

Max. Marks : 04  
With Option : 08

9

## Biology in Human Welfare

### Population

#### Introduction-

All organisms in a particular ecosystem form a community. In the ecosystem there are two types of communities namely plant community and animal community. Community is formed by several number of species where as species is a group of organisms.

Population is a group of individuals of a particular species, occupying particular area of specific time.

The word population is derived from latin word 'Populas' means people. It is after used with reference to human population.

The study of quantitative and statistical aspects of human population is called as demography. Population never found to be constant it is changing from time to time. So study of changes in population is called as population dynamics.

There is relationship between growth of population and other aspects related to development like education, health, social awareness, urbanisation etc.

#### Q.1 Define the terms.

##### 1. Natality -

Rate of birth per unit time per unit area per 1000 of population.

$$\text{Natality} = \frac{\text{No. of birth in year}}{\text{Total Population}} \times 1000$$

(at mid year)

##### 2. Mortality -

Rate of death in population per unit area per unit time per 1000 of population.

$$\text{Mortality} = \frac{\text{No. of deaths in year}}{\text{Total Population}} \times 1000$$

(at mid year)

##### 3. Sex ratio-

Numbers of females per thousand males in population is called as sex ratio. At present in world it is 986 and in

India it is 933.

##### 4. Age structure -

Distribution of population according to age group is called as age structure of that particular population. Human population can be divided in three age groups.

- Prereproductive age group (0-14 yrs)
- Reproductive age group (15-54 yrs)
- Post reproductive age group (above 55 yrs)

##### 5. Population explosion -

The rapid increase in population with in short time is called as population explosion.

##### 6. Growth rate -

Growth rate = Natality - Mortality

**7. Hypochondria -**

It is the common problem of adolescence in which adolescent have undue concern (more consciousness) about their health.

**8. Phobia -**

Phobias are common in adolescents. These are intense fear of many things e.g. crowd, darkness, open spaces or closed spaces, elevators (lifts).

**9. Neuroasthenia -**

It is a problem of adolescents in which there is problem of concentration on any thing. It may lead to irritability, fatigue, insomnia, depression and headache.

**10. Psychosis -**

Patient loses touch with reality and is unaware of illness. This is due to dysfunctioning of part of brain due to physical damage, high blood pressure, diabetes, tuberculosis etc.

**11. Withdrawal symptoms -**

These are the symptoms which arise due to sudden stopping of taking drugs (antitoxant). It shows symptoms like headaches, muscle twitches, anxiety and weakness.

**12. Hallucination -**

It is a false imagination due to consumption of hallucinogens e.g. Ganga charas, bhang, Bhang, Hashish Synthetic drug like L.S.D.

**13. Health -**

It is a state of physical, mental and social well being.

**Write Short notes on -****1. Density of population -**

It is total number of individual living per unit area at specific time. It is number of individual per sq. kms.

$$D = \frac{N/A}{T}$$

where - N - No. of individual

A - Area

T - Time in units

There is increase density if natality (Birth rate) is greater than mortality (death rate). In India density of urban area is more as compare to rural area. Density also changes due to migration and immigration (People coming from outside). Production of employment in rural areas can reduce the emigration. (migration from area)

**b. Growth rate of population -**

It is actual increase in number of individual divided by time required for this increase.

$$\text{Growth rate} = \frac{\text{no. of birth} - \text{No. of deaths}}{\text{Time required}}$$

When rate of birth becomes more than death rate then population show +ve growth. When death rate is more the population show -ve growth. In developed nations number of births are less and populations is declining.

**c. Change in sex - ratio in India -**

Sex ratio is number of females per 1000 males. Sex ratio indicates equality between male and female in the society. At present in world it is 986 in India it is 933. But in Kerala and Pondichery it is above 1000.

**Decline of sex ratio is mainly because of -**

1. Neglect of girl child leading to higher mortality.
2. Sex selective abortion.
3. High maternal mortality in villages. (death of mothers)
4. Female illiteracy.

**d. Effect of population explosion on education -**

Lack of education leads to unemployment and social crime, low standard of living and returns leads to increase in population. Number of illiterates are increasing due to rapid population growth. Large number of children of school going age are employed as child labour 32 - million primary school age children are not in school. Rural children are not able to complete their education due to large size of family and poverty.

**e. Effect of population explosion on pollution-**

Over population leads to over use. Due to over use there is increased industrialization urbanisation and increased transportation. Due to increased industrialization there is tremendous increase in air and water pollution. Increased population also leads to demand for agricultural growth and use of insecticides, pesticides and fertilizers. Which also leads to air water and soil pollution. Global warming is due to over population. It leads to melting of ice at polar regions and submergence of land. It also results in climatic alternation, cyclones,

storms and reduction in crop production.

**f. Effect of population explosion on standard of living -**

Increase in population decreases per capita income. Due to population explosion there is substandard life in India. It also leads to illiteracy, unemployment and low living standard. People cannot afford nutritional food and medical facility. Accommodation facilities are insufficient and such population live in slums and unhygienic surrounding.

**g. Mental healths -**

According to WHO health is a state of physical, mental and social well being.

**Mentally healthy person shows following characteristics -**

1. Person neither underestimates or overestimates his or her own abilities.
2. Well adjusted with society.
3. Balanced feeling, desires and ambitions.
4. Selfcontrol and consideration for others.
5. Readiness to accept criticism.
6. Has proper estimation of one's abilities.
7. Has good self control.

**h. Psychosis -**

It is caused due to dysfunctions of part of brain due to physical damage. It may be due high blood pressure, diseases tuberculosis etc. There can be change in chemical balances at synapse. In this patient loses touch with reality. Psychosis shows two disorders -

**a. Schizophrenia -**

Which is characterised by disturbed

thoughts and emotions laughing and crying at improper time. Abnormal behaviours.

**b. Mood disorder -**

In this there are fluctuations in moods. There are bouts of high and low moods. It is accompanied by depression, sadness low self esteem, hopelessness. It may be due to failure in examination, job or mishap in family.

**i) Neurosis -**

It is due to mal-adaptive habits. In this patient does not lose the contact with the real world but there is anxiety, fear and sadness.

**a) Anxiety disorders -**

These are over reactions to stressful events. It also shows body symptoms like palpitations, nausea and trembling, sweating, diarrhoea.

**b) Obsessive Compulsive disorder -**

In this disorder persons are compelled to perform an action despite of their own attempt to resist it. (Repeated actions are performed again and again.) This causes total disability obsession might be for infection of germ or dirt.

**c) Attention deficit disorder -**

It is due to lack of attention from parents. Children develop, frustration, lose confidence, and show poor performance in studies.

**f) Hallucinogens -**

These are the drugs that produce false feeling e.g. Ganja, charas, Bhang, Hashish and synthetic drug like LSD. (Lysergic acid diethylamide). L.S.D. is the most dangerous drug today. It is obtained from ergot fungus. Ganga, cha-

ras, Bhang, Mariguana are obtained from hemp plant. Short term use of drug causes more talkative ness, laughing red eyes, impaired attention, short term memory etc. Long term use cause loss of appetite, restlessness, weakness, impotency mental deterioration.

**k) Rehabilitation of drug addicts -**

Drug addiction must consider as a disease and it should be treated properly.

**Rehabilitation of drug addicts includes following steps -**

**1) Medical supervision -**

It is necessary to overcome on psychological as well as physical dependence.

**2) After care -**

It is also important because sudden delink of use of drug causes withdrawal symptom. Medication along with healthy family atmosphere is helpful for rehabilitation.

**Long answer Question -**

**Q.1. Write any four characters of population -**

- Ans :**
1. Natality (Birthrate)
  2. Mortality (deathrate)
  3. Growth rate
  4. Density
  5. Age structure
  6. Soneration

(Refer short notes and definitions)

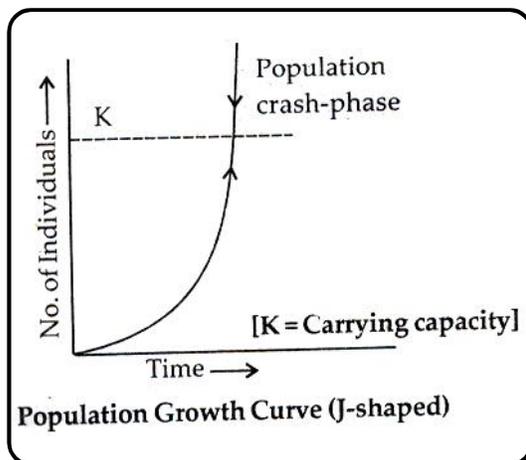
**Q.2 Discuss why 'J' shape curve is soon in human population only.**

**Ans :** There are three types of curve observe regarding population -

1. **Zero curve -** When number of birth and number of deaths are equal.
2. **J-shape -** When number of births

exceeds than death.

3. **'S' Shape** - It show three phases.
  - a) **Early or lagphase** - Very little growth is experienced.
  - b) **Middle or exponential phase** - In this phase there is geometric rise in number of individuals due to high growth rate.
  - c) **Last or plateaw phase** - In this phase there is decline in population growth environmental factor regulate population.



Observing all three curves 'J' shape curve is seen in human population only because in 'J' shape curve there is continuous rise in population This continuous rise is due to improved agriculture, industrial revolution and some religious thoughts and rituals.

**Q. 3** **What is adolescences what are the common problem o alldotescent?**

**Ans :** Adolescences is a period between childhood and adulthood. It is a period of rapid growth, physical and mental development. It is 12 to 18 yrs. in girls and 14 to 19 yrs.in boys. During this

period there are many psychological changes are also. This period is characterise by physical gorwth, maturity of reproductive organs, positive and accurate understanding of self, social awakensness.

**Common problems of adolescence-**

- 1) **Achne** - It is the common problem in girls as well as in boys. it is due to clogging and inflammation of pores of sabaceous gland.
- 2) **Hypochondria** - It is occur in case of late developers. These people have more concisousness regarding their health.
- 3) **Agresiveness** - Aldolescent becomes more agressive some experience alturnate periods of loncliness and gregariousness (tendency to be with surrounding).
- 4) **Nueroesthenia** - It is inability to concentrae which leads to irritability fatigue, insomnia, depression and headache.
- 5) **Eating disorders** - These are the abnormal pattenen of eating developed by aldolescent over eating or voluntry food restriction (less intake of food by wish).
- 6) **Phobias** - In tense fear of things crea- ture open spaces, height, water, crowd etc.
- 7) **Violence** - Many aldolescent violent actions at many places playground, fair traffic signal.
- 8) **Addiction to drugs, alcohol, tabacoo smoking and chewing** are common among aldolescent.

- 9) **Depression and suicide** - Depression is the common problem of adolescent. It is due to failure, disappointment and dejection from family and friends. It leads to suicidal ideation.
- 10) **Premarital pregnancy** - (Pregnancy before marriage). It leads to experience of humiliation and dejected from society.
- 11) **Sexually transmitted diseases (STD)**- It is due to unprotected multipartner sex. Examples i.g. AIDS, syphilis, gonorrhoea.
- 12) **Post traumatic stress disorder** - It is due to traumatic experience like rape, robbery etc.

**Q. 4** Describe in short types of mental illness.

**Ans :** Mental illness shows different types of symptoms following.

- 1) Depression, insomnia (excessive sleep).
- 2) Abnormal thinking, loss of memory.
- 3) Anxiety related aggressive behaviour.
- 4) Fears and phobias.
- 5) Self destructive behaviours like drug abuse, drinking alcohol, over eating or dieting.
- 6) Delusions (false beliefs) and hallucination (false imagination). Mental disorders can be grouped into psychological disorders and addictive disorders.

Psychological disorders are of two types.

- a) Psychosis
- b) Neurosis
- c) Border line disorder personality

a) **Psychosis** - It is caused due to dysfunction of part of brain. There is change in the chemical balance at synapse. Patient loses touch with reality. Examples of psychosis.

1) **Schizophrenia** - It is characterised by distorted thoughts, disturbed emotions, abnormal behaviour, etc.

2) **Mood disorder** - In which there are high and low bouts of mood. It is due to depression, low self esteem, hopelessness lack of sleep and appetite.

b) **Neurosis** - In this patient does not lose contact with real world. But there anxiety, phobia, fear and sadness.

1) **Anxiety disorder** - It is characterized by over reaction of stressful events. Unpleasant symptoms like palpitation, nausea, trembling sweating and muscular tension.

2) **Obsessive compulsive disorder** - It is performance of repeated actions and constant doubts.

3) **Attention deficit disorder** - It is common in school giving children due to lack of attention from parents.

c) **Borderline personality disorder** - Along with psychosis and neurosis person shows quarrelsome behaviours and unpredictable moods.

**Addictive disorders** - These are due to physical and mental dependence on smoking, alcohol and drugs.

**Q. 5** What is addiction? Explain the types of drugs?

**Ans :** Physical, mental and physiological dependence of a person on certain habit forming substances is called as addiction.

tion and Habituated person is called as addict. Habit forming drugs are called as psychotropic drugs - These are of five types -

- 1) Stimulant
  - 2) Depressant (Sedatives)
  - 3) Tranquillizers
  - 4) Narcotics
  - 5) Hallucinogens
- 1) **Stimulant** - Stimulant bring about rapid conduction of nerve impulses. They stimulate nervous system. Short term use of stimulant produce feeling of well being. But long term use leads to sweating, dialation of pupil, fast heart beat. Over use leads to convulsions and death also. Caffeine in tea, coffee, cocoa chocolate is mild stimulant. Another example of stimulant are amphetamines and cocaine. Amphetamines are called as superman drug they are strong stimulants. They increase self confidence and ability to concentrate.
- 2) **Depressant** - These drugs slows down the activity of CNS. They induce sleep e.g. sleeping pills. These drugs are also called as sedaives e.g. Alcohols, Barbiturates benzodizephine.
- 3) **Tranquillizers** - They bring about relaxation, calmness and relief from worries. They do not induce sleep e.g. Bentodizepine phenothiyazines, Reserpine.
- 4) **Narcotics** - These drugs have analgesic effect. They are often called as pain killers e.g. Morphine, codeine, Heroine, Methadone pethidine. Naural opiate is derived from unripe fruits of poppy plant.
- 5) **Hallucinogens** - These drugs produce false imaginary feelings. They take the

user in Fantasy world and give temporary happiness e.g. Bhang, Charas, Ganja mariguana, mescaline, psilocin, psilocybin and produce of hemp plant. LSD (Lycergic acid diethyl amide) is the most dangerous drug today. It is obtained from ergot fungus short term uses of hallecinogens causes more talkativeness, laughing, red eyes, sharpen senses. Larger doses causes restlessness. Long term use causes loss of appetite, weight loss, weakness, trenors, impotency, and morale, deterioration.

**Q. 6** Discuss reasons of drug addiction, Withdrawl symtoms.

**Ans :** **Reasons for addiction -**

- 1) In ability to adjust with stress.
- 2) Desire to escape from disappointments, depressions and failures.
- 3) Encouragement by friend circle.
- 4) Family background.

**Withdrawl symtoms -**

- 1) **Sedatives or depressant** - Headache, muscle twiches, anxiety, weakness, nausea loss of appetiate, low blood pressure etc.
- 2) **Stimulant** - Dry mouth vomitting nausea, diarrahoea, stomachpain palpitation, convulsion uncouncious ness.
- 3) **Tranquillizers** - Rest less ness, headache.
- 4) **Narcotics** - Pain in abdomen, perspiration vomitting, nausea, muscular cramps, epilepsy etc.
- 5) **Hallucinogens** - Nausea, palpitation, convulsions, unconsciousness, stomachpain, vomiting etc. lethargy and gloom.

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