

1. Population : Part - 1

Geography studies humans and their interactions with their environments. The study of population is a part of Human Geography under a branch called Population Geography. Population Geography studies human population and its distribution and pattern on the earth's surface. Their qualitative and quantitative composition is also studied in this subject. The way the population influences the economy and the development of a region are also the points of study in Geography. In this chapter, we will study humans as a resource.

Distribution of Population :



Try this.

Observe the pie-charts shown in Fig 1.1 carefully and answer the following questions.

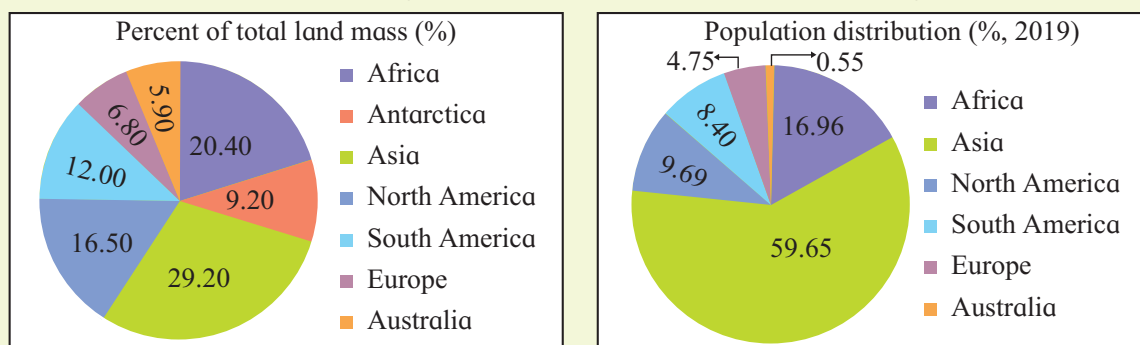


Fig 1.1

Source : UN data (<https://data.un.org>)

- 1) Which continent has the least population?
- 2) Which continent has the least landmass and also the least population?
- 3) Which continent has the most landmass as well as most of the population?
- 4) Which continent is missing in one of the pie charts? Why?

Geographical explanation

Human population is unevenly distributed throughout the world. In the year 2019, the world's population stands to be around 7.7 billion. **Continent wise population distribution is as follows :**

North and South America that account for around 28% of the landmass barely support 18% of the population. Asia occupies about 30% of the land mass and supports around 60% of the population. Europe has around 7% land and supports 5% of the population. Australia has around 6% of the world's land but does not even support 1% of the population. Africa occupies 20-40% land and supports 16.96 % population

of the world. Antarctica occupies around 9% of the landmass but has no permanent human settlements.

This distribution of land and population can be better understood not just in terms of numbers living in a region but also in terms of people living in an unit area. This is called population density.

$$\text{Density of population} = \frac{\text{Total population}}{\text{Total area (in sq. km.)}}$$



Give it a try.

Table 1.1 shows the 10 most populated countries in the world in 2018 with their areas. Calculate their population densities and complete the table.



Make friends with maps!



Each dot represents settlements above 200 persons/ Sq. Kms

Source: Landscan data set, ORNL-2017

Fig 1.2 World : Population Distribution

Table 1.1

Rank	Country	Population in Crores (2018)	Approx. Area (in lakh sq.km.)	Population Density
1	China	142.8	96.0	
2	India	135.3	32.9	
3	United States of America (USA)	32.7	95.3	
4	Indonesia	26.8	19.1	
5	Pakistan	21.2	8.9	
6	Brazil	20.9	85.2	
7	Nigeria	19.6	9.2	
8	Bangladesh	16.1	1.5	
9	Russia	14.6	171.0	
10	Mexico	12.6	19.7	

Geographical explanation

Patterns of Population Distribution in the World :

Looking at the pie-charts given in fig. 1.1 and table 1.1 together, we can conclude the following. We find that population and population densities both are unequally distributed in the world. When you look at the regions with large populations, it is explicitly visible. Patterns of population distribution and density help us to understand the demographic characteristics of any area. The term population distribution refers to the way people are spaced over the earth's surface. (Fig. 1.2.)



Make friends with maps!

Look at the map in Fig. 1.2. Compare it with the physical map of the world given in the book on page 83. Try to understand the impact of physical factors on population distribution. Complete the table accordingly. One has been done for you as an example.

Table 1.2

Continent	Physical Factors Responsible for High Population	Physical Factors Responsible for Less or No Population
North America	Coastal areas	Forests, desert, snow-covered land

Geographical explanation

When we compare the distribution of the world population with physical factors, we observe the following points :

- Snow-covered regions, around the North and the South Poles, are sparsely populated.
- Even hot deserts have low population.
- The Mountainous and hilly regions are also less populated.
- Coastal regions and plains are highly populated.
- In some river valleys like the Amazon, population is sparsely distributed. It means that there are factors other than physical factors, like forests, that influence population distribution.



Can you tell ?

Can you think of the factors besides physiography which affect the distribution of population? Make a list.

Geographical Factors Affecting Population Distribution :

Here are some physical and human factors affecting the distribution of population. Fill in suitable examples of countries or regions in the table 1.3. Two examples have been solved for your convenience.

Table : 1.3

Physical/ Human Factors	High Density	Low Density
1) Relief	Flat, Lowland e.g. Ganges plains	Mountainous area e.g. Himalayas
2) Climate		
3) Availability of Resources		
4) Economic	Business and financial centre. e.g. Tokyo	Low economic growth. e.g. Louisiana
5) Social		
6) Government Policies		
7) Cultural		

Geographical explanation

Following factors determine population distribution :

Physical Factors :

- 1) Relief (Landforms) :** Population is densely distributed on flat plains and gentle slopes. This is because such areas are favourable for the production of crops. In these areas it is easier to build roads and develop industries.

The mountainous and hilly areas tend to be less populated. If means of livelihood are available, population can be concentrated in few such areas. For example, Dehradun, Leh, etc.

Thus, it can be concluded that plateaus or mountainous areas are less populated than plains.

- 2) Climate :** Extreme climates such as very hot or cold deserts or regions with very heavy rainfall are uncomfortable for human habitation. They have less population. Areas with an equable climate, where there is not much seasonal variation, attract more people. Mediterranean regions were inhabited due to their pleasant climate.

In cold climates, only people like the

Eskimos and Lapps, who are highly adapted to such climates, can live in these regions. Vast equatorial areas of the Amazon lowland and Congo basin are very sparsely populated due to their unfavourable climate.



Find out !

- Are Eskimos still living in their conventional ways?
- What changes can be seen in their lifestyle now?

- 3) Availability of water :** It is the most important factor for life for all living beings including man. So, people prefer to live in areas where fresh or potable water is easily available. You will find that easily through the map in fig. 1.2.

It is because of this, that river valleys and coastal areas are among the most densely populated areas of the world. For example, Nile valley and coastal plains of India are one of the most densely populated areas of the world. In deserts too, population is found near oases. For examples, Phalodi from Thar desert and Al-Ahsa from Saudi Arabia have developed around oases.



Use your brain power !

- Can lakes be a factor for concentration of population? Find out examples.
- Which water bodies are surrounded by dense population in Maharashtra?

- 4) Soils :** Fertile soils are important for agricultural and allied activities. Therefore, areas which have fertile loamy soils have more people living on them, as these can support intensive agriculture. The flood plains of the river Mississippi, the Ganga,

the Irrawaddy, the Yangtze are examples of areas having high densities of population. Similarly, areas having Regur or black soils are also densely populated. The slopes and foothills of many volcanoes have high densities of population as their slopes are covered with fertile volcanic soil. The slopes and foothills of volcanoes in Java, Japan, Sicily and Central America support many people.



Fig 1.3 : Evacuation



Make friends with maps!

Refer to the map showing rice producing regions of the world in Fig. 1.4. Relate it with the population map of the world in Fig. 1.2. Write the conclusions in your own words.

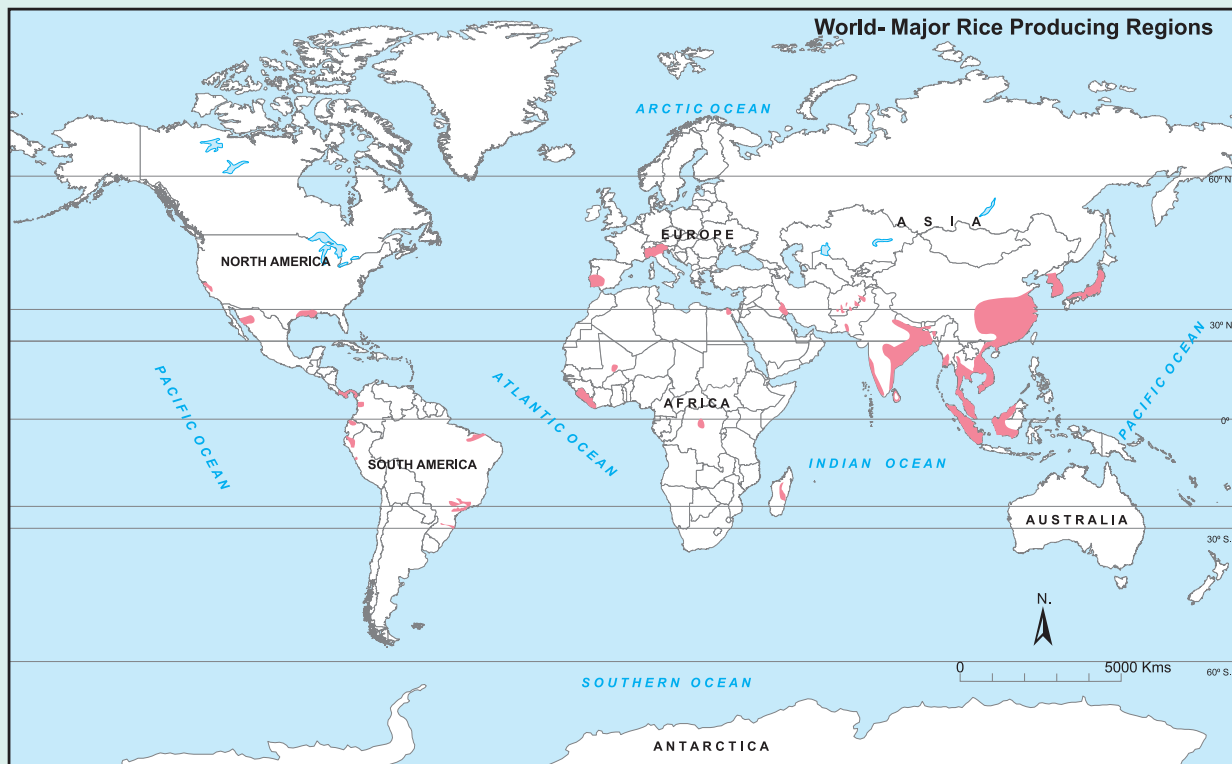


Fig 1.4

If a dormant volcano erupts someday, these settlements may face disasters. They may face economic losses and loss of life. For example, fig. 1.3 shows people leaving their places after an eruption in Mt. Agung in Bali.

Human Factors :

- 1) **Agriculture** : Increase in agricultural production due to use of fertilisers and irrigation make it possible to support more population. Type of agriculture, crops grown, method of cultivation and specialisation of particular crops are other characteristics of agriculture that affect the distribution of population. Do map activity related to fig 1.4.
- 2) **Mining** : Areas with good quality mineral deposits attract industries. Mining and industrial activities generate employment.

So, skilled and semi-skilled workers move to these areas and make them densely populated. Katanga copper belt in Zambia, the Chota Nagpur Plateau in India, coal and iron fields of Western Europe, the Manchurian region of China and the Appalachian mountains of the USA are examples where population is dense due to availability of minerals. Some

minerals are highly valuable and they are extracted despite odd physical conditions. In such areas, population may be dense. This is true for precious and rare minerals like gold and mineral oil. For example, gold mines area in the Australian desert, mineral oil in the desert regions of South-West Asian countries.



Give it a try.

Look at the satellite images given in Fig. 1.5. They show the same area from two different periods.

- What difference do you see?
- What might have caused these changes? Discuss in class.

A) Year 2005



B) Year 2019



Fig 1.5 : Satellite images showing Ambegaon Budruk, (Pune)

Geographical explanation

- 3) **Transportation** : After studying the satellite images in fig. 1.5, you may find that roads or highways may increase the population here. Such regions are easy to access because of roads thus increasing density. On the contrary, if accessibility is difficult, it takes more time and is costlier to reach there, then the region is sparsely populated. Fig. 1.5 clearly shows that the population density has increased as a highway passes through this area.

Sea transport led to the discovery of new places. Port cities got developed. The population grew there due to trade. For example, the construction of the Suez Canal increased the exchange of raw materials and goods. Therefore, the population appears to be concentrated in coastal regions. Western and eastern coastal regions of India, the western and eastern coastal regions of the United States are examples.

- 4) **Urbanisation** : The growth of industries is responsible for the development of towns and cities. Tertiary activities like transportation, trade and other services also increase in order to cater to the needs of the growing urban population. Cities offer better employment opportunities, educational and medical facilities, better means of transport and communication. In many areas of the world, a continuous urban belt is found. For example, Greater Mumbai.

- 5) **Political factors and government policies** : Besides all the above factors, the policies of various governments also affect population distribution and density. A government may choose to promote population in an area or depopulate it. For example, the government promoted human settlement in parts of Siberia by giving more opportunities and special incentives. For example, in Japan,

the government is giving incentives to people to leave Tokyo, as about one third of Japan lives in Tokyo.



Let's recall.

Which policy did the Brazilian government promote with respect to decentralisation?

Besides these factors, other factors like, distance from the sea coast, accessibility, natural harbours, sources of energy, navigable rivers or canals, cultural factors, migration, economic activities, technology, etc. affect distribution of population in the world. Adverse physical conditions and lack of sufficient opportunities for means of livelihood are mainly responsible for discouraging inhabitation in certain areas.

Components of population change :

People of one region differ from others. 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. Let us first understand the various aspects of population.

Population growth :



Try this.

Look at the fig. 1.6 and answer the questions that follow :

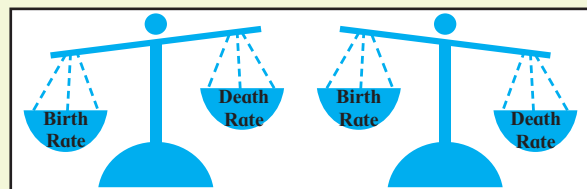


Fig. 1.6

- What does the image show?
- What happens to the population when deaths are more than births?
- What happens to the population when births are more than deaths?
- What happens when both are same? Is it possible?

Geographical explanation

The population growth or population change refers to the change in number of inhabitants of a territory during a specific period of time. This change may be positive (growth) or negative (decline). 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. It can be an indicator of social upliftment. For example, poverty can be reduced if population reduces.

There are three components of population change : births, deaths and migration.

Crude Birth Rate : Crude birth rate (CBR) is expressed as number of live births in a year per thousand of population. For example, in 2019, there were 3,250 births in a city with population of 2,23,000. Therefore :

$$CBR = \frac{3,250}{2,23,000} \times 1,000 = 14.57$$

So, at that time, there were 14.57 live births for every 1,000 people in the city.

Crude Death Rate : Death rate plays an active role in population change. Population growth occurs not only by increasing birth rate but also due to decreasing death rate. Like CBR, CDR is expressed in terms of number of deaths in a particular year per thousand of population, in a particular region.



Give it a try.

- Can you calculate the death rate in the above example, if the total number of deaths in the city was 2,986 in the same year?
- On the basis of the Birth Rate given earlier and Death Rate calculated by you, what change in population do you observe?



Always remember

The crude birth rate or death rate is considered 'crude'. This is because it ignores

the age structure of the population. It doesn't take into account that age group in the population that is actually able to give birth. Similarly, actual birth or death rates take into account the population structure of a country. Birth rates and death rates will not be same for all age groups simultaneously.

$$CBR = \frac{\text{Total number of live births in a year}}{\text{Total population in that year}} \times 1000$$

$$CDR = \frac{\text{Total number of deaths in a year}}{\text{Total population in that year}} \times 1000$$

$$\text{Population growth} = \text{Present population} - \text{Earlier population}$$

$$\text{Population growth rate} = \frac{\text{Population growth}}{\text{Earlier population}} \times 100$$



Can you tell ?

Observe the table 1.4. Arrange data in ascending order for birth rates and death rates respectively.

Table 1.4

Country	Crude BR (2017)	Crude DR (2017)
Sweden	11.5	9.1
India	18.1	7.2
Greece	8.2	11.6
China	12.4	7.1
USA	11.8	8.5
Niger	46.5	8.5

Population Growth and Explosion :

You know that birth rates and death rates determine the growth or decline in the population. Based on this notion, try to complete the table 1.5, where different combinations of Birth Rates and Death Rates are given. Discuss in the class and complete the table. One has been done for you as an example.

Table 1.5

Sr. No.	Birth Rate	Death Rate	Effect on Population Growth
1	High	High	Stable /Low Increase
2	High	Decreasing	
3	High	Low	
4	Decreasing	Low	
5	Low	Low	



Give it a try.

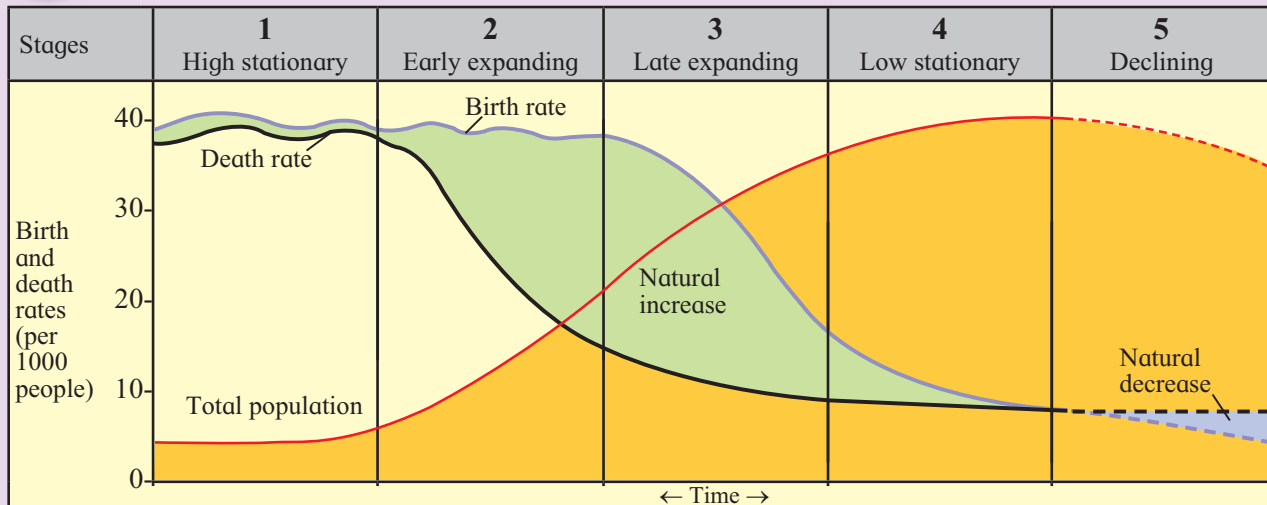


Fig . 1.7 Demographic Transition Theory

Look at the graph in Fig 1.7 carefully. Answer the following questions :

- 1) What do the blue and the black lines show?
- 2) What does the green part in the graph show?
- 3) What does the blue part in the graph show?
- 4) In which stages is the birth rate more than the death rate?
- 5) In which stages is the birth rate same as the death rate?
- 6) In which stage is the death rate more than birth rate?

Geographical explanation

Generally, a country experiences various stages in population growth. It never experiences the same rate of growth or decline. Along with the economic development, tendencies of birth rate and death rate are different. Hence, growth rate of population also varies. The theory of demographic transition is based on the population trends of a country with time. According to this theory, a country passes through different stages of population growth. It may take several years to pass through a stage. They are as follows :

Stage 1 : High stationary stage

Both birth rates and death rates are high during this phase, so population growth is stable. Birth rates are high because having lots of children is considered to be a good idea. At this stage, the financial position of the country is not developed. It is dependent on agriculture or similar primary occupations. People engaged in secondary and

tertiary activities are negligible. Educational opportunities are limited. Fertility rates are high. Families are big. Science and technology are not developed. Low sanitation, high occurrence of contagious diseases, lack of medical facilities and malnutrition are responsible for high death rates. At present, no country falls in this category.

Stage 2 : Early expanding stage

Technological expansion of science occurs and development starts. Therefore, medical and health care services start expanding. Efforts are underway to control and combat diseases. This leads to a reduction in mortality. But the birth rate is constant. As a result, the population grows rapidly. Production in agriculture and industry increases. Transportation network increases. Efforts to control the population are launched. The developing countries with high populations are currently undergoing this phase. This stage is also known as the 'population explosion' phase,

as it has the highest growth rate as shown in the fig 1.7. For example, Countries like Congo, Bangladesh, Uganda, Niger, etc. are presently in this stage.

Stage 3 : Late expanding stage

The reduced death rate in the second stage is still decreasing in this stage too. Birth rates are also decreasing now. This reduces the rate of population growth. But, the population is still growing because birth rates are higher than death rates. As the progress of the country is accelerating, the income of the people of the country is above the subsistence level. Their standard of living is elevated. Poverty is decreasing. Use of technology is seen to expand. Secondary and tertiary activities expand. Education level of the population also increases. People now know the importance of family planning. Family size reduces. Countries that are moving towards developed stage from developing are going through this stage. For example, China.



Use your brain power !

- In which stage do you think India is passing right now?

Stage 4 : Low stationary stage

The birth rate in the third stage now lowers further. The standard of living is very high. The economic condition of the country and the economic status of the citizens improves a lot. Secondary and tertiary occupations have a higher share than primary. The death rate is also very low as the best medical facilities are available. Epidemics like cholera, plague, etc. have been eliminated. People are health conscious. The birth rate is not less than the death rate but is almost the same. Therefore, population growth is minimal. For example, developed countries like USA are going through this phase.

Stage 5 : Declining stage

The birth rate is very low and almost equals

the death rate. Population growth is minimal or in some countries, could be negative. The population may be reduced because of higher mortality. In such countries the number of children is very low and the elderly are very high. Standard of living is very high. The economic condition of the country and the citizens is very good. Tertiary activities contribute the most to the economy. High quality of educational and medical facilities are available. Healthy environment and pleasant life is preferred. E.g. Sweden, Finland, etc.



Can you tell ?

Look at the fig. 1.7 and answer :

- 1) If the crude birth rate is 7 and the crude death rate is 8 then which stage of demographic transition is the country in?
- 2) If a country has crude death rate of 20 and crude birth rate of 24, then which stage of demographic transition is the country in?



Always remember

Population Composition :

Composition of population covers all the characteristics of a population that can be measured. For example, rural and urban residence, age, marital status, sex ratio, etc. are the basis on which population can be classified to understand its characteristics.

Population Structure :

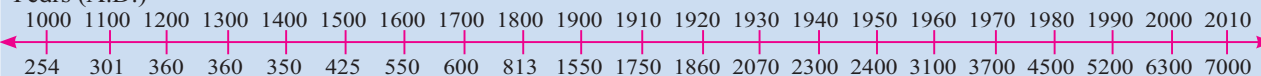
Structure of a population is the overall picture or the idea we get by studying the composition of the population. For example, age composition of the population tells us about the percentage of children, young and aged in the country. Population structure will give us an idea about the dependency ratio and the effects this composition will have on the economy of the country. We will study about them in the next chapter.



Use your brain power !

Find out in what multiples has population increased in the following timeline and write down your findings. For example, in the initial phase, the population took 6 centuries (1000 to 1600 A.D.) to double itself.

Years (A.D.)



Population of the world approx. (in millions)



Exercise

Q. 1) Identify the correct correlation :

A : Assertion; R : Reasoning

- 1) A : Areas which have fertile soil have dense population.

R : Fertile soils are good for agriculture.

- 1) Only A is correct
- 2) Only R is correct
- 3) Both A and R are correct and R is the correct explanation of A.
- 4) Both A and R are correct but R is not the correct explanation of A.

- 2) A : Population of a region does not change.

R : Birth rate, death rate and migration affect the population of a region.

- 1) Only A is correct
- 2) Only R is correct
- 3) Both A and R are correct and R is the correct explanation of A.
- 4) Both A and R are correct but R is not the correct explanation of A.

- 3) A : In stage 2, death rate reduces but birth rate is constant.

R : The population increases rapidly in stage 2.

- 1) Only A is correct
- 2) Only R is correct
- 3) Both A and R are correct and R is the correct explanation of A.
- 4) Both A and R are correct but R is not the correct explanation of A.

Q. 2) Write short notes on :

- 1) Impact of relief on population distribution.
- 2) Correlation between birth rates and death rates.

- 3) Stage 3 of Demographic Transition theory.

Q. 3) Give geographical reasons :

- 1) India is passing through Stage 3 of demographic transition.
- 2) Population distribution is uneven.
- 3) Population increases because of transportation facilities.
- 4) Secondary and tertiary activities increase in the third stage of demographic transition.
- 5) Population may increase though birth rates are low.
- 6) Population density is a function of population and area of a region.

Q. 4) Answer in detail :

- 1) Explain the physical factors affecting distribution of population.
- 2) In the first and fifth stage of the demographic transition, population growth is almost nil. What is the difference between the two stages then?
- 3) Discuss the problems faced by countries in stage 4 and stage 5.

Q. 5) Draw a neat labelled diagram for demographic transition theory and its various stages.

Q. 6) On an outline map of the world, show the following with index :

- 1) Highly populated region in Australia.
- 2) Sparsely populated region in India.
- 3) Any 2 countries in stage 5 of Demographic Transition Theory
- 4) Any 2 countries in stage 2 of Demographic Transition Theory
