

Demography and Development.

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Unit-I.

Concept of Demography.

The term demography is derived from two Greek words 'Demos' and 'Grapho'. Demos means people and grapho means to write or draw. Thus, its meaning is to draw or write about people. It was first used by Achille Guillard in 1885 and nowadays it denotes its study by statistical method of human population. The Multilingual Demographic Dictionary defines demography as the "Scientific study of Human Population primarily with respect to their size their structure of their development". Demography is a dynamic disciplinary study. There can be various aspects of demography, by defining separately demographic statistics, economic demography and social demography; the latter to supply the study of relations between demographic phenomenon on the one hand and economic and social phenomena on the other.

According to Peter R. Cox, "Demography is the study of statistical methods of human population involving primarily the measurement of size, growth and diminution ^{division} of the number of the people, the proportions of living ^{being} ~~below~~ ^{related functions} ~~importance~~ fertility, mortality and marriage".

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According to Thomson and Lewis, "The population student is interested in a population's size, composition and distribution; and in changes in these aspects through time and the causes of these changes. Ultimately he is interested in these changes because they are related to human welfare."

The Scope and Subject matter of Demography

With the help of demography we can study many problems such as marriage and status composition of family and growth trend about caste, villages, religion, education etc. from the point of macro-demography. Geography can also be studied with the help of macro-demography for instance problems of migration, urbanisation etc. In fact, UNO in one of its publications has listed under demography we study all determination and consequences of population.

Demography is a collective study of human life. It deals with individual necessities, variability, nature of population and collective physical social and vital effects. It registers facts from birth to death including family marriage, divorce and sickness, human growth structure and strength. It also studies at some length diseases and their relation with human body.

Demography also study many economic problems

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for eg. employment and income conditions of the masses, position regarding high and low living standard, labour conditions and their living standard, information about production and consumption, living habits of the population belonging to all the sections of the society, rate of growth, working efficiency of the masses, and the relationships of the economic development and the food growth with the growing population.

There is a close relationship between population & demography. Population data becomes socially useful only when demographers draw their inferences from that.

According to narrow view, we study demography as small units like individual family group etc. If we study the fertility rate of women in Cachar dist. of Assam, it forms part of microdemography.

According to Prof. Bogue, "Microdemography is the study of the growth, distribution and redistribution of the population within community, state, economic area or other local area. This included both numerical and composition aspects and is performed by using meaningful subdivision of community of local area".

It is accepted that demography is the study of human society and has very little to do with individualistic human problems. It takes the use of figures and arithmetics. In the World population conferences held by the UNO in 1954 and

1968, the following topics were discussed. —

- i. ~~///~~ Fertility.
- ii. ~~///~~ Mortality.
- iii. ~~///~~ Migration.
- iv. ~~///~~ Genetic Composition.
- v. ~~///~~ Future Prospects.
- vi. ~~///~~ Population and resources.
- vii. ~~///~~ Techniques of measurements.
- viii. ~~///~~ Training of demographers.
- ix. ~~///~~ Distribution of population.
- x. ~~///~~ Family planning.
- xi. ~~///~~ Population projection.
- xii. ~~///~~ Demographic aspects of housing, education, saving and investment.

According to Whipple, the subject matter of demography comprises of — five

1. ~~///~~ Genealogy, Ancestry & Emigration and their records.

2. ~~///~~ Human eugenics.

3. ~~///~~ Registration of vital facts.

4. ~~///~~ Census of population.

5. ~~///~~ Biometrics. dealing with the structure, growth and strength of human body.

6. ~~///~~ Pathometrics dealing with the knowledge of disease and anatomy.

Why was John Guarent called father of demography?

Credit goes to John Guarent for ^{starting} ~~starting~~ demographic study during modern times in the real sense. J.G. is an English man who is generally called as the father of demography for population study. He brought out famous volume article 'Natural and Political Observation Made Upon the ~~bits~~ bills of mortality' in London. It came out in 1962 and made him the real founder of demographic study. In this volume he has analysed the no. and causes of death in certain places. He also discussed the need of necessity of such analysis and approaches followed by him and also some details were given about birth, migration, family size etc. Similarly, other problems he has also analysed the population which was capable for growing in the army. He has suggested that population should be studied on the basis of sex, religion, age, occupation, status and state.

J.G. believed that fertility, mortality and migration were interrelated process and that these were based on definite postulates. Acc. to him, birth rate which was related to fertility rate is higher in urban areas as compared with rural areas and also that it was higher than the beginning of life than in any other state.

J.G.'s studies are important in many ways. He critically examined data on mortality and fertility

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and pointed out their weakness and biases and imprecision. He started an impo. tradition of evaluating any population data. He also made several impo. observations based on his data. He estimated the size and growth of population in London in absolute numbers. He avoided such speculations which were not supported by empirical data.

From the above discussion we can say J.G. as the father of Demography.

Indian Economy

Theory of Demographic Transition :-

The term demographic transition was first coined by F. W. Notis. Population growth experiences a transition from one stage to another stage. This transition is called demographic transition & also known as the modern theory of population growth.

According to the theory of demographic transition every country has to pass through three different stages of population growth. They are -

- (1) The period of stable population growth (no population growth).
- (2) The period of rapid population growth.
- (3) The period of stationary or slowly growing population.

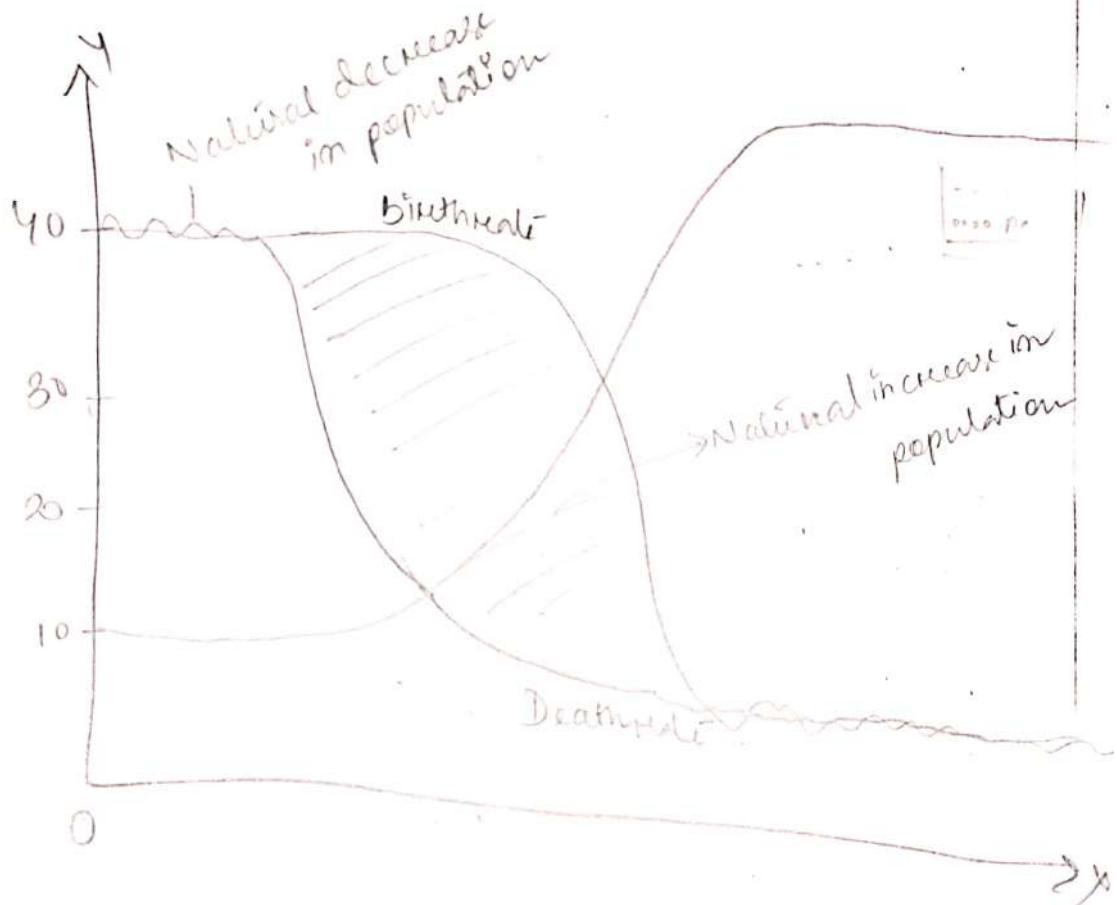
In the first stage, birth rate and death rate are high and the growth rate of population is low.

In the second stage, the birth rate remains more or less stable (or may even decrease a little at the later point of the period), but the death rate falls rapidly. As a result, the growth rate of population increases very rapidly.

In the last stage, the birth rate falls and death falls rapidly. As a result, the growth rate of population remains almost constant.

Therefore, the rate of growth of population becomes very slow or stationary.

These generalisation is based on the rate of the countries -
 at the advanced countries which have passed through the first two stages and are now in the final phase of incessant decline in the rate of growth of population. The underdeveloped countries are now passing through the second stage.



The above fig summarises the relationship between birth rate and death rate at different demographic stages which are briefly summarised below -
 Stage - I :- A pre industrial society which is in the first state is characterised

by high birth rate matched by a high death rate.

Death rate is high because of poor diet, inadequate medical facilities, poor sanitation, famine, crop-failures, blood and other uncontrollable, natural calamities.

In such societies, birth rate is also high because of illiteracy, superstitions, absence of any method of birth control etc. Moreover, more children are regarded as an insurance against old age by parents.

Since, both the birth and death rate are very high, the economy experiences a stable rate of population growth.

Stage - 2 :- This phase begins with economic development in which a fall in the death rate is not immediately accompanied by a decline in the birth rate. Therefore, population grows at an alarming rate.

The death rate falls due to certain direct and indirect economic changes such as improved medical facilities, better quality of food products, balanced diet, health facilities and so on.

But the birth rate does not correspondingly decrease rather, it may increase. Reduction in birth rate requires more long term. Fundamental changes which does not happen in early stages of industrialisation.

Stage - 3 :- In this stage of demographic transition, birth rate declines and tends

9. Role of the contribution of Education in New Education Policy.

to equal to the death rate and as a result, the rate of growth of population declines. Some of the important reasons behind the declining birth rate are -

- ① The operation of law of diminishing marginal utility from each additional child.
- ② Higher cost of education and maintenance of children.
- ③ Increasing mobility of woman labour.
- ④ Self-discipline created by education and the power to think rationally.

CRITICAL APPRAISAL OF THEORY OF DEMOGRAPHIC TRANSITION :-

The theory of demographic transitions is the modern and the most acceptable theory of population growth unlike the Malthusian theory. The theory of demographic transition is not unnecessary pessimistic. The theory is superior to the optimum theory which mainly emphasises the increased per-capita income for the growth of population and neglects the other important factors. The biological theories of population are also one sided because they study the problem of population growth simply from the biological point of view.

The theory of demographic transition is better than all those theories because it is based on the actual trend of population growth in different phases of economic growth of a country. The theory

considers the effects of economy growth on population growth. It is also based on an empirical finding of population growth in different developed countries of Europe, which have passed through the first two stages of the theory and are now in the final state.

The theory is equally applicable to the developing countries as well. On the basis of the theory, economists have developed economic demographic models so that the developing countries should enter the final stage and attain the stage of self-sustained growth. To conclude, unlike other theories of population growth, the theory is more realistic, scientific and practical, as it takes into consideration all the factors economic, institutional, social, biological and so on that influence the growth of population of a country.

The Relation Between Population Growth and Economic Development :-

The relation between population growth and economic development depends on a number of factors such as - the nature of the economy, the stage of economic development and so on.

However, population growth may be a causative as well as associative characteristic.

Population growth is not always causative characteristic of poverty, rather it is an associative characteristic. The former is true in some over-populated countries like India and China, but not in Africa and South America, where there is low density of population. In such countries poverty exists inspite of under population. Therefore, poverty is merely an associative characteristic of population growth in such countries. On the other hand, in a highly over-populated country where economic development is low and resources are limited, population growth becomes both a causative as well as an associative characteristic of poverty. Hence, population growth can have both favourable effects and adverse effects on economic development.

* BENEFICIAL EFFECTS OF POPULATION GROWTH :-

The beneficial effects of population growth on economic development can be summed-up in the following points -

- ① Population growth does not merely involve increasing mouths to feed but it also involved increasing hands and brains which can be utilised for productive works.

② In many countries, in spite of plenty of resources economic development was held back by the paucity of population. Industrial revolutions in U.K took place at the period of rapid population growth.

③ Population growth becomes very helpful especially at the last stage of development when it increases the effective demand and extends the market. When market is extended, division of labour can also be extended and the marginal efficiency of capital can be maintained.

④ In a country having high rate of population growth, labour becomes comparatively cheap. This can make labour intensive process lucrative. The increasing numbers can also be trained for increasing the scale formation which can be utilised for economic development.

⑤ In many countries, agricultural development was possible because of rapid growth of population.

⑥ Population growth leads to higher social mobility by shifting labour gradually from agriculture to industry, or from one type of industry, or from one type of industry to another.

* ADVERSE EFFECT OF POPULATION GROWTH
The consequences of population growth

growth on the development of backward economies are not at all favourable. The various adverse effects of population growth are briefly summarised below =

① Since national income has to be distributed over very large no. of persons, per-capita income decreases when population increases. From this so many other associated unfavourable effects follow — low saving, low investment, low output, low employment, low income etc.

② Population growth puts heavy pressure on the limited supply of lands and as a consequence, law of diminishing returns follows.

③ Growth of population leads to food scarcity which ultimately results in importation of food.

④ A high rate of growth of population, produces unemployment and underemployment, both open and disguised.

⑤ Rapidly growing population necessitates larger investment in social and public welfare, housing, transport, health and other social infrastructure. This demographic investment which is unproductive will be higher if population growth is higher.

Thus, from the above discussion it is clear that excessive rate of population growth is not a help but is a hindrance to rapid economic growth.

Concept of Migration.

Different definitions and concepts of migration are used in different parts of the world. Generally, it is defined as geographic mobility that involves a change of usual residence between different political, statistical area or between residence areas of different types. In short; a person who crosses an administrative boundary is considered to be a migrant.

Acc. to United Nations Multilingual Demographic Dictionary, "Migration is a form of geographical mobility between one geographical unit to another, generally involving a change in residence from the place of origin or place of departure to the place of destination or place of arrival." The migration defined here is permanent migration.

There are two broad classification of migration, namely international and internal.

International Migration refers to the movement across national boundaries and internal migration signifies the movement within the boundaries of the given nation.

Define the following concept.

i. Mover : A mover is a person who has moved from one place to another without any permanent change of his place of residence but returns to his own place of residence.

ii. Migrant : A migrant is a person who has changed his usual place of residence from one geographically well-defined area to another area with the intention of permanently or semi-permanently settling at the new place.

iii. In-Migrant : In-migrant refers to that migrant who move into a particular geographical area within his country. Thus, the migrant who come from Bihar to Assam are considered to be in-migrants of Assam.

iv. Out-Migrant : Out-migrant refers to that person who move out of a particular geographical area within his country. Thus the migrants who come from Bihar to Assam are considered to be the out-migrant of Bihar. (But it is in-migrant for Assam).

v. Net Migration : The difference between the total no. of person who arrive of the total no. of person who leave is called Net - migration or balance migration.

vi. Migration Stream : Migration stream refers to the total number of moves made during a given migration interval which have a common area of origin and a common area of destination. In practice, it refers to a body of migrant having a common area of origin and common area of destination.

vii. Return Migration : Return migration is a kind of temporary or short distance move. If a temporary movement begins and ultimately terminates to the original place of residence may be termed as return migration.

viii. International Migration : International migration refers to the movement of people across national boundary and therefore, it has a political significance and is dramatic. also as it involves the crossing of the more formidable, cultural and political barriers.

ix. Internal Migration : Internal migration refers to the migration of person within the boundaries of

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a given nation. In total it contributes it contributes all changes of residence within the national territory and as such involves not only the exchange of population between community but also within communities.

x. Life-time Migration : Life time migration is defined as the migration of those persons who are enumerated in a place which is not the place of birth i.e. the person enumerated in a place which is different from the place where he was born.

xi. Non migrants : The persons who are enumerated in the place which is not different from where they born are called non-migrants or non-migrant are the persons whose place of last residence and place of enumeration is the same.

xii. Place of origin : The place in which the migrants live is called place of origin and for that place the persons is an outmigrant.

xiii. Place of destination : The place where the migrants arrive that place is known as place of destination and the person is called inmigrant.

xiv. Gross migration : It is the sum of in migration of out migration.

xv. Immigration or Emigration : These two terms are used in the context of international migration from one country to another e.g. Immigration of Hindus from Bangladesh to India and emigration of the Hindus to united states.

xvi. Migration Interval : In order to analyse migration if it is necessary to break up the total time period into a series of intervals and assemble the data separately for each interval. Such intervals are known as migration intervals.

* Write notes on each of the following fertility measures. Your answer should contain definition, notation, example and socio-economic implication of each measure.

Ans: 1. Crude Birth Rate (CBR) : The ^{CBR} ~~ratio~~ is the ratio of total live births recorded in some specified years in a particular area to the total midyear population of the area multiplied by one thousand. It is computed by applying the following formula.

$$\text{Crude CBR} = \frac{\sum d}{\sum P} \times 1000$$

where,

$\sum d$ = Total no. of live birth during a year.
 $\sum P$ = Total population in the middle of that year.

Eg. Let the no. of births during 2017-18 in a sample area of Gensarati city = 80.

Let the mid year population of the area during that year is 6000

Therefore,

$$\therefore CBR = \frac{480}{36000} \times 1000$$
$$= \frac{40}{3} \times 1000 = 1333.33 \text{ per thousand.}$$

Socio-Economic Implication : The CBR is an important measure of fertility as it directly points to the contribution of fertility to the growth rate of population. It indicates the level of the fertility of a society.

Age Specific Fertility Rate (ASFR) : ASFR is defined as the no. of children born alive during a year per thousand women in a particular age group of reproductive span. ASFR is calculated by applying the following formula.

$$ASFR = \frac{n_f x}{n_f p x} \times 1000$$

where,

$$n_f x = ASFR$$

$n_f p x$ = no. of live births to women in the specific age group in the given region in given time.

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n_{jpx} = Average no. of women in that age group in the given area. Eg. ASFR for women in the age group 20-24 in a particular area of Silchar city during 2017-18.

Let the no. of live births to women in the age group 20-24 = 87.

No. of female population in that age group = 987

$$\therefore \text{ASFR} = \frac{87}{987} \times 1000$$

$$= 88.15 \text{ per thousand}$$

Implication : ASFR is good enough for checking out family planning operation population programme etc. Moreover, it is possible to compute ASFR with reference to only married women.

iii. Total fertility rate (TFR) : It may be defined as the total no. of children that would have been born alive per thousand women had the current schedule of ASFR been applicable for the entire child bearing period. In this type of fertility rate, all the females of reproductive age are considered.

It is calculated by adding the ASFR of given year groups and multiplying this total by 5 that is the age interval. Thus, TFR

$$\text{TFR} = \sum \text{ASFR} \times i$$

where i = the age interval

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eg. Let us consider the following age group of reproductive period with ASFR against each group

Age group	ASFR
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15-19	270
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20-24	270
-------	-----

25-29	290
-------	-----

30-34	240
-------	-----

35-39	165
-------	-----

40-44	83
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45-49	40
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$\Sigma ASFR = 1458$

Here,

$$TFR = \Sigma ASFR \times 5$$

$$= 1458 \times 5$$

$$= 7290$$

Implication: TFR can be worked out for different ~~regions~~ ~~separately~~ religions and for different regions separately to make comparison.

iv. General Marital fertility rate (GMFR): This type of fertility rate is slightly different from the general rate. In GMFR, the population of married women of child bearing age only is considered, whereas in GFR all women of child bearing age ~~only is considered~~ ~~whereas in GFR all are taken~~ into considerations. The GMFR can be defined as "the no. of children born alive during a year per thousand married women of child bearing age."

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The formula is

$$\text{GMFR} = \frac{\text{The no. of live birth to married women}}{\text{No. of married women of child bearing age}} \times 1000$$

where,

ΣB = Total live birth to married women in a place

ΣFM = Total married female in child bearing ages

$$\text{GMFR} = \frac{\Sigma B}{\Sigma FM} \times 1000$$

Let,

$$\Sigma B = 30, \quad \Sigma FM = 500.$$

$$\text{GMFR} = \frac{\Sigma B}{\Sigma FM} \times 1000.$$

$$= \frac{30}{500} \times 1000 = 60 \text{ per thousand.}$$

Implication: As fertility varies in various age group of married women, it is always preferable to calculate the age specific marital fertility rate. The social implication of GMFR is quite significant in our society as it is imperative to know the fertility rate of the married women separately.

v. GRR : "The GRR indicates the average no. of daughters who would be born to a group of girl beginning life together in a population where no died before the upper limit of the child bearing age & where the given set of fertility rate was in operation."

In other words, GRR is the sum of ASFR calculated from females birth for each year of reproductive period.

Symbolically, let $n f_{bx}$ is the no. of females births to the women of age x during the given period in the given region & $n f_{px}$ is the no. of female population of age x during the same period in same region.

Then,

$$GRR = \sum_{\lambda_1}^{\lambda_2} \frac{n f_{bx}}{n f_{px}} \times 1000$$

where,

λ_1 & λ_2 are the lower & upper limit of female reproductive period.

Let,

$$n f_{bx} = 46, \quad n f_{px} = 100$$

Let the TFR in that female population in the child bearing age group = 2230 per thousand.

$$\therefore GRR = \frac{46}{100} \times 2230$$

$$= 4.6 \times 223$$

$$= 1025.8 \text{ per thousand,}$$

Implication : GRR is quite useful for comparing the fertility in different regions or in the same region at different periods of time. If GRR is less than unity the population would decline no matter how low the death rate may be & if GRR is greater than unity then the population would increase no matter how high the death rate is.

Generally, GRR ranges from 0-5.

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Q. What do you mean by Aging of population distinguish the age structure of developed and developing countries. Explain the role of fertility, mortality and migration in determining the age structure of population.

Ans: The process by which of the population of children decrease & those of old person increase is known as the aging of population. The term is considered to be appropriate for, in the developed countries thought that this process would continue in the future to their great surprise, however a reversal in the process of aging was experienced by many countries, such as the USA, Canada, France & the United Kingdom. The Netherlands, Sweden, Austria, Australia and New Zealand. It was observed that in these countries the increase in the birth rates during 1940s & in some countries ~~even~~ even during in 1950s resulted in an increase in the proportion of children. The reversal in the trend in respect of proportion of children may be temporary phase but it has proved these population become slightly younger in spite of the fact that the proportion of persons of age 65 & above has constantly increase.

Age is defined as the interval of time between the ~~same~~ date of birth & date of census expressed in completed whole years. Age structure of any proportion is commonly studied with the help of simple

mathematical measure like this percent distribution. Another simple measure is the age pyramid. Another measure is the dependency ratio which indicates the number of dependence ~~ratio~~ ~~is~~ per the worker. The distribution betⁿ age structure of developed & developing countries are :

1. In developed countries the population have become older because in the countries the proportion of children in the popⁿ is small than that of adult & elder person.

On the other hand in the developing countries, the proportion of children & young person ~~is the~~ in the popⁿ is large & the proportion of old person is small. So the population of these countries have become younger.

2. The age distribution of developed countries have undergone changes during the course of industrial growth resulting increasing in the proportion of children under 15 yrs & an increase in the proportion of popⁿ aged 65 & above. On the contrary the age structure of population of developing countries have not shown any significant change.

3. The popⁿ age pyramids of developed countries are almost rectangular in shape with a slight sloping at the older age. These pyramids indicate a lower proportion of children & a higher popⁿ of developing adults & the elderly in the popⁿ.

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4. On the other hand, the pyramids of developing countries have broad base and steep sides, indicating a large proportion of children & young persons & small proportion of old people in the population.

5. In general the overall dependence ratios of developed countries are small because the developed countries have small population between the working age group.

On the other hand developing countries present an entirely different picture. These countries have high percentage of children below 15 & low percentage of elderly persons of 65 yrs of age or above. So these countries have to bear the burden of children to a large extent & their overall dependency ratios are greater than the developed countries.

Factors determining the Age Structure of population
Age structure of population depends upon fertility, mortality & migration. It is mathematically determined by the level of factors.

Role of fertility: Fertility can play an important role in determining the age structure of popⁿ. Until 1950, the effect of change in fertility, mortality on the age structure of a popⁿ was not well understood by demographers. However, by the 1950s, however, researchers of various demographic such as:

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(1950)
V.G. Vatsyana, Frank Lomax (1951), Alfred Sauvy (1954),
Audrey Coole (1956) and United Nations (1958) that the
aging of the population in several western countries was
almost entirely due to the decline in the fertility rate
but was vitally negligible because of the decline in
the death rate. It was further elaborated that the
increase in the proportion of the old people and the
increase in the median age of the population in western
countries has a product of the history of falling birth rates
which these countries had experienced.

In this context a question arises - how can we know
whether a particular population is old or young age
population. It is mainly determined by the fertility of
the women in the country, when fertility is high
birth rate is also high & the no. of children born is
large & population is younger on the other hand. When
fertility is low birth rate are low the no. of children
born is low & the population is old. When birth rate are
high the population has a larger proportion of children
relative to the adults of parental age. The sustained
high level of birth rates results in a larger proportion
of children & a small proportion of old population &
a low median age. When low level of birth rates
persist the result is a small proportion of children & a
large proportion of old people. Declining birth rate
causes an aging of the base as well as the apex of the
age pyramid, and an increase in the proportion of adults.
With consequences high median age & and old popⁿ.

It may therefore be concluded that the consequently developed countries experience an aging of the population because of their declining birth rates, while the age structure of the developing countries has remained virtually unchanged because their birth rates have remained more or less at high level though their death rates have been declining since the 1950s.

In this way fertility plays an crucial role in determining age structure of population of developed & developing countries.

Role of Mortality :- Compare to fertility, mortality affects the age distribution of population to a much lower extent. The effect of mortality on the age structure is just the opposite of the what one would imagine. Empirical observation has shown that the large and rapid reduction in mortality & the influence in the life span have resulted in a younger age distribution. An explanation of this phenomenon is to be sought in an understanding of the process of decline in mortality rates. The improvements in health & medical services & technology increases the survivorship among children mainly infants & young children. Thus there is an increase in the proportion of young persons of mortals & popⁿ become young.

However, it is noted that the phenomenon of mortality decline affecting those in the very young age group occurs only when a country is passing from very high levels of mortality to low level of mortality.

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When mortality level of any country is already very low & expectation of life at birth is quite high, there is not much scope for any large increases in survival rates during infancy and early childhood. In most of the developed countries mortality rates are low & survival rates are quite high. In sense of the nearly 95% of popⁿ survive upto the age of 32-48 yrs. Hence if any further improvement in mortality conditions take place it will affect the older age groups & lead to a further ageing of the popⁿ.

In this way mortality affects most age groups uniformly.

Role of War on

Age Structure: The age structure of the popⁿ is directly affected by the war casualties, which mainly affect males in the younger age group. Wars also affect age structure because of the indirect effect they have on fertility. During a war men in the armed forces are separated from their wives for long periods & this inhibits fertility. In the immediate post war period, however, there is often a 'baby boom' because couples unite once again. The age sex pyramid is affected as the smaller size cohorts during the war and the bigger size cohorts after the war move upward with the passage of time.

~~In this way fertility, mortality, migration & war affect the age structure of popⁿ.~~

Role of Migration: Compared to the fertility & mortality

migration can't directly affects age structure of a popⁿ. In general, the changes in fertility effects the base of the age pyramid, while changes in mortality affects infants & young children in the developing countries and the ~~other~~ older age group in the developed countries. But no much general rules can be laid down with respect to the effects of migration on age structure.

The role of migration in determining the age structure depends on two important factors i.e. the age distribution of the net migrants and the volume of net migration.

If the proportion and numbers of the young adults among the net migrants is large, the effects of ageing of the popⁿ tend to get retard. Since these young adults can participate in reproduction, they also add proportionately to the flow of births. If on the other hand the net migrants contribute mainly to the increase of those who are above the age of 30, the ageing process tends to get accelerated. Thus, whether age distribution would be affected, and if so in what direction, depends on the volume & age distⁿ of the net migrants. Both international as well as internal migrations can effect the age sex structure of a popⁿ. For eg. the union territory of the Andaman & Nicobar islands provides an ^{illustration} ~~illustration~~ of the effect of internal & international migration on age sex distⁿ.

The historical back ground of the Andaman & Nicobar islands is that the British rule there island as a penal settlement & the convicts who were deported for life from the mainland were mainly male. This resulted in a high sex ratio (330 male per 100 females in 1921). But after a certain period of time the sex ratio was fall down. During 1961-61 the sex ratio was also high. The explanation for this demographic changes may be offered in terms of historical facts. These islands had to absorb an influx of refugees from Bangladesh (E. Pakistan) as well as the labourers sent by the Forest & Aquatic Development of West Bengal. There was a preponderance of males among both the refugees & the labourers, specially in the age group 20-34. All these facts mainly related to intersex migration.

In this way fertility, mortality, migration & war affects the age structure of a population.

Role of Human Capital in Economic Development

Capital may be both in human or non-human forms. Human capital denotes scientific, managerial, engineering, technical, teaching, administrative & other skills employed.

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in creating, designing & operating economic institutions. It includes that part of population which has the ability to produce economic goods & services or which can productively be utilised.

Human Capital has been defined by the World Development Report- 1995, as "the skills & capabilities embodied in an individual through health, nutrition, education and training". It consist of brain power & is based on the application of systematic research to the problems of production & of the best organisation of the economic institutions.

The concept of "human capital formation" has been recently emphasised. Traditionally we have been attaching more importance to the accumulation of physical capital in the process of economic development. Accumulation of physical capital is a pre-requisite for economic development but human brain is behind this growth of tangible capital stock lack of skill & knowledge in developing countries is a severe limiting factor for economic development. An improvement in the quality of human factor is therefore, as essential as investment in physical capital. It is the human capital formation is insufficient physical capital can't be productively used.

Despite massive importance of PC, UDCs have not been able to accelerate their rate of growth because of the insufficiency of HC. Despite abundance of the labour force, shortage of skilled labour is also very

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acute in these countries which sometimes hampers growth. This problem can be solved if HC formation is given the due priority. Economic backwardness may be reduced through the means of material capital but the more decisive means would be through HC.

Schultz, has demonstrated that even when a country possesses the PC & resources, growth should fall catastrophically if it does not possess sufficient HC. There would be both low output & extra-ordinary rigidity of economic organisation until the capacities of the people are raised by investing in them. However, in many cases the capacity for physical capital has proved to be low because the growth of HC has failed to keep with the accumulation physical capital.

HC plays an important role in the process of economic development. Recent studies made by Schultz, Harbison & Kenonick point out that a large part of the growth of the output in USA can be attributed to increased productivity which has mainly been the result of HC formation.

Prof. Galebraith observes that, "we now get the larger part of industrial growth not from more capital investment but from investment in men and improvements brought about by improved men" Adam Smith included in a country's stock of fixed capital the required and useful abilities of all the inhabitants. The technological knowledge & skill formed the community in material equipment without which PC can't be utilised productively. Alfred

Marshall regarded education as a national investment & the most valuable of all capital is that invested in human beings.

One of the main reasons behind the low growth of the is that the people possessing critical skills & knowledge required for all round development of the economy are not present in these countries underdeveloped human resources are manifested in low labour productivity, factor immobility & limited specialisation in occupation. Since, we have a of critical skills & knowledge, PC, whether indigenous or imported can't be productively utilise. As a result machines break down & wear out soon, materials & components are wasted & the quality of prodⁿ falls & cost rise. So, high skilled man power acts as a to all these problems.

HIC plays a significant role to carry forward industrialisation. The various types of activities influence the formation of HIC. Prof. Schultz, points out such activities which are given ahead.

- ① The services & facilities necessary to improve health standards, strength, vitality & life expectancy of people.
- ② All forms of in service training apprenticeship & on the job courses organised by firms.
- ③ Establishment of educational institution schools colleges & universities under formal education.
- ④ Adult Education programmes especially for the rural people.
- ⑤ Mobility of labour in order to adjust in changing job opportunities.

Each of the above categories of activities helps to improve

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or enhance the human capabilities.

Problems of HC Formation.

- i) Problems of Assessments -
- ii) Problem of measuring the growth rate of human capital -
- iii) Problem of the pattern of investment in education.
- iv) Problems of university education.
- v) Lack of manpower planning.
- vi) Less attention on agricultural & adult education.