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Q.No 1(A) :

Population : It has derived from a Latin word populous which means people . In Ecology , Population is defined as a group of organism of the same species occupying a particular space, where they can freely live with each other.

Examples : A group of horses in a forest , group of lions on a grassland

Theories of population :

These are the theories which explain the main influences with respect to fertility rate . There are three types of theories .

- i) Biological
- ii) Cultural
- iii) Economic

Biological theory : This theory states that the human capacity for reproduction increases with the rate at which subsistence (the source from which food and other items are necessary to exist, are obtained) . In simple , the population is controlled by the means of subsistence unless deprived by some powerful and obvious checks .

Cultural theory : This theory emphasis on the importance of human' character and culture which influence his fertility . This can be explained by the declining fertility of advanced countries where particular stress has been placed on the influence of desires for higher socio-economic status and for luxurious life .

Economic theory : According to this theory, The increasing rate of population requires higher investment to maintain the economic growth . This will result in more and more pressure on existing resources .

Q.No.1(B) : Main components of population growth :

Population growth is defined as the increase in the number of human inhabitants of a given place.

These are the following main components of the population growth.

- i) **Fertility :** it is defined as the actual number of live births in a population unit in single year. Cohort fertility is the number of live births for a group or cohort of women during their span fertility of reproduction. It increases population size. Each species will have its own maximum birth rate. Maximum birth rate depends on the conditions .

- ii) **Mortality** : It shows the number of deaths per thousands individuals .It reduces the population growth and operates when conditions are not suitable. There are lot of factors such as epidemics, wars , famines , Climate and racial factor which increase mortality rate.
- iii) **Migration** : It is defined as the action of coming to live permanently in a foreign country . It increases the population growth and operates when population is not completely isolated.
- iv) **Emigration** : It is the process of leaving one's country with the purpose to settle elsewhere. It decreases the population growth and operates when population is not completely isolated .

Q.No.2: Air pollution :

It is defined as the presence of chemicals or compounds (including those of biological origin)in the air which poses health risk for human beings . It not only degrades the quality of air but also endangers the life of living beings by causing global warming. e.g co₂, so₂, & CH₄ gasses in air

Sources of air pollution : Air pollution may be caused by different process both natural and man made such as ;

Volcanic activities : Volcanic eruption emits a series of toxic gasses, but usually limited to that specific area.

Winds and air currents : it can mobilize pollutants from the ground and transport them over large area.

Wild-fire : it's a kind of destructive fire that spreads over woodland and add enormous amount of CO & CO₂ gasses to air.

Industrialization : Industries cause releasing CO₂ and SO₂ to air and destroy the quality of air.

Transportation : Transport is one of the major reasons of affecting the quality of air. Transport releases CO₂ gasses to air and results in global warming .

Effects of air pollution on human health :

Air pollution has serious impacts on human health depending on the type of pollutants and level of exposure to it .

Skin problems : It is caused by prolonged exposure to severe air pollutants .

Asthma : Inhalation of air pollutants may result in the lung disease like asthma.

Respiratory disease : Exposure to air pollution may lead to respiratory disease like cough.

Eyes irritation : Air pollution also affects human eyes . Pollutants like CO and other particles in air cause severe eyes irritation .

Q.No.3 : Environmental science :

The word environment has been derived from French word "Environ" which means surrounding or enveloping. Environmental science is a multidisciplinary science which combines different branches of science like physics, chemistry , biology , medical , health science , agriculture and forestry and so on .

Scope of environmental science :

It covers all our surrounding including forests, mountains, rivers, deserts or combination of all these elements. Most of us live in landscapes that have been modified by human beings in villages, towns and cities. Those who live in cities rely on surrounding villages . Water is used for drinking purposes and other daily chores , while air is breathed and other resources are utilized from which food is made. Dependence on nature is so great that without protecting environment lives on earth is not possible .

Evolution of Environmental science :

Environmental science started as a subject after 1960 with the Rachel Carson ' book "silent spring " . It's importance further increased with the famous incidents of Santa Barbara oil spillage and the Cuyahoga river of Cleveland , and Ohio catching fire in 1969. Since 1970s, environmental issues have been addressed chiefly in terms of implications of development process on environment quality. The book Limit to growth by Club of Rome in 1970 and Stockholm conference in 1972 drew the attention of the world community towards environmental imbalance created by developmental activities . In 1987 the Brundtland Commission introduced the word sustainable development in its report and Agenda 21 was adopted during the Earth Summit called Rio Summit in 1992 which contributed significantly in increasing awareness about making development environment friendly . Moreover, number of environment agencies and NGOs came into being with the passage of time which resulted in increasing its importance and led to creation of academic discipline known as environmental science .

Legislations on environment in Pakistan : Legislative work in Pakistan started with PEPO (Pakistan environmental protection ordinance) in 1983. Later on Pakistan environmental protection agency (PEPA) was established and issued NEQS in 1993. PNCS was prepared in 1992 by federal ministry of

environment and the conservation of union. Moreover, Pakistan environmental protection act 1997 stands at the apex of statutory law on environmental issues in Pakistan . Biodiversity Action plan (BAP) for Pakistan was prepared in 2000.