1. Differentiate between the following:

a) Natural Environment and man-made environment

Ans: The natural environment encompasses all living and non-living things occurring naturally on earth or some region thereof. It is an environment that encompasses the interaction of all living species along with biotic and abiotic components. A pond is an example of natural environment as its environment consists of abiotic components such as light, temperature and water, while the biotic components are microscopic plankton, some higher plants, animals like fish and decomposers.

Man-made environment is formed as a result of human modification in the natural environment. Cultivated fields or cities are the examples of artificial environment. In artificial environment, the natural environment is altered according to the need of the population living in it. The man-made city environment consumes excessive amounts of energy and materials and needs constant care, supervision and management to keep it habitable.

b) Food chain and Food Web

Ans: The food chain refers to a natural system by which energy is transmitted from one organism to another. When we refer to these systems on an ecological basis, we use the term food web.

A food chain refers to four main parts. These are:

* The sun – this is the primary source of energy for all organisms
* The producers – these are the plants. They are called producers because they are the only part of the food chain that produces their own food, as well as the food for other organisms. In fact, the oxygen that all living things breathe in is a result of the food producing process of the plants (photosynthesis). The food that other organisms take in is also a result of the photosynthesis in plants that produces glucose.
* The consumers – this refers to the group of organisms that eat something else. They may be herbivores (plant eating animals) or carnivores (flesh eating animals). They also include parasites and scavengers.
* The fourth in the food chains are the scavengers. These are the fungi and bacteria that we look down on with such disgust. They are an all important part of the food chain because they convert all dead matter into nitrogen and carbon that is released into the atmosphere. Without the hard work put in by these scavengers the earth would just be one large garbage bin that was never emptied!

A food web on the other hand refers to a bunch of food chains that make up an ecosystem. It is a mass of connected food chains that are interlinked at various points. For instance, there may be links running between grass and all the animals that eat grass e.g. the goat, cow etc. Then there would be a link between those animals and other animals that ate them, for instance the lion, humans etc.

A food chain describes a pattern through which energy is transmitted from the producers or the plants to the decomposers. For instance, it would perhaps describe how a tiny fish survive on plankton, while the larger ones survive on them. A food web on the other hand would also include the big fish that were feeding on the plankton as well. It basically depicts a broader picture of all interconnected food chains that exist within an ecosystem.

A food chain is a description of a single link between the origin of the source of energy and its final recipient. A food web includes all such chains that make up an ecosystem. It can be described as a collection of individual and interlinked food chains! Both food chains and the food web have been adversely affected by the onslaught of human civilization. In order to make our habitat more 'conducive', we are causing the destruction of valuable parts of the food chain and the food web. For instance, the use of pesticides is having an adverse effect on most of the eco systems. Man must realize that they are a part of the food chain and that their welfare is dependent on others also.

2. Write short notes on the following:

a) Bhopal Tragedy

Ans: The Bhopal disaster, also referred to as the Bhopal gas tragedy, was a gas leak incident on the night of 2–3 December 1984 at the Union Carbide India Limited (UCIL) pesticide plant in Bhopal, Madhya Pradesh, India. It is considered to be the world's worst industrial disaster. Over 500,000 people were exposed to methyl isocyanate (MIC) gas. The highly toxic substance made its way into and around the small towns located near the plant.

Estimates vary on the death toll. The official immediate death toll was 2,259. The government of Madhya Pradesh confirmed a total of 3,787 deaths related to the gas release. A government affidavit in 2006 stated that the leak caused 558,125 injuries, including 3,478 temporary partial injuries and approximately 3,900 severely and permanently disabling injuries. Others estimate that 8,000 died within two weeks, and another 8,000 or more have since died from gas-related diseases. The cause of the disaster remains under debate. The Indian government and local activists argue that slack management and deferred maintenance created a situation where routine pipe maintenance caused a backflow of water into a MIC tank, triggering the disaster. Union Carbide Corporation (UCC) argues water entered the tank through an act of sabotage.

The owner of the factory, UCIL, was majority owned by UCC, with Indian Government-controlled banks and the Indian public holding a 49.1 percent stake. In 1989, UCC paid $470 million ($929 million in 2017 dollars) to settle litigation stemming from the disaster. In 1994, UCC sold its stake in UCIL to Eveready Industries India Limited (EIIL), which subsequently merged with McLeod Russel (India) Ltd. Eveready ended clean-up on the site in 1998, when it terminated its 99-year lease and turned over control of the site to the state government of Madhya Pradesh. Dow Chemical Company purchased UCC in 2001, seventeen years after the disaster.

Civil and criminal cases were filed in the District Court of Bhopal, India, involving UCC and Warren Anderson, UCC CEO at the time of the disaster. In June 2010, seven former employees, including the former UCIL chairman, were convicted in Bhopal of