## NCERT TEXTUAL EXERCISE (SOLVED)

**1.** Name the three important components of biodiversity.

**Ans.** Three components of biodiversity are:

(a) Genetic diversity (b) Species diversity

(c) Ecological diversity

**2.** How do ecologists estimate the total number of species present in the world?

**Ans.** Ecologists make a significant comparison of species richness of exhaustively studied groups of insects of the temperate and tropical regions and extrapolate this ratio to other groups of animals and plants to calculate gross estimate of the total number of species existing on the earth.

**3.** Give three hypotheses for explaining why tropics show greatest levels of species richness.

**Ans.** (1) The tropical area have a more stable climate than temperate zones. Local species continues to live in absence of natural disturbances.

(2) Warm temperature and high humidity in most tropical areas provide favourable conditions for growth and survival of diverse species.

(3) Tropical areas receive more solar energy over year and thus tropical communities are more productive and can support a wide range of species.

**4.** What is the significance of the slope of regression in a species – area relationship?

**Ans.** When analysis of species area relationships is done among small areas, the values of slope of regression are remarkably similar regardless of the taxonomic group or the region. However, when such analysis is done among very large areas (i.e. continents), then the slope of regression would be much steeper.

**5.** What are the major causes of species losses in a geographical region?

**Ans.** Species are lost in a geographical region due to natural disturbances like forest, famine, drought and also due to human disturbance with over replantation, habitat destruction, habitat displacement and over specialisation.

**6.** How is biodiversity important for ecosystem functioning?

**Ans.** (1) It contributes to productivity

(2) Cause more efficient recycling of energy and matter.

(3) It has many alternative pathways for survival under diverse conditions.

Rich biodiversity provides alternatives available at each trophic level. All organisms are linked in food chains and interact with their abiotic

environment in such a way so as to keep the natural cycles going and make the ecosystems self– sustaining units. Disappearance of any link in a food chain will not affect the ecosystem as other alternatives are there.

**7.** What are sacred groves? What is their role in conservation?

**Ans.** **Sacred groves** are forest patches around places of working. These are held in high esteem by tribal communities/state or central government. Tribals do not allow to cut even a single branch of trees in these sacred groves. This is the reason why many endemic species flourish in these regions.

**8.** Among the ecosystem services are control of floods and soil erosion. How is this achieved by the biotic components of the ecosystem?

**Ans.** Plants play a vital role in the control of floods and soil erosion. Their roots bind the soil particles firmly and in this way they do not allow the top soil to be drifted away by winds or moving water. Roots of plants also make the soil porous and allow water to go into the soil.

**9.** The species diversity of plants (22%) is much less than that of animals (72%). What could be the explanations to how animals achieved greater diversification?

**Ans.** Due to greater dispersal/more number of surviving individuals. Most animals possess simple or complex nervous system to control and coordinate various activities. They possess receptors to receive against them. Most of their responses are adaptive and ensure their survival in changing environmental conditions. They, therefore, have evolved to reveal much higher species diversity than plants who do not possess nervous system and respond differently against environment stimuli.

**10.** Can you think of a situation where we deliberately want to make a species extinct? How would you justify it?

**Ans.** We are trying to eradicate disease causing organisms (e.g. poliovirus) from this world to make this world disease free. Since, such microorganisms are harmful to the human society, such attempt is justified. Further, such microorganisms are not essential components (producers or decomposers) of any ecosystem and losing one or few such organisms would not affect the functioning of ecosystem.