Quadrant II – NOTES

Programme : Bachelor of Arts/Commerce/Science (First Year)

Subject : Environmental Studies

Course Code : ESA 101/ESA 102

Course Title : Environmental Studies

Unit : I

Module Name : Disaster Mitigation and Management- Floods, Droughts and Earthquakes.

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Introduction:

Disaster is defined as any sudden occurrence of the events whose effects are seriously destructive. It leads to environment, human and financial losses. Disasters can be natural and man-made as well as human induced**:** Earthquakes, volcanic activity, tsunamis, floods, cyclones, landslides, avalanches and droughts, nuclear explosions, terrorism, industrial accidents, epidemics and so on.

Need for Disaster Management

Disaster management is a process of effectively preparing for and responding to disasters. Disaster management aims to reduce, or avoid, the potential losses from hazards, assure prompt and appropriate assistance to victims of disaster, achieve rapid and effective recovery. Four disaster management phases are mitigation, preparedness, response, and recovery. They are important to carry out the effective mitigation management. Disaster mitigation measures eliminate or reduce the impacts and risks of hazards through proactive measures taken before an emergency or disaster occurs.

Floods:

Definition: a flood is overflow of water that submerges land and inflow of tide into land.

Causes of Floods: Snow melt, flash flood, heavy siltation, A dam breaking, drain blockage, landslide blocking, Storm surge leads to flooding.

Adverse Effects of floods:

- ✳ Damage to infrastructure and property: Flood cause huge losses to homes, roads, power supply and other infrastructure.
- ✳ There is huge loss to life and livestock caused by drowning.
- ✳ Spread of Diseases: Lack of proper drinking water facilities, contamination of water leads to outbreak of epidemics, diarrhea, viral infection, malaria and many other infectious diseases.
- ✳ Crops destruction can results in shortage of food, and animal fodder.
- ✳ Floods may also affect the soil characteristics making fertile land infertile.

Flood management involves the following:

- ✳ Construction of engineered structures in the flood plains and strengthening of structures it include building dams, channel management and embankments.
- ✳ Flood Control method includes include increasing forest and vegetation cover, watershed management, flood proofing and catchment modifications. Schemes of drainage and flood protection,
- ✳ Non-structural methods: flood forecasting, flood warning and emergency preparedness systems, flood insurance, public information and education, and flood relief

Droughts:

Drought is either absence or deficiency of rainfall from its normal pattern in a region for an extended period of time leading to general suffering in the society.

Causes of Droughts: Deficit rainfall, Over population , Over grazing, Deforestation, Soil erosion, Excessive use of ground and surface water for growing crops and Loss of biodiversity are some of the cause of droughts.

Effects of droughts:

- ✳ Irrigated areas are affected much later than the rain fed areas.
- ✳ The impacts slowly spread into social fabric as the availability of drinking water diminishes, reduction in energy production, health reduction and loss of life, increased poverty, reduced quality of life and social unrest leading to migration.

There are various mitigation strategies to cope up with drought.

- ✳ Public Awareness and education: This includes awareness on the availability of safe drinking water, water conservation techniques, agricultural drought management strategies like crop contingency plans, construction of rain water harvesting structure. Awareness can be generated by the print, electronic and folk media.
- ✳ Drought Monitoring: It is continuous observation of the rainfall situation, availability of water in the reservoirs, lakes, rivers etc and comparing with the existing water needs in various sectors of the society.
- ✳ Water supply augmentation and conservation: Water harvesting by either allowing the runoff water from all the fields to a common point (e.g. Farm ponds) or allowing it to infiltrate into the soil where it has fallen (in situ) (e.g. contour bunds, contour

cultivation, raised bed planting etc) helps increase water availability for sustained agricultural production.

- ✳ Expansion of irrigation facilities: reduces the drought vulnerability.
- ✳ Livelihood planning: identifies those livelihoods which are least affected by the drought. Some of such livelihoods include increased off-farm employment opportunities, collection of non-timber forest produce from the community forests, raising goats, carpentry etc.
- ✳ Drought planning: the basic goal of drought planning is to improve the effectiveness of preparedness and response efforts by enhancing monitoring, mitigation and response measures.

Earthquake

Definition: Earthquake can be defined as the sudden shaking of the earth crust. It is one of the most destructive natural hazards.

It is caused by sudden release of slowly accumulating strain energy along a fault with in the earth crust.

Following are the effects of the earthquake:

- Ground shaking: Surface waves that are near the epicenter are responsible for the earthquake. The intensity of ground shaking depends on the duration, local geology, and distance.
- Damage to a man-made structure.
- An outbreak of fire and spilling of hazardous chemical

Earthquake: Mitigation and Management

- Community preparedness: Community preparedness is vital for mitigating earthquake impact. The most effective way to save you even in a slightest shaking is 'DROP, COVER and HOLD‘
- Planning: The Bureau of Indian Standards has published building codes and guidelines for safe construction of buildings against earthquakes.
- Public education: Public education is educating the public on causes and characteristics of an earthquake and preparedness measures.
- Engineered structures: Buildings need to be designed and constructed as per the building by laws to withstand ground shaking.