief, climate, soil and some of the other geographical factors, it is not practical to grow paddy in many parts of monsoon Asia.
- Wheat, soyabean, barley and sorghum are grown in northern China, Manchuria, North Korea and North Japan.
- In India wheat is grown in western parts of the Indo-Gangetic plains and millets are grown in dry parts of western and southern India.
- Most of the characteristics of this type of agriculture are similar to those dominated by wet paddy except that irrigation is often used.
- The Europeans colonised many parts in the world and they introduced some other forms of agriculture such as plantations which were mainly profit-oriented large scale production systems.

(b) Plantation Agriculture

- Plantation agriculture was introduced by the Europeans in colonies situated in the tropics and some of the important plantation crops are tea, coffee, cocoa, rubber, cotton, oil palm, sugarcane, bananas and pineapples.
- The characteristic features of this type of farming are large estates or plantations, large capital investment, managerial and technical support, scientific methods of cultivation, single crop specialisation, cheap labour, and a good system of transportation which links the estates to the factories and markets for the export of the products.
- The French established cocoa and coffee plantations in west Africa while the British set up large tea gardens in India and Sri Lanka, rubber plantations in

Malaysia and sugarcane and banana plantations in West Indies.

- Spanish and Americans invested heavily in coconut and sugarcane plantations in the Philippines and The Dutch once had monopoly over sugarcane plantation in Indonesia while some coffee fazendas (large plantations) in Brazil are still managed by Europeans.
- Today, ownership of the majority of plantations has passed into the hands of the government or the nationals of the countries concerned.
- The slopes of hills are used for tea plantations because of favourable geographical conditions.

(c) Extensive Commercial Grain Cultivation

- Commercial grain cultivation is practised in the interior parts of semi-arid lands of the midlatitudes.
- Wheat is the principal crop, though other crops like corn, barley, oats and rye are also grown and the size of the farm is very large, therefore entire operations of cultivation from ploughing to harvesting are mechanised with a low yield per acre but high yield per person.
- This type of agriculture is best developed in Eurasian steppes, the Canadian and American Prairies, the Pampas of Argentina, the Velds of South Africa, the Australian Downs and the Canterbury Plains of New Zealand. (Locate these areas on the world map).

(d) Mixed Farming

- This form of agriculture is found in the highly developed parts of the world, e.g. North-western Europe, Eastern North America, parts of Eurasia and the temperate latitudes of Southern continents.
- Mixed farms are moderate in size and usually the crops associated with it are wheat, barley, oats, rye, maize, fodder and root crops and fodder crops are an important component of mixed farming.
- Crop rotation and intercropping play an important role in maintaining soil fertility and equal emphasis is laid on crop cultivation and animal husbandry.
- Animals like cattle, sheep, pigs and poultry provide the main income along with crops.
- Mixed farming is characterised by high capital expenditure on farm machinery and building, extensive use of chemical fertilizers and green manures and also by the skill and expertise of the farmers.

(e) Dairy Farming

- Dairy is the most advanced and efficient type of rearing of milch animals and it is highly capital intensive.
- Animal sheds, storage facilities for fodder, feeding and milching machines add to the cost of dairy farming with special emphasis on cattle breeding, health care and veterinary services.
- It is highly labour intensive as it involves rigorous care in feeding and mulching and there is no off season during the year as in the case of crop raising.

- It is practised mainly near urban and industrial centres which provide neighbourhood market for fresh milk and dairy products.
- The development of transportation, refrigeration, pasteurisation and other preservation processes have increased the duration of storage of various dairy products.
- There are three main regions of commercial dairy farming – first is the largest North Western Europe, the second is Canada and the third belt includes South Eastern Australia, New Zealand and Tasmania.

(f) Mediterranean Agriculture

- Mediterranean agriculture is highly specialized commercial agriculture and is practised in the countries on either side of the Mediterranean sea in Europe and in north Africa from Tunisia to Atlantic coast, southern California, central Chile, south western parts of South Africa and south and south western parts of Australia. This region is an important supplier of citrus fruits.
- Viticulture or grape cultivation is a speciality of the Mediterranean region and best quality wines in the world with distinctive flavours are produced from high quality grapes in various countries of this region.
- The inferior grapes are dried into raisins and currants in this region that also produces olives and figs.
- The advantage of Mediterranean agriculture is that more valuable crops such as fruits and vegetables are grown in winters when there is great demand in European and North American markets.

(g) Market Gardening and Horticulture

- Market gardening and horticulture specialize in the cultivation of high value crops such as vegetables, fruits and flowers, solely for the urban markets.
- Farms are small and are located where there are good transportation links with the urban centre where high income group of consumers is located.
- It is both labour and capital intensive and lays emphasis on the use of irrigation, HYV seeds, fertilisers, insecticides, greenhouses and artificial heating in colder regions.
- This type of agriculture is well developed in densely populated industrial districts of north west Europe, north eastern United States of America and the Mediterranean regions.
- The Netherlands specialises in growing flowers and horticultural crops especially tulips, which are flown to all major cities of Europe.
- The farming in this region, where farmers specialise in vegetables only, is known as truck farming as the distance of truck farms from the market is governed by the distance that a truck can cover overnight.
- In addition to market gardening, a modern development in the industrial regions of Western Europe and North America is factory farming.

- Livestock, particularly poultry and cattle rearing, is done in stalls and pens, fed on manufactured feedstuff and carefully supervised against diseases requiring heavy capital investment in terms of building, machinery for various operations, veterinary services and heating and lighting.
- One of the important features of poultry farming and cattle rearing is breed selection and scientific breeding.
- Types of farming can also be categorized according to the farming organisation which is affected by the way in which farmers own their farms and various policies of the government which help to run these farms.

(h) Co-operative Farming

- A group of farmers form a co-operative society by pooling in their resources voluntarily for more efficient and profitable farming. Individual farms remain intact and farming is a matter of cooperative initiative.
- Co-operative societies help farmers, to procure all important inputs of farming, sell the products at the most favourable terms and help in processing of quality products at cheaper rates.
- Co-operative movement originated over a century ago and has been successful in many western European countries like Denmark, Netherlands, Belgium, Sweden, Italy etc. In Denmark, the movement has been so successful that practically every farmer is a member of a co-operative.

(i) Collective Farming

- The basic principle behind this type of farming is based on social ownership of the means of production and collective labour.
- Collective farming or the model of Kolkhoz was introduced in erstwhile Soviet Union to improve upon the inefficiency of the previous methods of agriculture and to boost agricultural production for self-sufficiency.
- The farmers used to pool in all their resources like land, livestock and labour. However, they were allowed to retain very small plots to grow crops in order to meet their daily requirements.

MINING

- The discovery of minerals in the history of human development, is reflected in many stages in terms of copper age, bronze age and iron age.
- The use of minerals in ancient times was largely confined to the making of tools, utensils and weapons.
- The actual development of mining began with the industrial revolution and its importance is continuously increasing.

Factors Affecting Mining Activity

The profitability of mining operations thus, depends on two main factors:

(i) Physical factors include the size, grade and the mode of occurrence of the deposits.

(ii) Economic factors such as the demand for the mineral, technology available and used, capital to develop infrastructure and the labour and transport costs.

Methods of Mining

- Depending on the mode of occurrence and the nature of the ore, mining is of two types: surface and underground mining.
- The surface mining also known as *open-cast* mining is the easiest and the cheapest way of mining minerals that occur close to the surface.
- Overhead costs such as safety precautions and equipment is relatively low in this method where the output is both large and rapid.
- When the ore lies deep below the surface, underground mining method (shaft method) has to be used wherein, vertical shafts have to be sunk, from where underground galleries radiate to reach the minerals.
- Minerals are extracted and transported to the surface through these passages for which it requires specially designed lifts, drills, haulage vehicles, ventilation system for safety and efficient movement of people and material.
- This method is risky as poisonous gases, fires, floods and caving in lead to fatal accidents.
- The developed economies are retreating from mining, processing and refining stages of production due to high labour costs, while the developing countries with large labour force and striving for higher standard of living are becoming more important.

SECONDARY ACTIVITIES

- Secondary activities add value to natural resources by *transforming* raw materials into valuable products.
- Cotton in the boll has limited use but after it is transformed into yarn, becomes more valuable and can be used for making clothes.
- Iron ore, cannot be used; directly from the mines, but after being converted into steel it gets its value and can be used for making many valuable machines, tools, etc.
- The same is true of most of the materials from the farm, forest, mine and the sea. Secondary activities, therefore, are concerned with manufacturing, processing and construction (infrastructure) industries.

MANUFACTURING

- Manufacturing involves a full array of production from handicrafts to moulding iron and steel and stamping out plastic toys to assembling delicate computer components or space vehicles.
- In each of these processes, the common characteristics are the application of power, mass production of identical products and specialised labour in factory settings for the production of standardised commodities.
- Manufacturing may be done with modern power and machinery or it may still be very primitive.
- More emphasis is given to the kind of 'industrial' activity which involves less complicated systems of production.

Characteristics of Modern Large Scale Manufacturing

Modern large scale manufacturing has the following characteristics:

1. Specialisation of Skills/Methods of Production

- Under the 'craft' method factories produce only a few pieces which are made-to-order and so the costs are high.
- On the other hand, mass production involves production of large quantities of standardised parts by each worker performing only one task repeatedly.

2. Mechanisation

- Mechanisation refers to using gadgets which accomplish tasks.
- Automation (without aid of human thinking during the manufacturing process) is the advanced stage of mechanisation.
- Automatic factories with feedback and closedloop computer control systems where machines are developed to 'think', have sprung up all over the world.

3. Technological Innovation

- Technological innovations through research and development strategy are an important aspect of modern manufacturing for quality control, eliminating waste and inefficiency, and combating pollution.

4. Organisational Structure and Stratification

- Modern manufacturing is characterised by:

(a) a complex machine technology
(b) extreme specialisation and division of labour for producing more goods with less effort, and low costs
(c) vast capital
(d) large organisations
(e) executive bureaucracy.

5. Uneven Geographic Distribution

- Major concentrations of modern manufacturing have flourished in a few number of places covering less than 10 per cent of the world's land area And these nations have become the centres of economic and political power.
- In terms of the total area covered, manufacturing sites are much less conspicuous and concentrated on much smaller areas than that of agriculture due to greater intensity of processes. For example, 2.5 sq km of the American corn belt usually includes about four large farms employing about 10-20 workers supporting 50-100 persons. But this same area could contain several large integrated factories and employ thousands of workers.
- Industries maximise profits by reducing costs and therefore, they should be located at points where the production costs are minimum. Some of the factors influencing industrial locations are as under:

(a) Access to Market

- The existence of a market for manufactured goods is the most important factor in the location of industries.

- 'Market' means people who have a demand for these goods and also have the purchasing power (ability to purchase) to be able to purchase from the sellers at a place.
- Remote areas inhabited by a few people offer small markets while the developed regions of Europe, North America, Japan and Australia provide large global markets as the purchasing power of the people is very high.
- The densely populated regions of South and South-east Asia also provide large markets. Some industries, such as aircraft manufacturing, have a global market. The arms industry also has global markets.

(b) Access to Raw Material

- Raw material used by industries should be cheap and easy to transport and perishability is a vital factor for the industry to be located closer to the source of the raw material.
- Industries based on cheap, bulky and weight-losing material (ores) are located close to the sources of raw material such as steel, sugar, and cement industries.
- Agro-processing and dairy products are processed close to the sources of farm produce or milk supply respectively.

(c) Access to Labour Supply

- Labour supply is an important factor in the location of industries and some types of manufacturing still require skilled labour.
- Increasing mechanisation, automation and flexibility of industrial processes have reduced the dependence of industry upon the labours.

(d) Access to Sources of Energy

- Industries which use more power are located close to the source of the energy supply such as the aluminium industry.
- Earlier coal was the main source of energy, today hydroelectricity and petroleum are also important sources of energy for many industries.

(e) Access to Transportation and Communication Facilities

- Speedy and efficient transport facilities to carry raw materials to the factory and to move finished goods to the market are essential for the development of industries.
- The cost of transport plays an important role in the location of industrial units.
- Western Europe and eastern North America have a highly developed transport system which has always induced the concentration of industries in these areas.
- Modern industry is inseparably tied to transportation systems and improvements in transportation led to integrated economic development and regional specialisation of manufacturing.
- Communication is also an important need for industries for the exchange and management of information.

(f) Government Policy

- Governments adopt 'regional policies' to promote 'balanced' economic development and hence set up industries in particular areas.

(g) Access to Agglomeration Economies/ Links between Industries

- Many industries benefit from nearness to a leader-industry and other industries and these benefits are termed as agglomeration economies.
- Savings are derived from the linkages which exist between different industries and these factors operate together to determine industrial location.

Classification of Manufacturing Industries

- Manufacturing industries are classified on the basis of their size, inputs/raw materials, output/products and ownership.
- The amount of capital invested, number of workers employed and volume of production determine the size of industry.
- Accordingly, industries may be classified
i nto household or cottage, small-scale and large-scale.

(a) Household industries or cottage manufacturing

- It is the smallest manufacturing unit wherein the artisans use local raw materials and simple tools to produce everyday goods in their homes with the help of their family members or part-time labour.
- Finished products may be for consumption in the same household or, for sale in local (village) markets, or, for barter.
- Capital and transportation do not wield much influence as this type of manufacturing has low commercial significance and most of the tools are devised locally.
- Some common everyday products produced in this sector of manufacturing include foodstuffs, fabrics, mats, containers, tools, furniture, shoes, and figurines from wood lot and forest, shoes, thongs and other articles from leather; pottery and bricks from clays and stones.

(b) Small Scale Manufacturing

- Small scale manufacturing is distinguished from household industries by its production techniques and place of manufacture (a workshop outside the home/cottage of the producer).
- This type of manufacturing uses local raw material, simple power-driven machines and semi-skilled labour. It provides employment and raises local purchasing power.
- Countries like India, China, Indonesia and Brazil, etc. have developed labour-intensive small scale manufacturing in order to provide employment to their population.

(c) Large Scale Manufacturing

- Large scale manufacturing involves a large market, various raw materials, enormous energy, specialised workers, advanced technology, assembly-line mass production and large capital. This kind of manufacturing developed in the last 200 years, in the United Kingdom, north-eastern U.S.A. and Europe. Now it has diffused to almost all over the world.

- On the basis of the system of large scale manufacturing, the world's major industrial regions may be grouped under two broad types, namely

1. traditional large-scale industrial regions which are thickly clustered in a few more developed countries.
2. high-technology large scale industrial regions which have diffused to less developed countries.

Industries based on Inputs/Raw Materials

On the basis of the raw materials used, the industries are classified as: (a) agro-based; (b) mineral based; (c) chemical based; (d) forest based: and (e) animal based.

(a) ***Agro based Industries***

- Agro processing involves the processing of raw materials from the field and the farm into finished products for rural and urban markets.
- Major agro-processing industries are food processing, sugar, pickles, fruits juices, beverages (tea, coffee and cocoa), spices and oils fats and textiles (cotton, jute, silk), rubber, etc.
- Agro processing includes canning, producing cream, fruit processing and confectionery.
- While some preserving techniques, such as drying, fermenting and pickling, have been known since ancient times, these had limited applications to cater to the pre-Industrial Revolution demands.

(b) ***Mineral based Industries***

- These industries use minerals as a raw material and some industries use ferrous metallic minerals which contain ferrous (iron), such as iron and steel industries but some use non-ferrous metallic minerals, such as aluminium, copper and jewellery industries.
- Many industries use non-metallic minerals such as cement and pottery industries.

(c) ***Chemical based Industries***

- Such industries use natural chemical minerals, e.g. mineral-oil (petroleum) is used in petrochemical industry. Salts, sulphur and potash industries also use natural minerals.
- Chemical industries are also based on raw materials obtained from wood and coal. Synthetic fibre, plastic, etc. are other examples of chemical based industries.

(d) Forest based Raw Material using Industries

- The forests provide many major and minor products which are used as raw material.
- Timber for furniture industry, wood, bamboo and grass for paper industry, lac for lac industries come from forests.

(e) Animal based Industries

- Leather for leather industry and wool for woollen textiles are obtained from animals. Besides, ivory is also obtained from elephant's tusks.

Industries Based On Output/Product

- You have seen some machines and tools made of iron or steel. The raw material for such machines and tools is iron and steel, which is itself an industry.

- The industries whose products are used to make other goods by using them as raw materials are basic industries.
- The consumer goods industries produced goods which are consumed by consumers directly.
- For example, industries producing breads and biscuits, tea, soaps and toiletries, paper for writing, televisions, etc. are consumer goods or non-basic industries.

Industries based on ownership

(a) Public Sector Industries are owned and managed by governments. In India, there were a number of Public Sector Undertakings (PSUs). Socialist countries have many state owned industries. Mixed economies have both Public and Private sector enterprises.

(b) Private Sector Industries are owned by individual investors. These are managed by private organisations. In capitalist countries, industries are generally owned privately.

(c) Joint Sector Industries are managed by joint stock companies or sometimes the private and public sectors together establish and manage the industries. Can you make a list of such industries?

Traditional Large-Scale Industrial Regions

- These are based on heavy industry, often located near coal-fields and engaged in metal smelting, heavy engineering, chemical manufacture or textile production.
- These industries are now known as smokestack industries.
- Traditional industrial regions can be recognised by:
  – High proportion of employment in manufacturing industry; High-density housing, often of inferior type, and poor services; Unattractive environment, for example, pollution, waste heaps, and so on.
  – Problems of unemployment, emigration and derelict land areas caused by closure of factories because of a worldwide fall in demand.

The Ruhr Coal-field, Germany

- The Ruhr Coal-field, Germany has been one of the major industrial regions of Europe for a long time.
- Coal and iron and steel formed the basis of the economy, but as the demand for coal declined, the industry started shrinking.
- Even after the iron ore was exhausted, the industry remained, using imported ore brought by waterways to the Ruhr.
- The Ruhr region is responsible for 80 per cent of Germany's total steel production but changes in the industrial structure have led to the decay of some areas, and there are problems of industrial waste and pollution.
- The future prosperity of the Ruhr is based less on the products of coal and steel, for which it was initially famous, and more on the new industries like the huge Opel car assembly plant, new chemical plants, universities.

- Out-of-town shopping centres have appeared resulting in a 'New Ruhr' landscape.

Iron and Steel Industry

- The iron and steel industry forms the base of all other industries and, therefore, it is called a basic industry and also because it provides raw material for other industries such as machine tools used for further production.
- It may also be called a heavy industry because it uses large quantities of bulky raw materials and its products are also heavy.
- Iron is extracted from iron ore by smelting in a blast furnace with carbon (coke) and limestone and the molten iron is cooled and moulded to form pig iron which is used for converting into steel by adding strengthening materials like manganese.
- The large integrated steel industry is traditionally located close to the sources of raw materials – iron ore, coal, manganese and limestone – or at places where these could be easily brought, e.g. near ports.
- Traditionally, most of the steel was produced at large integrated plants, but mini mills are limited to just one-step process – steel making – and are gaining ground.
- The industry is one of the most complex and capital-intensive industries and is concentrated in the advanced countries of North America, Europe and Asia.
- In U.S.A, most of the production comes from the north Appalachian region (Pittsburgh), Great Lake region (Chicago-Gary, Erie, Cleveland, Lorain, Buffalo and Duluth) and the Atlantic Coast (Sparrows Point and Morisville).
- The industry has also moved towards the southern state of Alabama and Pittsburg area is now losing ground and has now become the "rust bowl" of U.S.A.
- In Europe, U.K., Germany, France, Belgium, Luxembourgh, the Netherlands and Russia are the leading producers.
- The important steel centres are Scun Thorpe, Port Talbot, Birmingham and Sheffield in the U.K.; Duisburg, Dortmund, Dusseldorf and Essen in Germany; Le Creusot and St. Ettienne in France; and Moscow, St. Petersburgh, Lipetsk, Tula, in Russia and Krivoi Rog, and Donetsk in Ukraine.
- In Asia, the important centres include Nagasaki and Tokyo-Yokohaa in Japan; Shanghai, Tienstin and Wuhan in China; and Jamshedpur, Kulti-Burnpur, Durgapur, Rourkela, Bhilai, Bokaro, Salem, Visakhapatnam and Bhadravati in India. Consult your atlas to locate these places/centres.

Cotton Textile Industry

- Cotton textile industry has three sub-sectors i.e. handloom, powerloom and mill sectors.
- Handloom sector is labour-intensive and provides employment to semi-skilled workers and it requires small capital investment.

- The powerloom sector introduces machines and becomes less labour intensive and the volume of production increases.
- Cotton textile mill sector is highly capital intensive and produces fine clothes in bulk and cotton textile manufacturing requires good quality cotton as raw material.
- India, China, U.S.A, Pakistan, Uzbekistan, Egypt produce more than half of the world's raw cotton while the U.K, NW European countries and Japan also produce cotton textile made from imported yarn.
- Europe alone accounts for nearly half of the world's cotton imports. The industry has to face very stiff competition with synthetic fibres hence it has now shown a declining trend in many countries.

Concept of High Technology Industry

- High technology, or simply high-tech, is the latest generation of manufacturing activities and is best understood as the application of intensive research and development (R and D) efforts leading to the manufacture of products of an advanced scientific and engineering character.
- Professional (white collar) workers make up a large share of the total workforce and these highly skilled specialists greatly outnumber the actual production (blue collar) workers.
- Robotics on the assembly line, computer-aided design (CAD) and manufacturing, electronic controls of smelting and refining processes, and the constant development of new chemical and pharmaceutical products are notable examples of a high-tech industry.
- Neatly spaced, low, modern, dispersed, office-plant-lab buildings rather than massive assembly structures, factories and storage areas mark the high-tech industrial landscape.
- Planned business parks for high-tech start-ups have become part of regional and local development schemes.
- High-tech industries which are regionally concentrated, self-sustained and highly specialised are called technopolies and the Silicon Valley near San Francisco and Silicon Forest near Seattle are examples of technopolies.
- Manufacturing contributes significantly to the world economy and Iron and steel, textiles, automobiles, petrochemicals and electronics are some of the world's most important manufacturing industries.

TERTIARY AND QUATERNARY ACTIVITIES

- Tertiary activities are those related to service sectors like health, education, law, governance and recreation etc. that requires professional skills and other theoretical knowledge and practical training.
- Manpower is an important component of the service sector as most of the tertiary activities are performed by skilled labour, professionally trained experts and consultants.

- In a developed economy, the majority of workers get employment in tertiary activity and a moderate proportion is employed in the secondary sector.
- Tertiary activities include both production and exchange wherein the production involves the 'provision' of services that are 'consumed' and the output is indirectly measured in terms of wages and salaries while, Exchange, involves trade, transport and communication facilities that are used to overcome distance.
- Tertiary activities involve the commercial output of services rather than the production of tangible goods and they are not directly involved in the processing of physical raw materials. Common examples are the work of a plumber, electrician, technician, launderer, barber, shopkeeper, driver, cashier, teacher, doctor, lawyer and publisher etc.
- The main difference between secondary activities and tertiary activities is that the expertise provided by services relies more heavily on specialised skills, experience and knowledge of the workers rather than on the production techniques, machinery and factory processes.

TYPES OF TERTIARY ACTIVITIES

Trade and commerce

- Trade is essentially buying and selling of items produced elsewhere and all the services in retail and wholesale trading or commerce are specifically intended for profit.
- The towns and cities where all these works take place are known us trading centres.
- The rise of trading from barter at the local level to money-exchange of international scale has produced many centres and institutions such as trading centres or collection and distribution points.
- Trading centres may be divided into rural and urban marketing centres.

(a) Rural marketing centres

- These cater to nearby settlements and are quasi-urban centres and serve as trading centres of the most rudimentary type where personal and professional services are not well-developed and form local collecting and distributing centres.
- Most of these have *mandis (*wholesale markets) and also retailing areas and they are not urban centres *per se* but are significant centres for making available goods and services which are most frequently demanded by rural folk.
- Periodic markets in rural areas are found where there are no regular markets and local periodic markets are organised at different temporal intervals and may be weekly, biweekly markets from where people from the surrounding areas meet their temporally accumulated demand.
- These markets are held on specified dates and move from one place to another and the shopkeepers thus, remain busy on all the days while a large area is served by them.

(b) Urban marketing centres

- ***These*** have more widely specialised urban services providing ordinary goods and services as well as many of the specialised goods and services required by people.
- Urban centres, therefore, offer manufactured goods as well as many specialised markets develop, e.g. markets for labour, housing, semi or finished products.
- Services of educational institutions and professionals such as teachers, lawyers, consultants, physicians, dentists and veterinary doctors are available.

Retail Trading

- This is the business activity concerned with the sale of goods directly to the consumers and most of the retail trading takes place in fixed establishments or stores solely devoted to selling. Street peddling, handcarts, trucks, door-to-door, mail-order, telephone, automatic vending machines and internet are examples of non-store retail trading.

Wholesale Trading

- Wholesale trading constitutes bulk business through numerous intermediary merchants and supply houses and not through retail stores.
- Some large stores including chain stores are able to buy directly from the manufacturers while, most retail stores procure supplies from an intermediary source.
- Wholesalers often extend credit to retail stores to such an extent that the retailer operates very largely on the wholesaler's capital.

Transport

- Transport is a service or facility by which people, materials and manufactured goods are physically carried from one location to another which is an organised industry created to satisfy man's basic need of mobility.
- Modern society requires speedy and efficient transport systems to assist in the production, distribution and consumption of goods.
- At every stage in this complex system, the value of the material is significantly enhanced by transportation.
- Transport distance can be measured as: km distance or actual distance of route length; time distance or the time taken to travel on a particular route; and cost distance or the expense of travelling on a route.
- In selecting the mode of transport, distance, in terms of time or cost, is the determining factor. Isochrone lines are drawn on a map to join places equal in terms of the time taken to reach them.

Factors Affecting Transport

- Demand for transport is influenced by the size of population – the larger the population size, the greater is the demand for transport.
- Routes depend on: location of cities, towns, villages, industrial centres and raw materials, pattern of trade between them, nature of the landscape between them, type of climate, and funds

available for overcoming obstacles along the length of the route.

Communication and Telecommunication

- Communication services involve the transmission of words and messages, facts and ideas.
- The invention of writing preserved messages and helped to make communication dependent on means of transport and were actually carried by hand, animals, boat, road, rail and air. That is why all forms of transport are also referred to as lines of communication.
- Where the transport network is efficient, communications are easily disseminated but certain developments, such as mobile telephony and satellites, have made communications independent of transport.
- All forms are not fully disassociated because of the cheapness of the older systems and thus, very large volumes of mail continue to be handled by post offices all over the world.
- The use of telecommunications is linked to the development of modern technology that has revolutionised communications because of the speed with which messages are sent.
- Besides, the recent advancements like mobile telephony have made communications direct and i nstantaneous at any time and from anywhere. The telegraph, morse code and telex have almost become things of the past.
- Radio and television also help to relay news, pictures, and telephone calls to vast audiences around the world and hence they are termed as mass media which are vital for advertising and entertainment.
- Newspapers are able to cover events in all corners of the world. Satellite communication relays information of the earth and from space. The internet has truly revolutionised the global communication system.

Services

- Services occur at many different levels – some are geared to industry, some to people, and some to both industry and people, e.g. the transport systems.
- Low-order services, such as grocery shops and laundries, are more common and widespread than high-order services or more specialised ones like those of accountants, consultants and physicians.
- Services are provided to individual consumers who can afford to pay for them; For example, the gardener, the launderers and the barber do primarily physical labour while Teachers, lawyers, physicians, musicians and others perform mental labour.
- Making and maintaining highways and bridges, maintaining fire fighting departments and supplying or supervising education and customer-care are among the important services most often supervised or performed by governments or companies.

- State and union legislation have established corporations to supervise and control the marketing of such services as transport, telecommunication, energy and water supply.
- The location of recreational and entertainment services depends on the market – Multiplexes and restaurants might find location within or near the Central Business District (CBD), whereas a golf course would choose a site where land costs are lower than in the CBD.
- Personal services are made available to the people to facilitate their work in daily life.
- The workers migrate from rural areas in search of employment and are unskilled and they are employed in domestic services as housekeepers, cooks, and gardeners and hence, this segment of workers is generally unorganised.
- One such example in India is Mumbai's *dabbawala* (Tiffin) service provided to about 1,75,000 customers all over the city.

PEOPLE ENGAGED IN TERTIARY ACTIVITIES

- Today most people are service workers and services are provided in all societies.
- In more developed countries, a higher percentage of workers is employed in providing services as compared to less developed countries.
- The trend in employment in this sector has been increasing while it has remained unchanged or decreasing in the primary and secondary activities.

SOME SELECTED EXAMPLES

Tourism

- Tourism is travel undertaken for purposes of recreation rather than business that has become the world's single largest tertiary activity in total registered jobs (250 million) and total revenue (40 per cent of the total GDP).
- Besides, many local persons, are employed to provide services like accommodation, meals, transport, entertainment and special shops serving the tourists.
- Tourism fosters the growth of infrastructure industries, retail trading, and craft industries (souvenirs).
- In some regions, tourism is seasonal because the vacation period is dependent on favourable weather conditions, but many regions attract visitors all the year round.
- The warmer places around the Mediterranean Coast and the West Coast of India are some of the popular tourist destinations in the world.
- Others include winter sports regions, found mainly in mountainous areas, and various scenic landscapes and national parks, which are scattered.
- Historic towns also attract tourists, because of the monument, heritage sites and cultural activities.

Factors Affecting Tourism

- ***Demand*:** Since the last century, the demand for holidays has increased rapidly.
- Improvements in the standard of living and increased leisure time, permit many more people to go on holidays for leisure.
- ***Transport*:** The opening-up of tourist areas has been aided by improvement in transport facilities.
- Travel is easier by car, with better road systems but more significant in recent years has been the expansion in air transport.
- For example, air travel allows one to travel anywhere in the world in a few hours of flyingtime from their homes. The advent of package holidays has reduced the costs.

Tourist Attractions

- ***Climate**:* Most people from colder regions expect to have warm, sunny weather for beach holidays which is one of the main reasons for the importance of tourism in Southern Europe and the Mediterranean lands.
- The Mediterranean climate offers almost consistently higher temperatures, than in other parts of Europe, long hours of sunshine and low rainfall throughout the peak holiday season.
- People taking winter holidays have specific climatic requirements, either higher temperatures than their own homelands, or snow cover suitable for skiing.
- ***Landscape**:* Many people like to spend their holidays in an attractive environment, which often means mountains, lakes, spectacular sea coasts and landscapes not completely altered by man.
- ***History and Art**:* The history and art of an area have potential attractiveness and people visit ancient or picturesque towns and archaeological sites, and enjoy exploring castles, palaces and churches.
- ***Culture and Economy*** attract tourists with a penchant for experiencing ethnic and local customs.
- Besides, if a region provides for the needs of tourists at a cheap cost, it is likely to become very popular. Home-stay has emerged as a profitable business such as *heritage homes* in Goa, Madikere and Coorg in Karnataka.

Medical Services for Overseas Patients in India

- About 55,000 patients from U.S.A. visited India in 2005 for treatment which is still a small number compared with the millions of surgeries performed each year in the U.S. healthcare system.
- World class hospitals located in metropolitan cities cater to patients all over the world and hence medical tourism brings abundant benefits to developing countries like India, Thailand, Singapore and Malaysia.
- Beyond medical tourism, is the trend of outsourcing of medical tests and data interpretation.

- Hospitals in India, Switzerland and Australia have been performing certain medical services – ranging from reading radiology images, to interpreting Magnetic Resonance Images (MRIs) and ultrasound tests.
- Outsourcing holds tremendous advantages for patients, if it is focused on improving quality or providing specialised care.

QUATERNARY ACTIVITIES

- Quaternary activities involve some of the following: the collection, production and dissemination of information or even the production of information.
- Quaternary activities centre around research, development and may be seen as an advanced form of services involving specialised knowledge and technical skills.

QUINARY ACTIVITIES

- The highest level of decision makers or policy makers perform quinary activities which are subtly different from the knowledge based industries that the quinary sector in general deals with.
- Outsourcing has resulted in the opening up of a large number of call centres in India, China, Eastern Europe, Israel, Philippines and Costa Rica creating new jobs in these countries.
- Outsourcing is coming to those countries where cheap and skilled workers are available and these are also out-migrating countries.
- With the work available though outsourcing, the migration in these countries may come down. Outsourcing countries are facing resistance from job-seeking youths in their respective countries and the comparative advantage is the main reason for continuing outsourcing.
- New trends in quinary services include knowledge processing outsourcing (KPO) and 'home shoring', the latter as an alternative to outsourcing.
- The KPO industry is distinct from Business Process Outsourcing (BPO) as it involves highly skilled workers – it is information driven knowledge outsourcing.
- KPO enables companies to create additional business opportunities. Examples of KPOs include research and development (R and D) activities, e-learning, business research, intellectual property (IP) research, legal profession and the banking sector.

THE DIGITAL DIVIDE

- Opportunities emerging from the Information and Communication Technology based development is unevenly distributed across the globe.
- There are wide ranging economic, political and social differences among countries and how quickly countries can provide ICT access and benefits to its citizens is the deciding factor.
- While developed countries in general have surged forward, the developing countries have lagged behind and this is known as the digital divide.

- Similarly digital divides exist within countries. For example, in a large country like India or Russia, it is inevitable that certain areas like metropolitan centres possess better connectivity and access to the digital world versus peripheral rural areas.

TRANSPORT AND COMMUNICATION

TRANSPORT

- Transport is a service or facility for the carriage of persons and goods from one place to the other using humans, animals and different kinds of vehicles and such movements take place over land, water and air.
- Roads and railways form part of land transport; while shipping and waterways and airways are the other two modes.
- Pipelines carry materials like petroleum, natural gas, and ores in liquidified form.
- Transportation is an organized service industry created to satisfy the basic needs of society that includes transport arteries, vehicles to carry people and goods, and the organisation to maintain arteries, and to handle loading, unloading and delivery.
- Every nation has developed various kinds of transportation for defence purposes. Assured and speedy transportation, along with efficient communication, promote cooperation and unity among scattered peoples.

MODES OF TRANSPORTATION

- The principal modes of world transportation which are land, water, air and pipelines, are used for inter-regional and intra-regional transport, and each one (except pipelines) carries both passengers and freight.
- The significance of a mode depends on the type of goods and services to be transported, costs of transport and the mode available. International movement of goods is handled by ocean freighters.
- Road transport is cheaper and faster over short distances and for door-to-door services.
- Railways are most suited for large volumes of bulky materials over long distances within a country.
- High-value, light and perishable goods are best moved by airways.
- In a well-managed transport system, these various modes complement each other.

1. LAND TRANSPORT

- In early days, humans themselves were carriers and later animals were used as beasts of burden.
- With the invention of the wheel, the use of carts and wagons became important and the revolution in transport came about only after the invention of the steam engine in the eighteenth century.
- Perhaps the first public railway line was opened in 1825 between Stockton and Darlington in northern England and then onwards, railways became the most popular and fastest form of transport in the nineteenth century.
- It opened up continental interiors for commercial grain farming, mining and

manufacturing in U.S.A. The invention of the internal combustion engine revolutionized road transport in terms of road quality and vehicles (motor cars and trucks) plying over them.

- Among the newer developments in land transportation are pipelines, ropeways and cableways. Liquids like mineral oil, water, sludge and sewers are transported by pipelines. The great freight carriers are the railways, ocean vessels, barges, boats and motor trucks and pipelines.
- In general, the old and elementary forms like the human porter, pack animal, cart or wagon are the most expensive means of transportation and large freighters are the cheapest.
- They are important in supplementing modern channels and carriers which penetrate the interiors in large countries.
- In the densely populated districts of India and China, overland transport still takes place by human porters or carts drawn or pushed by humans.

(a) Roads

- Road transport is the most economical for short distances compared to railways and freight transport by road is gaining importance because it offers door-to-door service.
- Unmetalled roads, though simple in construction, are not effective and serviceable for all seasons and during the rainy season these become unmotorable and even the metalled ones are seriously handicapped during heavy rains and floods.
- Roads, therefore, play a vital role in a nation's trade and commerce and for promoting tourism.
- The quality of the roads varies greatly between developed and developing countries because road construction and maintenance require heavy expenditure.
- In developed countries good quality roads are universal and provide long-distance links in the form of motorways, autobahns (Germany), and inter–state highways for speedy movement but unfortunately, the world's road system is not well developed.
- The world's total motorable road length is only about 15 million km, of which North America accounts for 33 per cent with the highest road density and the highest number of vehicles registered in this continent compared to Western Europe.
- Traffic on roads has increased dramatically in recent years and when the road network cannot cope with the demands of traffic, congestion occurs and city roads suffer from chronic traffic congestion.
- Peaks (high points) and troughs (low points) of traffic flow can be seen on roads at particular times of the day, for example, peaks occurring during the rush hour before and after work.
- Most of the cities in the world have been facing the problem of congestion.

Highways

- Highways are metalled roads connecting distant places that are constructed in a

manner for unobstructed vehicular movement.

- They are 80 m wide, with separate traffic lanes, bridges, flyovers and dual carriageways to facilitate uninterrupted traffic flow and in developed countries, every city and port town is linked through highways.
- In North America, highway density is high, about 0.65 km per sq km and every place is within 20 km distance from a highway.
- Cities located on the Pacific coast (west) are well-connected with those of the Atlantic Coast (east); likewise, the cities of Canada in the north are linked with those of Mexico in the south.
- The Trans- Canadian Highway links Vancouver in British Columbia(west coast) to St. John's City in Newfoundland (east coast) and the Alaskan Highway links Edmonton (Canada) to Anchorage (Alaska).
- The Pan-American Highway, a large portion of which has been constructed, will connect the countries of South America, Central America and U.S.A.-Canada.
- The Trans-Continental Stuart Highway connects Darwin (north coast) and Melbourne via Tennant Creek and Alice Springs in Australia.
- Europe has a large number of vehicles and a well-developed highway network but highways face a lot of competition from railways and waterways.
- In Russia, a dense highway network is developed in the industrialised region west of the Urals with Moscow as the hub.
- The important Moscow-Vladivostok Highway serves the region to the east and due to the vast geographical area, highways in Russia are not as important as railways.
- In China, highways criss-cross the country connecting all major cities such as Tsungtso (near Vietnam boundary), Shanghai (central China), Guangzhou (south) and Beijing (north) and a new highway links Chengdu with Lhasa in Tibet.
- In India, there are many highways linking the major towns and cities. For example, National Highway No. 7 (NH 7), connecting Varanasi with Kanya Kumari, is the longest in the country.
- The Golden Quadrilateral (GQ) or Super Expressway is underway to connect the four metropolitan cities — New Delhi, Mumbai, Bangalore, Chennai, Kolkata and Hyderabad.
- In Africa, a highway joins Algiers in the north to Conakry in Guinea. Similarly, Cairo is also connected to Cape Town.

Border Roads

- Roads laid along international boundaries are called border roads and play an important role in integrating people in remote areas with major cities and providing defence.

- Almost all countries have such roads to transport goods to border villages and military camps.

(b) Railways

- Railways are a mode of land transport for bulky goods and passengers over long distances.
- The railway gauges vary in different countries and are roughly classified as broad (more than 1.5 m), standard (1.44 m), metre gauge (1 m) and smaller gauges. The standard gauge is used in the U.K.
- Commuter trains are very popular in U.K., U.S.A, Japan and India carrying millions of passengers daily to and fro in the city and there are about 13 lakh km of railways open for traffic in the world.
- Europe has one of the most dense rail networks in the world with about 4,40,000 km of railways, most of which is double or multiple-tracked and Belgium has the highest density of 1 km of railway for every 6.5 sq kms area.
- The industrial regions exhibit some of the highest densities in the world with important rail heads being London, Paris, Brussels, Milan, Berlin and Warsaw.
- Passenger transport is more important than freight in many of these countries.
- Underground railways are important in London and Paris and the Channel Tunnel, operated by Euro Tunnel Group through England, connects London with Paris.
- Trans-continental railway lines have now lost their importance to quicker and more flexible transport systems of airways and roadways.
- In Russia, railways account for about 90 per cent of the country's total transport with a very dense network west of the Urals.
- Moscow is the most important rail head with major lines radiating to different parts of the country's vast geographical area and underground railways and commuter trains are also important in Moscow.
- North America has one of the most extensive rail networks accounting for nearly 40 per cent of the world's total and in contrast to many European countries, the railways here are used more for long-distance bulky freight like ores, grains, timber and machinery than for passengers.
- The most dense rail network is found in the highly industrialised and urbanised region of East Central U.S.A. and adjoining Canada.
- In Canada, railways are in the public sector and distributed all over the sparsely populated areas with the transcontinental railways carrying the bulk of wheat and coal tonnage.
- Australia has about 40,000 km of railways, of which 25 per cent are found in New South Wales alone and the west-east Australian National Railway line runs across the country from Perth to Sydney.

- New Zealand's railways are mainly in the North Island to serve the farming areas.
- In South America, the rail network is the most dense in two regions, namely, the Pampas of Argentina and the coffee growing region of Brazil which together account for 40 per cent of South America's total route length.
- Only Chile, among the remaining countries has a considerable route length linking coastal centres with the mining sites in the interior while Peru, Bolivia, Ecuador, Colombia and Venezuela have short single-track rail-lines from ports to the interior with no inter-connecting links.
- There is only one trans-continental rail route linking Buenos Aires (Argentina) with Valparaiso (Chile) across the Andes Mountains through the Uspallatta Pass located at a height of 3,900 m.
- In Asia, rail network is most dense in the thickly populated areas of Japan, China and India while other countries have relatively few rail routes.
- West Asia is the least developed in rail facilities because of vast deserts and sparsely populated regions.
- Africa continent, despite being the second largest, has only 40,000 km of railways with South Africa alone accounting for 18,000 km due to the concentration of gold, diamond and copper mining activities.
- The important routes of the African continent are: (i) the Benguela Railway through Angola to Katanga-Zambia Copper Belt; (ii) the Tanzania Railway from the Zambian Copper Belt to Dar-es-Salaam on the coast; (iii) the Railway through Botswana and Zimbabwe linking the landlocked states to the South African network; and (iv) the Blue Train from Cape Town to Pretoria in the Republic of South Africa.
- Elsewhere, as in Algeria, Senegal, Nigeria, Kenya and Ethiopia, railway lines connect port cities to interior centres but do not form a good network with other countries.

Trans–Continental Railways

(i) Trans–Siberian Railway

- This is a trans–siberian Railways major rail route of Russia runs from St. Petersburg in the west to Vladivostok on the Pacific Coast in the east passing through Moscow, Ufa, Novosibirsk, Irkutsk, Chita and Khabarovsk.
- It is the most important route in Asia and the longest (9,332 km) double-tracked and electrified trans–continental railway in the world.
- It has helped in opening up its Asian region to West European markets. It runs across the Ural Mountains Ob and Yenisei rivers Chita is an important agrocentre and Irkutsk, a fur centre.
- There are connecting links to the south, namely, to Odessa (Ukraine), Baku on the Caspian Coast, Tashkent (Uzbekistan), Ulan Bator (Mongolia), and Shenyang (Mukden) and Beijing in China.

(ii) Trans–Canadian Railways

- This 7,050 km long rail-line in Canada runs from Halifax in the east to Vancouver on the Pacific Coast passing through Montreal, Ottawa, Winnipeg and Calgary.
- It was constructed in 1886, initially as part of an agreement to make British Columbia on the west coast join the Federation of States.
- Later on, it gained economic significance because it connected the Quebec-Montreal Industrial Region with the wheat belt of the Prairie Region and the Coniferous Forest region in the north and thus each of these regions became complementary to the other.
- A loop line from Winnipeg to Thunder Bay (Lake Superior) connects this rail-line with one of the important waterways of the world. This line is the economic artery of Canada. Wheat and meat are the important exports on this route.

(iii) The Union and Pacific Railway

- This rail-line connects New York on the Atlantic Coast to San Francisco on the Pacific Coast passing through Cleveland, Chicago, Omaha, Evans, Ogden and Sacramento.
- The most valuable exports on this route are ores, grain, paper, chemicals and machinery.

(iv) The Australian Trans–Continental Railway

- This rail-line runs west-east across the southern part of the continent from Perth on the west coast, to Sydney on the east coast. Passing through Kalgoorlie, Broken Hill and Port Augusta.
- Another major north-south line connects Adelaide and Alice Spring and to be joined further to the Darwin–Birdum line.

(v) The Orient Express

- This line runs from Paris to Istanbul passing through Strasbourg, Munich, Vienna, Budapest and Belgrade. The journey time from London to Istanbul by this Express is now reduced to 96 hours as against 10 days by the sea-route. The chief exports on this rail-route are cheese, bacon, oats, wine, fruits, and machinery.
- There is a proposal to build a Trans–Asiatic Railway linking Istanbul with Bangkok via Iran, Pakistan, India, Bangladesh and Myanmar.

2. WATER TRANSPORT

- One of the great advantages of water transportation is that it does not require route construction.
- The oceans are linked with each other and are negotiable with ships of various sizes and all that is needed is to provide port facilities at the two ends.
- It is much cheaper because the friction of water is far less than that of land and the energy cost of water transportation is lower.
- Water transport is divided into sea routes and inland waterways.

(a) Sea Routes

- The oceans offer a smooth highway traversable in all directions with no

maintenance costs and its transformation into a routeway by sea-going vessels is an important development in human adaptation to the physical environment.

- Compared to land and air, ocean transport is a cheaper means of haulage (carrying of load) of bulky material over long distances from one continent to another.
- Modern passenger liners (ships) and cargo ships are equipped with radar, wireless and other navigation aids.
- The development of refrigerated chambers for perishable goods, tankers and specialised ships has also improved cargo transport and the use of containers has made cargo handling at the world's major ports easier.

Important Sea Routes

(i) The Northern Atlantic Sea Route

- This links North-eastern U.S.A. and Northwestern Europe, the two industrially developed regions of the world.
- The foreign trade over this route is greater than that of the rest of the world combined with one fourth of the world's foreign trade moving on this route.
- It is, therefore, the busiest in the world and otherwise, called the Big Trunk Route and both the coasts have highly advanced ports and harbour facilities.

(ii) The Mediterranean–Indian Ocean Sea Route

- This sea route passes through the heart of the Old World and serves more countries and people than any other route.
- Port Said, Aden, Mumbai, Colombo and Singapore are some of the important ports on this route.
- The construction of Suez Canal has greatly reduced the distance and time as compared to the earlier route through the Cape of Good Hope, which was longer than the route through Suez Canal.

(iii) The Cape of Good Hope Sea Route

- This trade route connects the highly industrialised Western European region with West Africa, South Africa, South-east Asia and the commercial agriculture and livestock economies of Australia and New Zealand.
- The volume of trade and traffic between both East and West Africa is on the increase due to the development of the rich natural resources such as gold, diamond, copper, tin, groundnut, oil palm, coffee and fruits.

(iv) The Southern Atlantic Sea Route

- This sea route is another important one across the Atlantic Ocean which connects West European and West African countries with Brazil, Argentina and Uruguay in South America.
- The traffic is far less on this route because of the limited development and population in South America and Africa.
- Only southeastern Brazil and Plata estuary and parts of South Africa have large-scale industries and there is also little traffic on the route between Rio de

Janeiro and Cape Town because both South America and Africa have similar products and resources.

(v) The North Pacific Sea Route

- Trade across the vast North Pacific Ocean moves by several routes which converge at Honolulu.
- The direct route on the Great Circle links Vancouver and Yokohama and reduces the travelling distance (2,480 km) by half.
- This sea route links the ports on the westcoast of North America with those of Asia and these are Vancouver, Seattle, Portland, San Francisco and Los Angeles on the American side and Yokohama, Kobe, Shanghai, Hong Kong, Manila and Singapore on the Asian side.

(vi) The South Pacific Sea Route

- This sea route connects Western Europe and North America with Australia, New Zealand and the scattered Pacific islands via the Panama Canal.
- This route is also used for reaching Hong Kong, Philippines and Indonesia.
- The distance covered between Panama and Sydney is 12,000 km and Honolulu is an important port on this route.

Coastal Shipping

- While oceanic routes connect different countries, coastal shipping is a convenient mode of transportation with long coastlines, e.g. U.S.A, China and India.
- Shenzhen States in Europe are most suitably placed for coastal shipping connecting one member's coast with the other.
- If properly developed, coastal shipping can reduce the congestion on the land routes.

Shipping Canals

- The Suez and the Panama Canals are two vital man-made navigation canals or waterways which serve as gateways of commerce for both the eastern and western worlds.

1. The Suez Canal

- This canal had been constructed in 1869 in Egypt between Port Said in the north and Port Suez in the south linking the Mediterranean Sea and the Red Sea.
- It gives Europe a new gateway to the Indian Ocean and reduces direct sea-route distance between Liverpool and Colombo compared to the Cape of Good Hope route.
- It is a sea-level canal without locks which is about 160 km and 11 to 15 m deep and about 100 ships travel daily and each ship takes 10-12 hours to cross this canal.
- The tolls are so heavy that some find it cheaper to go by the longer Cape Route whenever the consequent delay is not important.
- A navigable fresh-water canal from the Nile also joins the Suez Canal in Ismailia to supply fresh-water to Port Said and Suez.

2. The Panama Canal

- This canal connects the Atlantic Ocean in the east to the Pacific Ocean in the west

and it has been constructed across the Panama Isthmus between Panama City and Colon by the U.S. government which purchased 8 km of area on either side and named it the Canal Zone.

- The Canal is about 72 km. long and involves a very deep cutting for a length of 12 km and has a six-lock system and ships cross the different levels (26 m up and down) through these locks before entering the Gulf of Panama.
- It shortens the distance between New York and San Francisco by 13,000 km by sea; likewise the distance between Western Europe and the West-coast of U.S.A. and North-eastern and Central U.S.A. and East and South-east Asia is shortened.
- The economic significance of this Canal is relatively less than that of the Suez. However, it is vital to the economies of Latin America.

(b) Inland Waterways

- The development of inland waterways is dependent on the navigability width and depth of the channel, continuity in the water flow, and transport technology in use.
- Rivers are the only means of transport in dense forests and very heavy cargo like coal, cement, timber and metallic ores can be transported through inland waterways.
- In ancient times, riverways were the main highways of transportation as in the case of India, but they lost importance because of competition from railways, lack of water due to diversion for irrigation, and their poor maintenance.
- The significance of rivers as inland waterways for domestic and international transport and trade has been recognized throughout the developed world.
- Despite inherent limitations, many rivers have been modified to enhance their navigability by dredging, stabilising river banks, and building dams and barrages for regulating the flow of water.
- The following river waterways are some of the world's important highways of commerce.

(i) The Rhine Waterways

- The Rhine flows through Germany and the Netherlands and is navigable for 700 km from Rotterdam, at its mouth in the Netherlands to Basel in Switzerland.
- Ocean-going vessels can reach up to Cologne and the Ruhr river joins the Rhine from the east.
- It flows through a rich coalfield and the whole basin has become a prosperous manufacturing area and with Dusseldorf being the Rhine port for this region, huge tonnage moves along the stretch south of the Ruhr.
- This waterway is the world's most heavily used and each year more than 20,000 ocean-going ships and 2,00,000 inland vessels exchange their cargoes.
- It connects the industrial areas of Switzerland, Germany, France, Belgium and the Netherlands with the North Atlantic Sea Route.

(ii) The Danube Waterway

- This important inland waterway serves Eastern Europe with the Danube river rising in the Black Forest and flowing eastwards through many countries.
- It is navigable up to Taurna Severin and the chief export items are wheat, maize, timber, and machinery.

(iii) The Volga Waterway

- Russia has a large number of developed waterways, of which the Volga is one of the most important providing a navigable waterway of 11,200 km and drains into the Caspian Sea.
- The Volga-Moscow Canal connects it with the Moscow region and the Volga-Don Canal with the Black Sea.

(iv) The Great Lakes – St. Lawrence Seaway

- The Great Lakes of North America Superior, Huron Erie and Ontario are connected by Soo Canal and Welland Canal to form an inland waterway.
- The estuary of St. Lawrence River, along with the Great Lakes, forms a unique commercial waterway in the northern part of North America.
- The ports on this route like Duluth and Buffalo are equipped with all facilities of ocean ports and hence large oceangoing vessels are able to navigate up the river deep inside the continent to Montreal.
- Good have to be trans-shipped to smaller vessels due to the presence of rapids and therefore canals have been constructed up to 3.5 m deep to avoid these.

(v) The Mississippi Waterways

- The Mississippi-Ohio waterway connects the interior part of U.S.A. with the Gulf of Mexico in the south. Large steamers can go through this route up to Minneapolis.

3. AIR TRANSPORT

- Air transport is the fastest means of transportation, but it is very costly and being fast, it is preferred by passengers for long-distance travel.
- Valuable cargo can be moved rapidly on a world-wide scale and is often the only means to reach inaccessible areas.
- Air transport has brought about a connectivity revolution in the world overcoming the frictions created by mountainous snow fields or inhospitable desert terrains have been overcome and the accessibility has increased.
- The airplane brings varied articles to the Eskimos in Northern Canada unhindered by the frozen ground while in the Himalayan region, the routes are often obstructed due to landslides, avalanches or heavy snow fall.
- The manufacturing of aircrafts and their operations require elaborate infrastructure like hangars, landing, fuelling, and maintenance facilities for the aircrafts.
- The construction of airports is also very expensive and has developed more in highly industrialised countries where there is a large volume of traffic.
- At present no place in the world is more than 35 hours away and this startling fact

has been made possible due to people who build and fly airplanes.

- Although, U.K. pioneered the use of commercial jet transport, U.S.A. developed largely post-War international civil aviation.
- Today, more than 250 commercial airlines offer regular services to different parts of the world. Supersonic aircraft, cover the distance between London and New York within three and a half hours.

Inter-Continental Air Routes

- In the Northern Hemisphere, there is a distinct east-west belt of inter-continental air routes and dense network exists in Eastern U.S.A., Western Europe and Southeast Asia with U.S.A. alone accounts for 60 per cent of the airways of the world.
- New York, London, Paris, Amsterdam, Frankfurt Rome, Moscow, Karachi, New Delhi, Mumbai, Bangkok, Singapore, Tokyo, San Francisco, Los Angeles and Chicago are the nodal points where air routes converge or radiate to all continents.
- Africa, Asiatic part of Russia and South America lack air services.
- There are limited air services between 10-35 latitudes in the Southern hemisphere due to sparser population, limited landmass and economic development.

4. PIPELINES

- Pipelines are used extensively to transport liquids and gases such as water, petroleum and natural gas for an uninterrupted flow.
- Cooking gas or LPG is supplied through pipelines in many parts of the world and pipelines can also be used to transport liquidified coal.
- In New Zealand, milk is being supplied through pipelines from farms to factories.
- In U.S.A. there is a dense network of oil pipelines from the producing areas to the consuming areas.
- Big Inch is one such famous pipeline, which carries petroleum from the oil wells of the Gulf of Mexico to the North-eastern States.
- About 17 per cent of all freight per tonne-km. is carried through pipelines in U.S.A while in Europe, Russia, West Asia and India, pipelines are used to connect oil wells to refineries, and to ports or domestic markets.
- Turkmenistan in central Asia has extended pipelines to Iran and also to parts of China and the proposed Iran-India via Pakistan international oil and natural gas pipeline will be the longest in the world.

COMMUNICATIONS

- Human beings have used different methods long-distance communications of which the telegraph and the telephone were important.
- During the early and mid-twentieth century, the American Telegraph and Telephone Company (AT&T) enjoyed a monopoly over U.S.A.'s telephone industry and in fact, the telephone

became a critical factor in the urbanisation of America.

- Firms centralised their functioning at city headquarters and located their branch offices in smaller towns and even today, the telephone is the most commonly used mode.
- In developing countries, the use of cell phones, made possible by satellites, is important for rural connectivity and today there is a phenomenal pace of development.
- The first major breakthrough is the use of optic fiber cables (OFC) and faced with mounting competition, telephone companies all over the world soon upgraded their copper cable systems to include optic fiber cables.
- Optic fiber cables allow large quantities of data to be transmitted rapidly, securely, and are virtually error-free.
- With the digitisation of information in the 1990s, telecommunication slowly merged with computers to form integrated networks termed as Internet.

Satellite Communication

- Today Internet is the largest electronic network on the planet connecting about 1,000 million people in more than 100 countries.
- Communication through satellites emerged as a new area in communication technology since the 1970s after U.S.A. and former U.S.S.R. pioneered space research.
- Artificial satellites are successfully deployed in the earth's orbit to connect even the remote corners of the globe with limited onsite verification rendering the unit cost and time of communication invariant in terms of distance which means it costs the same to communicate over 500 km as it does over 5,000 km via satellite.
- India has also made great strides in satellite development – Aryabhatt was launched on 19 April 1979, Bhaskar-I in 1979 and Rohini in 1980.
- On 18 June 1981, APPLE (Arian Passenger Payload Experiment) was launched through Arian rocket while Bhaskar, Challenger and INSAT I-B have made long distance communication, television and radio very effective.
- Today weather forecasting through television is a boon.

Cyber Space – Internet

- Cyberspace is the world of electronic computerised space encompassed by the Internet such as the World Wide Web (www).
- In simple words, it is the electronic digital world for communicating or accessing information over computer networks without physical movement of the sender and the receiver and is also referred to as the Internet.
- Cyberspace exists everywhere – it may be in an office, sailing boat, flying plane and virtually anywhere.
- The speed at which this electronic network has spread is unprecedented in human history; there were less than 50

million Internet users in 1995, about 400 million in 2000 A.D. and over two billion in 2010.

- In the last few years there has been a shift among global users from U.S.A. to the developing countries and the percentage share of U.S.A. has dropped from 66 in 1995 to only 25 in 2005.
- Now the majority of the world's users are in U.S.A., U.K., Germany, Japan, China and India.
- As billions use the Internet each year, cyberspace will expand the contemporary economic and social space of humans through e-mail, e-commerce, e-learning and e-governance.
- Internet together with fax, television and radio will be accessible to more and more people cutting across place and time.
- It is these modern communication systems, more than transportation, that has made the concept of global village a reality.

INTERNATIONAL TRADE

- International trade is the exchange of goods and services among countries across national boundaries. Countries need to trade to obtain commodities, they cannot produce themselves or they can purchase elsewhere at a lower price.
- In ancient times, transporting goods over long distances was risky, hence trade was restricted to local markets and people then spent most of their resources on basic necessities – food and clothes where only the rich people bought jewellery, costly dresses and this resulted in trade of luxury items.
- The Silk Route is an early example of long distance trade connecting Rome to China – along the 6,000 km route where the traders transported Chinese silk, Roman wool and precious metals and many other high value commodities from intermediate points in India, Persia and Central Asia.
- After the disintegration of the Roman Empire, European commerce grew during twelfth and thirteenth century with the development of ocean going warships trade between Europe and Asia grew and the Americas were discovered.
- Fifteenth century onwards, the European colonialism began and along with trade of exotic commodities, a new form of trade emerged which was called slave trade.
- The Portuguese, Dutch, Spaniards, and British captured African natives and forcefully transported them to the newly discovered Americas for their labour in the plantations.
- Slave trade was a lucrative business for more than two hundred years till it was abolished in Denmark in 1792, Great Britain in 1807 and United States in 1808.
- After the Industrial Revolution, the demand for raw materials like grains, meat, wool also expanded, but their monetary value declined in relation to the manufactured goods.

- The industrialised nations imported primary products as raw materials and exported the value added finished products back to the non-industrialised nations.
- In the later half of the nineteenth century, regions producing primary goods were no more important, and industrial nations became each other's principle customers.
- During the World Wars I and II, countries imposed trade taxes and quantitative restrictions for the first time and during the postwar period, organisations like General Agreement for Tariffs and Trade (which later became the World Trade Organisation), helped in reducing tariff.

Why Does International Trade Exist?

- International trade is the result of specialization in production and benefits the world economy if different countries practise specialisation and division of labour in the production of commodities or provision of services. Each kind of specialisation can give rise to trade.
- International trade is based on the principle of comparative advantage, complimentarity and transferability of goods and services and in principle, should be mutually beneficial to the trading partners.
- In modern times, trade is the basis of the world's economic organisation and is related to the foreign policy of nations.
- With well-developed transportation and communication systems, no country is willing to forego the benefits derived from participation in international trade.

Basis of International Trade

(i) ***Difference in national resources:*** The world's national resources are unevenly distributed because of differences in their physical make up i.e. geology, relief soil and climate.

(a) ***Geological structure:*** It determines the mineral resource base and topographical differences ensure diversity of crops and animals raised. Lowlands have greater agricultural potential. Mountains attract tourists and promote tourism.

(b) ***Mineral resources:*** They are unevenly distributed the world over. The availability of mineral resources provides the basis for industrial development.

(c) ***Climate:*** It influences the type of flora and fauna that can survive in a given region. It also ensures diversity in the range of various products, e.g. wool production can take place in cold regions, bananas, rubber and cocoa can grow in tropical regions.

(ii) ***Population factors*****:** The size, distribution and diversity of people between countries affect the type and volume of goods traded.

(a) ***Cultural factors:*** Distinctive forms of art and craft develop in certain cultures which are valued the world over, e.g. China produces the finest porcelains and brocades. Carpets of Iran are famous while North African leather work and Indonesian batik cloth are prized handicrafts.

(b) ***Size of population:*** Densely populated countries have large volume of internal trade but little external trade because most of the agricultural and industrial production is consumed in the local markets. Standard of living of the population determines the demand for better quality imported products because with low standard of living only a few people can afford to buy costly imported goods.

(iii) ***Stage of economic development:*** At different stages of economic development of countries, the nature of items traded undergo changes.

- In agriculturally important countries, agro products are exchanged for manufactured goods whereas industrialised nations export machinery and finished products and import food grains and other raw materials.

(iv) ***Extent of foreign investment:*** Foreign investment can boost trade in developing countries which lack in capital required for the development of mining, oil drilling, heavy engineering, lumbering and plantation agriculture.

- By developing such capital intensive industries in developing countries, the industrial nations ensure import of food stuffs, minerals and create markets for their finished products and thus, this entire cycle steps up the volume of trade between nations.

(v) ***Transport:*** In olden times, lack of adequate and efficient means of transport restricted trade to local areas and only high value items, e.g. gems, silk and spices were traded over long distances.

- With expansions of rail, ocean and air transport, better means of refrigeration and preservation, trade has experienced spatial expansion.

Important Aspects of International Trade

International trade has three very important aspects. These are volume, sectoral composition and direction of trade.

(i) Volume of Trade

- The actual tonnage of goods traded makes up the volume; however, services traded cannot be measured in tonnage and therefore, the total value of goods and services traded is considered to be the volume of trade

(ii) Composition of Trade

- The nature of goods and services imported and exported by countries have undergone changes during the last century.
- Trade of primary products was dominant in the beginning of the last century and later on, manufactured goods gained prominence and currently, though the manufacturing sector commands the bulk of the global trade, service sector which includes travel, transportation and other commercial services have been showing an upward trend.
- The volume of imports and exports of the world merchandise has been growing consistently over the years and manufactured goods contributed to the

bulk of world merchandise exports from 2005 to 2015.

- Fuels and mining goods and agricultural goods are also important contributors of merchandise exports.
- There is change in the share of continents in the world merchandise trade as Europe's contribution is declining while the contribution of Asian countries is growing.

(iii) Direction of Trade

- Historically, the developing countries of the present used to export valuable goods and artefacts, etc., which were exported to European countries but during the nineteenth century there was a reversal in the direction of trade. European countries started exporting manufactured goods for exchange of foodstuffs and raw materials from their colonies.
- Europe and U.S.A. emerged as major trade partners in the world and were leaders in the trade of manufactured goods. Japan at that time was also the third important trading country.
- The world trade pattern underwent a drastic change during the second half of the twentieth century.
- Europe lost its colonies while India, China and other developing countries started competing with developed countries and the nature of the goods traded has also changed.

Balance of Trade

- Balance of trade records the volume of goods and services imported as well as exported by a country to other countries.
- If the value of imports is more than the value of a country's exports, the country has negative or unfavourable balance of trade and if the value of exports is more than the value of imports, then the country has a positive or favourable balance of trade.
- Balance of trade and balance of payments have serious implications for a country's economy.
- A negative balance would mean that the country spends more on buying goods than it can earn by selling its goods which would ultimately lead to exhaustion of its financial reserves.

Types of International Trade

International trade may be categorised into two types:

(a) Bilateral trade: Bilateral trade is done by two countries with each other entering into agreement to trade specified commodities amongst them. For example, country A may agree to trade some raw material with agreement to purchase some other specified item to country B or vice versa.

(b) Multi-lateral trade: As the term suggests multi-lateral trade is conducted with many trading countries. The same country can trade with a number of other countries and the country may also grant the status of the "Most Favoured Nation" (MFN) on some of the trading partners.

Case for Free Trade

- The act of opening up economies for trading is known as free trade or trade

liberalization which is done by bringing down trade barriers like tariffs.

- Trade liberalisation allows goods and services from everywhere to compete with domestic products and services.
- Globalisation along with free trade can adversely affect the economies of developing countries by not giving equal playing field by imposing conditions which are unfavourable.
- With the development of transport and communication systems goods and services can travel faster and farther than ever before.
- But free trade should not only let rich countries enter the markets, but allow the developed countries to keep their own markets protected from foreign products.
- Countries also need to be cautious about dumped goods; as along with free trade dumped goods of cheaper prices can harm the domestic producers.

World Trade Organisation

- In 1948, to liberalise the world from high customs tariffs and various other types of restrictions, General Agreement for Tariffs and Trade (GATT) was formed by some countries.
- In 1994, it was decided by the member countries to set up a permanent institution for looking after the promotion of free and fair trade amongst nation and the GATT was transformed into the World Trade Organisation from 1st January 1995.
- WTO is the only international organisation dealing with the global rules of trade between nations and it sets the rules for the global trading system and resolves disputes between its member nations.
- WTO also covers trade in services, such as telecommunication and banking, and others issues such as intellectual rights.
- The WTO has however been criticised and opposed by those who are worried about the effects of free trade and economic globalization.
- It is being argued that free trade does not make ordinary people's lives more prosperous but actually widening the gulf between rich and poor by making rich countries more rich which is because the influential nations in the WTO focus on their own commercial interests.
- Moreover, many developed countries have not fully opened their markets to products from developing countries.
- It is also argued that issues of health, worker's rights, child labour and environment are ignored.

Regional Trade Blocs

- Regional Trade Blocs have come up in order to encourage trade between countries with geographical proximity, similarity and complementarities in trading items and to curb restrictions on trade of the developing world.
- Today, 120 regional trade blocs generate 52 per cent of the world trade and these trading blocs developed as a response to the failure of the global organisations to speed up intra-regional trade.

- Though, these regional blocs remove trade tariffs within the member nations and encourage free trade, in the future it could get increasingly difficult for free trade to take place between different trading blocs.

Concerns Related to International Trade

- Undertaking international trade is mutually beneficial to nations if it leads to regional specialisation, higher level of production, better standard of living, worldwide availability of goods and services, equalisation of prices and wages and diffusion of knowledge and culture.
- International trade can prove to be detrimental to nations of it leads to dependence on other countries, uneven levels of development, exploitation, and commercial rivalry leading to wars.
- Global trade affects many aspects of life; it can impact everything from the environment to health and well-being of the people around the world.
- As countries compete to trade more, production and the use of natural resources spiral up, resources get used up faster than they can be replenished.
- As a result, marine life is also depleting fast, forests are being cut down and river basins sold off to private drinking water companies.
- Multinational corporations trading in oil, gas mining, pharmaceuticals and agri-business keep expanding their operations at all costs creating more pollution – their mode of work does not follow the norms of sustainable development.
- If organisations are geared only towards profit making, and environmental and health concerns are not addressed, then it could lead to serious implications in the future.

GATEWAYS OF INTERNATIONAL TRADE

Ports

- The chief gateways of the world of international trade are the harbours and ports; Cargoes and travellers pass from one part of the world to another through these ports.
- The ports provide facilities of docking, loading, unloading and the storage facilities for cargo.
- In order to provide these facilities, the port authorities make arrangements for maintaining navigable channels, arranging tugs and barges, and providing labour and managerial services.
- The importance of a port is judged by the size of cargo and the number of ships handled and the quantity of cargo handled by a port is an indicator of the level of development of its hinterland.

Types of Port

Generally, ports are classified according to the types of traffic which they handle.
Types of port according to cargo handled:

(i) ***Industrial Ports:*** These ports specialise in bulk cargo-like grain, sugar, ore, oil, chemicals and similar materials.

(ii) ***Commercial Ports:*** These ports handle general cargo-packaged products and

manufactured good. These ports also handle passenger traffic.

(iii) ***Comprehensive Ports:*** Such ports handle bulk and general cargo in large volumes. Most of the world's great ports are classified as comprehensive ports.

Types of port on the basis of location:

(i) ***Inland Ports:*** These ports are located away from the sea coast and are linked to the sea through a river or a canal. Such ports are accessible to flat bottom ships or barges. For example, Manchester is linked with a canal; Memphis is located on the river Mississippi; Rhine has several ports like Mannheim and Duisburg; and Kolkata is located on the river Hoogli, a branch of the river Ganga.

(ii) ***Out Ports:*** These are deep water ports built away from the actual ports. These serve the parent ports by receiving those ships which are unable to approach them due to their large size. Classic combination, for example, is Athens and its out port Piraeus in Greece.

Types of port on the basis of specialized functions:

(i) ***Oil Ports:*** These ports deal in the processing and shipping of oil. Some of these are tanker ports and some are refinery ports. Maracaibo in Venezuela, Esskhira in Tunisia, Tripoli in Lebanon are tanker ports. Abadan on the Gulf of Persia is a refinery port.

(ii) ***Ports of Call:*** These are the ports which originally developed as calling points on main sea routes where ships used to anchor for refuelling, watering and taking food items. Later on, they developed into commercial ports. Aden, Honolulu and Singapore are good examples.

(iii) ***Packet Station:*** These are also known as *ferry ports.* These packet stations are exclusively concerned with the transportation of passengers and mail across water bodies covering short distances. These stations occur in pairs located in such a way that they face each other across the water body, e.g. Dover in England and Calais in France across the English Channel.

(iv) ***Entrepot Ports:*** These are collection centres where the goods are brought from different countries for export. Singapore is an entrepot for Asia. Rotterdam for Europe, and Copenhagen for the Baltic region.

(v) ***Naval Ports:*** These are ports which have only strategic importance. These ports serve warships and have repair workshops for them. Kochi and Karwar are examples of such ports in India.

HUMAN SETTLEMENTS

- The study of human settlements is basic to human geography because the form of settlement in any particular region reflects human relationship with the environment.
- A human settlement is defined as a place inhabited more or less permanently.
- The houses may be designed or redesigned, buildings may be altered,

functions may change but settlement continues in time and space.

- There may be some settlements which are temporary and are occupied for short periods, may be a season.

CLASSIFICATION OF SETTLEMENTS

RURAL URBAN DICHOTOMY

- It is widely accepted that settlements can be differentiated in terms of rural and urban, but there is no consensus on what exactly defines a village or a town.
- Although population size is an important criterion, it is not a universal criterion since many villages in densely populated countries of India and China have population exceeding that of some towns of Western Europe and United States.
- At one time, people living in villages pursued agriculture or other primary activities, but presently in developed countries, large sections of urban populations prefer to live in villages even though they work in the city.
- The basic difference between towns and villages is that in towns the main occupation of the people is related to secondary and tertiary sectors, while in the villages most of the people are engaged in primary occupations such as agriculture, fishing, lumbering, mining, animal husbandry, etc.
- Differentiations between rural and urban on the basis of functions are more meaningful even though there is no uniformity in the hierarchy of the functions provided by rural and urban settlements.
- Petrol pumps are considered as a lower order function in the United States while it is an urban function in India.
- Facilities available in the villages of developed countries may be considered rare in villages of developing and less developed countries.

TYPES AND PATTERNS OF SETTLEMENTS

Settlements may also be classified by their shape, patterns types. The major types classified by shape are:

(i) ***Compact or Nucleated settlements:***
These settlements are those in which large number of houses are built very close to each other. Such settlements develop along river valleys and in fertile plains. Communities are closely knit and share common occupations.

(ii) ***Dispersed Settlements:*** In these settlements, houses are spaced far apart and often interspersed with fields. A cultural feature such as a place of worship or a market, binds the settlement together.

Rural Settlements

Rural settlements are most closely and directly related to land and are dominated by primary activities such as agriculture, animal husbandary, fishing etc.
The settlements size is relatively small.
Some factors affecting the location of rural settlements are:

(a) ***Water Supply:*** Usually rural settlements are located near water bodies such as rivers, lakes, and springs where water can be easily obtained. Sometimes the

need for water drives people to settle in otherwise disadvantaged sites such as islands surrounded by swamps or low lying river banks. Most water based 'wet point' settlements have many advantages such as water for drinking, cooking and washing. Rivers and lakes can be used to irrigate farm land. Water bodies also have fish which can be caught for diet and navigable rivers and lakes can be used for transportation.

(b) ***Land:*** People choose to settle near fertile lands suitable for agriculture. In Europe villages grew up near rolling country avoiding swampy, low lying land while people in south east Asia chose to live near low lying river valleys and coastal plains suited for wet rice cultivation. Early settlers chose plain areas with fertile soils.

(c) ***Upland:*** Upland which is not prone to flooding was chosen to prevent damage to houses and loss of life. Thus, in low lying river basins people chose to settle on terraces and levees which are "dry points". In tropical countries people build their houses on stilts near marshy lands to protect themselves from flood, insects and animal pests.

(d) ***Building Material****:* The availability of building materials- wood, stone near settlements is another advantage. Early villages were built in forest clearings where wood was plentiful. In loess areas of China, cave dwellings were important and African Savanna's building materials were mud bricks and the Eskimos, in polar regions, use ice blocks to construct igloos.

(e) ***Defence:*** During the times of political instability, war, hostility of neighbouring groups villages were built on defensive hills and islands. In Nigeria, upstanding inselbergs formed good defensive sites. In India most of the forts are located on higher grounds or hills.

(f) ***Planned Settlements:*** Sites that are not spontaneously chosen by villagers themselves, planned settlements are constructed by governments by providing shelter, water and other infrastructures on acquired lands. The scheme of villagisation in Ethiopia and the canal colonies in Indira Gandhi canal command area in India are some good examples.

Rural Settlement Patterns

- Patterns of rural settlements reflect the way the houses are sited in relation to each other. The site of the village, the surrounding topography and terrain influence the shape and size of a village.
- Rural settlements may be classified on the basis of a number of criteria:

1. ***On the basis of setting:*** The main types are plain villages, plateau villages, coastal villages, forest villages and desert villages.
2. ***On the basis of functions:*** There may be farming villages, fishermen's villages, lumberjack villages, pastoral villages etc.
3. ***On the basis of forms or shapes of the settlements:*** These may be a number of geometrical forms and shapes such as

Linear, rectangular, circular star like, T-shaped village, double village, cross-shaped village etc.

(a) ***Linear pattern:*** In such settlements houses are located along a road, railway line, river, canal edge of a valley or along a levee.

(b) ***Rectangular pattern:*** Such patterns of rural settlements are found in plain areas or wide inter montane valleys. The roads are rectangular and cut each other at right angles.

(c) ***Circular pattern*:** Circular villages develop around lakes, tanks and sometimes the village is planned in such a way that the central part remains open and is used for keeping the animals to protect them from wild animals.

(d) ***Star like pattern:*** Where several roads converge, star shaped settlements develop by the houses built along the roads.

(e) ***T-shaped, Y-shaped, Cross-shaped or cruciform settlements:*** T –shaped settlements develop at tri-junctions of the roads (T) while Y-shaped settlements emerge as the places where two roads converge on the third one and houses are built along these roads. Cruciform settlements develop on the cross-roads and houses extend in all the four direction.

(f) **Double village:** These settlements extend on both sides of a river where there is a bridge or a ferry. Identify these patterns on any topographical sheet which you have studied in Practical Work in Geography, Part I (NCERT, 2006) in Class XI

Problems of Rural Settlements

- Rural settlements in the developing countries are large in number and poorly equipped with infrastructure representing a great challenge and opportunity for planners.
- Supply of water to rural settlements in developing countries is not adequate and people in villages, particularly in mountainous and arid areas have to walk long distances to fetch drinking water.
- Water borne diseases such as cholera and jaundice tend to be a common problem.
- The countries of South Asia face conditions of drought and flood very often and crop cultivation sequences, in the absence of irrigation, also suffer.
- The general absence of toilet and garbage disposal facilities cause health related problems.
- The design and use of building materials of houses vary from one ecological region to another. The houses made up of mud, wood and thatch, remain susceptible to damage during heavy rains and floods, and require proper maintenance every year and most house designs are typically deficient in proper ventilation.
- Besides, the design of a house includes the animal shed along with its fodder store within it which is purposely done to keep the domestic animals and their food properly protected from wild animals.

- During rainy season, the settlements remain cut off and pose serious difficulties in providing emergency services.
- It is also difficult to provide adequate health and educational infrastructure for their large rural population.
- The problem is particularly serious where proper villagisation has not taken place and houses are scattered over a large area.

Urban Settlements

- Rapid urban growth is a recent phenomenon and until recent times, few settlements reached the population size of more than a few thousand inhabitants.
- The first urban settlement to reach a population of one million was the city of London by around A.D. 1810
- By 1982 approximately 175 cities in the world had crossed the one million population mark and presently 54 per cent of the world's population lives in urban settlements compared to only 3 per cent in the year 1800.

Classification of Urban Settlements

Some of the common basis of classification are size of population, occupational structure and administrative setup besides location.

(i) Population Size

- It is an important criteria used by most countries to define urban areas. The lower limit of the population size for a settlement to be designated as urban is 1,500 in Colombia, 2,000 in Argentina and Portugal, 2,500 in U.S.A. and Thailand, 5,000 in India and 30,000 in Japan.
- Besides the size of population, density of 400 persons per sq km and share of non-agricultural workers are taken into consideration in India.
- Countries with low density of population may choose a lower number as the cut-off figure compared to densely populated countries.
- In Denmark, Sweden and Finland, all places with a population size of 250 persons are called urban.
- The minimum population for a city is 300 in Iceland, whereas in Canada and Venezuela, it is 1,000 persons.

(ii) Occupational Structure

- In some countries, such as India, the major economic activities in addition to the size of the population in designating a settlement as urban are also taken as a criterion.
- Similarly, in Italy, a settlement is called urban, if more than 50 per cent of its economically productive population is engaged in non-agricultural pursuits. India has set this criterion at 75 per cent.

(iii)Administration

- The administrative setup is a criterion for classifying a settlement as urban in some countries.
- example, in India, a settlement of any size is classified as urban, if it has a municipality, Cantonment Board or Notified Area Council.
- Similarly, in Latin American countries, such as Brazil and Bolivia, any

administrative centre is considered urban irrespective of its population size.

(iv) Location

- Location of urban centres is examined with reference to their function. For example, the sitting requirements of a holiday resort are quite different from that of an industrial town, a military centre or a seaport.
- Strategic towns require sites offering natural defence; mining towns require the presence of economically valuable minerals; industrial towns generally need local energy supplies or raw materials; tourist centres require attractive scenery, or a marine beach, a spring with medicinal water or historical relics, ports require a harbour etc.
- Locations of the earliest urban settlements were based on the availability of water, building materials and fertile land.
- Today, while these considerations still remain valid, modern technology plays a significant role in locating urban settlements far away from the source of these materials.
- Piped water can be supplied to a distant settlement, building material can be transported from long distances.
- Apart from site, the situation plays an important role in the expansion of towns.
- The urban centres which are located close to an important trade route have experienced rapid development.

Functions of Urban Centres

- The earliest towns were centres of administration, trade, industry, defence and religious importance.
- Today, several new functions, such as, recreational, residential, transport, mining, manufacturing and most recently activities related to information technology are carried on in specialised towns.
- Some of these functions do not necessarily require the urban centre to have any fundamental relationship with their neighbouring rural areas.
- Large cities have a rather greater diversity of functions; Besides, all cities are dynamic and over a period of time may develop new functions.
- Most of the early nineteenth-century fishing ports in England have now developed tourism and many of the old market towns are now known for manufacturing activities.
- Towns and cities are classified into the following categories.

(a) ***Administrative Towns:*** National capitals, which house the administrative offices of central governments, such as New Delhi, Canberra, Beijing, Addis Ababa, Washington D.C., and London etc. are called administrative towns. Provincial (sub-national) towns can also have administrative functions, for example, Victoria (British Columbia), Albany (New York), Chennai (Tamil Nadu).

(b) ***Trading and Commercial Towns:*** Agricultural market towns, such as,

Winnipeg and Kansas city; banking and financial centres like Frankfurt and Amsterdam; large inland centres like Manchester and St Louis; and transport nodes such as, Lahore, Baghdad and Agra have been important trading centres.

(c) ***Cultural Towns:*** Places of pilgrimage, such as Jerusalem, Mecca, Jagannath Puri and Varanasi etc. are considered cultural towns. These urban centres are of great religious importance. Additional functions which the cities perform are health and recreation (Miami and Panaji), industrial (Pittsburgh and Jamshedpur), mining and quarrying (Broken Hill and Dhanbad) and transport (Singapore and Mughal Sarai).

CLASSIFICATION OF TOWNS ON THE BASIS OF FORMS

- An urban settlement may be linear, square, star or crescent shaped. In fact, the form of the settlement, architecture and style of buildings and other structures are an outcome of its historical and cultural traditions.
- Towns and cities of developed and developing countries reflect marked differences in planning and development.
- While most cities in developed countries are planned, most urban settlements of developing countries have evolved historically with irregular shapes.
- For example, Chandigarh and Canberra are planned cities, while smaller town in India have evolved historically from walled cities to large urban sprawls.

Types of Urban Settlements

Depending on the size and the services available and functions rendered, urban centres are designated as town, city, million city, conurbation, megalopolis.

(a) ***Town:*** The concept of 'town' can best be understood with reference to 'village'. Population size is not the only criterion. Functional contrasts between towns and villages may not always be clearcut, but specific functions such as, manufacturing, retail and wholesale trade, and professional services exist in towns.

(b) ***City:*** A city may be regarded as a leading town, which has outstripped its local or regional rivals. In the words of Lewis Mumford, " the city is in fact the physical form of the highest and most complex type of associative life". Cities are much larger than towns and have a greater number of economic functions. They tend to have transport terminals, major financial institutions and regional administrative offices. When the population crosses the one million mark it is designated as a million city.

(c) ***Conurbation:*** The term conurbation was coined by Patrick Geddes in 1915 and applied to a large area of urban development that resulted from the merging of originally separate towns or cities. Greater London, Manchester, Chicago and Tokyo are examples. Can you find out an example from India?

(d) ***Million City:*** The number of million cities in the world has been increasing as never before. London reached the million mark in 1800, followed by Paris in 1850, New York in 1860, and by 1950 there were around 80 such cities. There were 162 million cities in mid 70's and there was threefold increase in 2005 and the number reached to 438. In 2016, there were 512 cities with at least 1 million inhabitants globally. By 2030, a projected 662 cities will have at least 1 million residents.

(e) ***Megalopolis:*** This Greek word meaning "great city", was popularised by Jean Gottman (1957) and signifies 'super-metropolitan' region extending, as union of conurbations. The urban landscape stretching from Boston in the north to south of Washington in U.S.A. is the best known example of a megalopolis.

Distribution of Mega Cities

- A mega city or megalopolis is a general term for cities together with their suburbs with a population of more than 10 million people.
- New York was the first to attain the status of a mega city by 1950 with a total population of about 12.5 million.
- The number of mega cities is now 31. The number of mega cities has increased in the developing countries during the last 50 years vis-à-vis the developed countries.

Problems of Human Settlements in Developing Countries

- The settlements in developing countries, suffer from various problems, such as unsustainable concentration of population, congested housing and streets, lack of drinking water facilities.
- They also lack infrastructure such as, electricity, sewage disposal, health and education facilities.

Problems of Urban Settlements

- People flock to cities to avail of employment opportunities and civic amenities and since most cities in developing countries are unplanned, it creates severe congestion.
- Shortage of housing, vertical expansion and growth of slums are characteristic features of modern cities of developing countries.
- In many cities an increasing proportion of the population lives in substandard housing, e.g. slums and squatter settlements.
- In most million plus cities in India, one in four inhabitants lives in illegal settlements, which are growing twice as fast as the rest of the cities.
- Even in the Asia Pacific countries, around 60 per cent of the urban population lives in squatter settlements.

1. Economic Problems

- The decreasing employment opportunities in the rural as well as smaller urban areas of the developing countries consistently push the population to the urban areas.

- The enormous migrant population generates a pool of unskilled and semi-skilled labour force, which is already saturated in urban areas.

2. Socio-cultural Problems

- Cities in the developing countries suffer from several social ills and insufficient financial resources fail to create adequate social infrastructure catering to the basic needs of the huge population.
- The available educational and health facilities remain beyond the reach of the urban poor. Health indices present a gloomy picture in cities of developing countries and lack of employment and education tends to aggravate the crime rates.
- Male selective migration to the urban areas distorts the sex ratio in these cities.

3. Environmental Problems

- The large urban population in developing countries not only uses but also disposes off a huge quantity of water and all types of waste materials.
- Many cities of the developing countries even find it extremely difficult to provide the minimum required quantity of potable water and water for domestic and industrial uses.
- An improper sewerage system creates unhealthy conditions and massive use of traditional fuel in the domestic as well as the industrial sector severely pollutes the air.
- The domestic and industrial wastes are either let into the general sewerages or dumped without treatment at unspecified locations.
- Cities, towns and rural settlements are linked through the movements of goods, resources and people.
- Urban-rural linkages are of crucial importance for the sustainability of human settlements and as the growth of rural population has outpaced the generation of employment and economic opportunities, rural-to-urban migration has steadily increased, particularly in the developing countries, which has put an enormous pressure on urban infrastructure and services that are already under serious stress.
- It is urgent to eradicate rural poverty and to improve the quality of living conditions, as well as to create employment and educational opportunities in rural settlements.
- Full advantage must be taken of the complementary contributions and linkages of rural and urban areas by balancing their different economic, social and environmental requirements.

PLEASE NOTE THAT IT IS NCERT BASED SO FACTUAL DATA IS NOT UPDATED