

**MAA OMWATI DEGREE COLLEGE**  
**HASSANPUR (PALWAL)**

**NOTES**

**SUBJECT : Dissater Mgt.**

**CLASS : BBA 3rd Sem**

**SESSION : 2021-2022**

## Disaster Management

- \* A continuous and integrated process of planning organization, coordinating and implementing measures which are necessary or expedient for : -
- \* prevention of danger or threat of any disaster
- \* Reduction of Risk of any disaster its severity or consequences
- \* Capacity - building
- \* preparedness to deal with any disaster
- \* prompt Response to any threatening disaster situation or disaster

\*

\* Assessing the severity or magnitude of effect of any disaster.

\* Rehabilitation and Reconstruction

disaster management

Disaster management means:

that all such measures should be taken so that hazard can not take the forms of disaster. Since we can not prevent the coming of many natural hazard but can reduce their harmful effects by proper management in order to minimize the loss of life and assets.

Disasters are the consequences of natural or human hazard. In fact, the current danger is not as much from the natural disaster as we from man made disaster. For example, sudden flood due to unsustainable urbanisation, draught due to poor water management, rapid infrastructural development and overpopulation settlement in ecologically sensitive areas like Himalaya Region lead to the problem of earthquake and landslides. Disaster management broadly encompasses the management before, during and after disaster.

International action was specially certified (developing countries)

The super cyclone in Orissa in October, 1919 and the Bhuj earthquake in Gujarat in January 2001 underscored the need to adopt a multi-dimensional endeavour involving diverse scientific engineering, financial and social processes. The need to adopt multi-disciplinary and multi-sectoral approach and incorporation of Risk Reduction in the development plans and strategies.

## \* Types of Disaster \*

### \* Natural disasters \*

Natural disasters are large-scale geological or or meteorological events that have the potential to cause loss of life or property. These types of disaster include: Severe storms and floods are the most common types of natural disaster reported in the United States. These meteorological events are occasionally preceded by presidential emergency declarations requiring state and local planning prior to the event such as evacuations and protection of public

assets. Disaster distress helpline staff are available to speak to those who call or text before, during and after a natural disaster.

\* natural disaster including flood, hurricane, earthquake and volcano eruption that have immediate impact on human health and secondary impact causing further death and suffering from (for example) floods, landslides, fires, tsunamis.

\* complex emergencies including

\* man made disasters \*

1. technological
2. industrial
3. warfare

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team:  
1. Disaster management →

world wide governments, business and non-business organisation are setting up disaster or crisis management teams in order to manage the disaster.

the disaster management teams are broadly divided into three parts namely

- ① the policy team
- ② the management team
- ③ the liaison team.

2. systematic planning →

Disaster management involves systematic planning to avert a disaster, and.

If it occurs then systematic planning is required in order to overcome the crisis arising out of disaster.

Disaster planning  
Indicates what to do  
when to do, how to do  
and is to do certain  
activities to manage  
and overcome the  
problem of disaster.

## ② Organisation Structure $\Rightarrow$

Robert F. Littlejohn in  
his paper on 'Crisis  
management' suggested a  
matrix organisation  
structure to deal with  
disaster or crisis in  
the organisation or in  
the city or country.  
The disaster management  
team is to be headed  
by a crisis  
manager.

## ③ \* Training to manpower \*

To manage a disaster  
effectively, there is a  
need to provide proper  
training to the disaster  
management involves systematic  
planning to avert a  
disaster and if it occurs  
then systematic planning  
is required in order  
to overcome the crisis  
arising out of disaster.  
Disaster planning indicates  
the training will help  
to develop and improve  
disaster management skills  
in the personnel training  
management skills in the  
personnel training  
may help to avert  
a disaster effectively -

## 1. Structure of atmosphere

Chapter 1Introduction →

The atmosphere of earth is a layer of gases surrounding the planet earth that is retained by earth's gravity. The atmosphere protects life on earth by absorbing ultraviolet solar radiation, warming the surface through heat retention (greenhouse) effect, and reducing temperature extremes between day and night. The properties associated with atmosphere are:

\* The earth's atmosphere is a very thin layer wrapped around a very large planet. Two gases make up the bulk of the earth's atmosphere, nitrogen which comprises 78% of the atmosphere, and oxygen which accounts for 21%. Various trace gases make up the remainder.

\* Based on temperature, the atmosphere is divided into four layers: the troposphere, stratosphere, mesosphere, and thermosphere.

\* Energy is transferred between the earth's surface and the atmosphere via conduction, convection, and radiation.

## \* Structure / Layers of the atmosphere

The atmosphere of the earth changes from the ground up. five distinct layers have been identified using

\* Thermal characteristics (temperature changes)

\* Chemical composition

\* movement and

\* Density

Each of the layers is bounded by "pauses" where the greatest changes in thermal characteristics, chemical composition, movement, and density occur.

The various layers of the atmosphere based on temperature are as follows: the troposphere, stratosphere, mesosphere, thermosphere, and exosphere:

### 1. Troposphere

\* Features \*

- \* 0 to 11 km - this layer contains 75% of the gases in the atmosphere
- 1. Average height is 10-11 km.  
15-16 km. at the equator;  
5-6 km. at the poles.
- 2. 75-80 % of total mass.
- 3. Temperature generally decreases with height; average lapse rate is  $6.5^{\circ} / \text{km}$
- 4. Referred to as the "weather layers"  
tropopause  $\rightarrow$  this layer is located at the top of the troposphere. the temperature remains fairly constant here.

1. Stratosphere 2-12 to 50 km -  
in the lower part of  
the stratosphere the  
temperature remains  
fairly constant.  
(-60 degrees Celsius)  
this layer contains the  
ozone layer. ozone  
acts as a shield  
for in the earth's  
surface. it absorbs  
ultraviolet radiation  
from the sun. this  
causes a temperature  
increase in the upper  
part of the layer.

### \* Feature \*

1. From 12 to 45-50 km
2. Temperature is constant with height initially, then it increases with  $h$ , known as an inversion (temperature increase w/ $h$ )
3. 20-25 % of total mass
4. Lid to the troposphere and important to aircraft

### 3. \* Mesosphere \*

50 to 80 km - in the lower part of the stratosphere the temperature drops in this layer to about -100 degrees Celsius. this is the coldest region of the atmosphere. this layer protects the earth from meteoroids. they burn up in this area.

## \* Feature \*

1. From 45 to 80 km
2. Less than 1% of the total mass
3. sharp decline in temperature -  $83^{\circ}\text{C}$  ( $-137^{\circ}\text{F}$ ) at top

## 3. Thermosphere $\Rightarrow$

80 km and up, the air is very thin. temperature means "heat sphere" the temperature is very high in this layer because ultraviolet radiation is turned into heat. temperatures often reach 2000 degrees celsius or more. this layer contains:

## \* Ionosphere $\Rightarrow$

This is the lower part of the thermosphere. it extends from about 80 to 550 km. gas particles absorb ultraviolet and x-ray radiation from the sun. the particles of gas become electrically charged (ions). Radio waves are bounced off the ions and reflect waves back to earth. this generally helps radio communication. however, solar back to earth solar flares can increase the number of ions and can interfere with the transmission of some radio waves.

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## \* Feature \*

1. Increase in temperature (extremely high) due to absorption of Radiation. The temperature increase with height i.e. from as low as  $-184^{\circ}\text{F}$  ( $-120^{\circ}\text{C}$ ) at the bottom of this layer, temperature can reach as high as  $3600^{\circ}\text{F}$  ( $2000^{\circ}\text{C}$ ) near the top.

2. Very few molecules resulting in very low pressure.

3. Topped by exosphere.

4. *Aurora borealis* and *Aurora australis*.

5. Exosphere :-  $\rightarrow$

the upper part of the thermosphere. It extends from about 550 km for thousands of Kilometers. Air is very thin here. This is the area where Satellites orbit the Earth.

## \* Features \*

1. This is the outermost layer of the atmosphere.

2. It extends from the top of the thermosphere to 6200 miles (10,000 km) above the Earth.

3. In this layer, atoms and molecules escape into space and satellites orbit the earth.

## Atmospheric pressure

### \* Introduction \*

An important characteristic of the earth's atmosphere is its pressure as it often determines wind and weather patterns across the globe. By definition, atmospheric or air pressure is the force per unit of area exerted on the earth's surface by the weight of the air above the surface. The force exerted by an air mass is created by the molecules that make it up through their size motion

and number present in the air.

### \* Precipitation \*

Precipitation (the total volume of water precipitated to a certain surface area for a given period of time) means water, in either liquid or solid state, falling out of the clouds or depositing from the air on the land surface, on various materials, or plants. Atmospheric precipitation may take the form of rain, drizzle, snow, sleet, snow pellets, small hail or hail.

## \* cloud Classification And formation \*

### \* Introduction \*

clouds are made of tiny drops of water or ice crystals that settle on dust particles that settle on dust particles in the atmosphere. the droplets are so small a diameter of about a hundredth of a millimeter, that each cubic metre of air will contain 100 million droplets. clouds will either be composed of ice or water droplets depending on the height of the cloud and temperature of the atmosphere.

## \* Formation of cloud \*

clouds form when the invisible water vapour in the air condenses into visible water droplets or ice crystals. there is water around us all the time in the form of tiny gas particles, also

known as water vapour. there are also tiny particles floating around in the air such as salt and dust. these are called aerosols.

The water vapour and the aerosols are constantly bumping into each other. when the air is cooled, some of the water vapour sticks to the aerosols. when they collide, this is condensation. eventually, bigger water droplets

Form around the aerosol particles, and these water droplets start sticking together with other droplets forming clouds.

Clouds form when the air is saturated and cannot hold any more water vapour. This can happen in two ways:

1. The amount of water in the air has increased.  
- For example through evaporation - to the point that the air cannot hold any more water.
2. The air is cooled to its dew point - the point where condensation occurs - and the air unable to hold any more water.

## \* El Nino Phenomenon \*

### \* Introduction \*

El nino, which means: little boy in spanish. is a weather phenomenon characterized by unusually warm ocean surface temperatures in the central and eastern tropical pacific.

### \* Definitions \*

\* El nino refers to the large-scale ocean-atmosphere climate ~~into~~ interaction linked to a periodic warming in sea surface temperature across the central and east-central equatorial pacific. /

Western Disturbances\* Introduction \*

Western disturbances or the area of "disturbed air pressure" travelling to India from the west are a regular feature through the "winter season".

These are basically extra-tropical storms or low pressure systems originating outside the tropical regions. The rain and snow they bring to the north India and neighbouring regions is formed from the moisture they carry from the Atlantic ocean or the Mediterranean.

\* Meaning of Western Disturbance \*

The meaning of western disturbance lies in its name - the disturbance travels from the "western" to the "eastern" direction. Disturbance means an area of "disturbed" or "Reduced air pressure".

## energy model and budget of the earth

### \* Introduction \*

energy is all around us. it can take many forms and it is a difficult concept to understand, but it is important for many different things that we do. energy helps us play sports, drive our cars, watch television, and stay warm. just like people, the earth is affected by different forms of energy which determine how warm or cold the earth is. energy is the ability to change the surroundings. example: fuel for a car, ball falling from a window, electricity to turn on a light.

### \* Earth's energy budget \*

The earth receives energy from the sun, and it also reflects and radiates energy back into space. This balance of incoming and outgoing energy creates our climate that supports life as we know it on earth.

The law of conservation of energy states that energy can neither be created nor destroyed, but it can be transformed from one state to another. Energy from the sun is delivered as light energy and some of that energy is used to warm the earth and the differences in densities of air and water between warm and cold regions of the atmosphere and ~~drives~~ oceans induce currents.

## \* Magma generation and formation of igneous Rock \*

### \* Introduction \*

Magma is molten Rock found below the earth's surface. The temperature at which a Rock melts is affected by its composition, pressure and water.

Magma is primarily a very hot liquid, which is called a melt. It formed the melting of Rock in the earth's lithosphere, which is the outermost shell of earth - made of the earth's crust and upper part of the mantle and the asthenosphere which is the layer below the lithosphere.

It is composed of whatever elements made up the minerals in the source Rock. But most magma also has other things mixed in.

For example -

It usually contains bits, pieces of minerals that have not yet melted or have solidified (or crystallized) from the molten state as the magma cools. There are also many different gases dissolved in magma. Water vapor, carbon dioxide and hydrogen sulfide are common.

## \* Formation of magma \*

Earth is divided into three general layers. The core is the superheated center, the mantle is the thick middle layer, and the crust is the top layer on which we live. Magma originates in the lower part of the earth's crust and in the upper portion of the mantle. Most of the mantle and crust are solid, so the presence of magma is crucial to understanding the geology and morphology of the mantle. Differences in temperature, pressure, and structural formations in the mantle and crust cause magma to form in different ways.

## \* Types of Magma \*

All magma contains gases and a mixture of simple elements. Being that oxygen and silicon are the most abundant elements in magma, geologists define magma types in terms of their silica content expressed as  $\text{SiO}_2$ . These differences in chemical composition are directly related to difference in gas content, temperature and viscosity.

- ① Mafic magma:
- ② Intermediate magma:
- ③ Felsic Magma:

## \* Igneous Rocks formation \*

Igneous rocks are magma that has cooled to a stable magmatic rock. They are usually present in two forms: intrusive and extrusive. Intrusive igneous rocks are those that intrude into a low-density area of another geologic formation. Devil's Tower, Wyoming, is an intrusive igneous formation where the other geologic formation has weathered away entirely, leaving only the magmatic intrusion.

Igneous Rocks are produced by the crystallization and solidification of molten magma. Magma forms when rock is heated to high temperature (between 625 and 1200° Celsius) beneath the Earth's surface.

## \* Types of Igneous Rocks \*

The types of igneous rock that form magma is a function of three factors: the chemical composition of the magma, the temperature of solidification, and the rate of cooling, which influences the crystallization process. Magma can vary chemically in its composition.

For example  $\Rightarrow$

The amount of silica ( $\text{SiO}_2$ ) found in magma can vary from 75% to less than 45%. The temperature of cooling determines which types of minerals are found dominating the rock's composition.

\* weathering erosion and deposition \*

### Introduction

Weathering erosion and deposition are a main force behind landscape type but they are not the only reason for a plain, plateau and mountain region to form the water cycle or

Hydrologic cycle is the driving force behind weathering erosion and deposition.

Winds also help form the surface landscape but without gravity and the sun this whole process would not occur.

Weathering is the process where rock is dissolved worn away or broken down into smaller and smaller pieces.

### \* Erosion \*

Sediments that have been moved into a region from another place by natural process are called transported sediment.

Sediments that formed in their location are called Residual. The removal and transport of sediment the removal and transport of sediment is called erosion.

Once a rock material has been weathered, it is ready to be transported or eroded. Erosion refers to the transportation of rock, soil, and mineral particles from one location to another. Erosion is different from weathering since erosion has the moving element.

\* Causes of erosion in India \*

① \* Topography and slope of the land \*

② Nature of Rainfall.

③ Natural of soil

④ The human factor

\* Deforestation:

\* overgrazing of land

\* Improper farming techniques:

\* Deposition \*

When the sea loses energy it drops the sand rock particles and pebbles it has been carrying. This is called deposition.

## \* Depletion of natural capital

### \* Introduction \*

Natural capital is the stock of natural ecosystems that yields a flow of valuable ecosystem goods or services into the future. It is the extension of the economic notion of capital (manufactured means of production) to goods and services relating to the natural environment. In economics, depletion of natural capitals is a consequence that needs to be accounted for when looking at a company's effect on total welfare. A company might be making big profit but if it is doing a lot of

Damage to the natural capital of an economy it may actually have a negative effect on total welfare.

Natural capital is the environmental stock or capital of earth that provide goods flows and ecological services required to support life. Examples of natural capital include: minerals, water waste assimilation, carbon dioxide absorption, arable land, habitat, fossil fuels, erosion control, recreation, visual amenity, biodiversity, temperature regulation, and oxygen. Natural capital has financial value as the use of natural capital drives many businesses.

## \* Definitions \*

Natural Capital is the land, air, water, living organisms and all formations of the earth's biosphere that provide us with ecosystem goods and services imperative for survival and well-being. Furthermore, it is the basis for all human economic activity."

## \* Environmental Degradation \*

Almost all physical, chemical, biological and other activities are responsible for environmental degradation. Today we are running out of fossil fuels, there is shortage of drinking water and water for irrigation. /

## \* Causes of Capital Depletion \*

- \* overuse / Irrational use
- \* Non-equitable distribution of capitals
- \* Technological and industrial development
- \* Population growth
- \* overuse / Irrational use:
- \* Depletion of soil:
- \* Depletion of plant cover:
- \* unequal distribution of capitals:
- \* confinement of petroleum Reserves:
- \* Natural gas:
- \* water:

\* Technological and industrial development:

\* Impact of depletion of natural capital:

\* Imbalance in nature

\* shortage of materials

\* struggle for existence

\* slackening of economic growth

\* ways to deal with Disasters \*

\* Environmental impact assessment:

\* early warning signals:

\* protection and conservation

\* Remove encroachment:

\* urgent action

\* unsustainable mining

\* No Blasting:

## \* Rapid population growth

### \* Introduction \*

Every year, India adds more people than any other nation in the world, and in fact the individual population of some of its states is equal to the total population of many countries.

For example → population of Uttar Pradesh (State in India)

almost equals to the population of Brazil. As per 2001 population census of India, has 190 million people and the growth rate is 16.16%. The population of the second most populous state

Maharashtra, which has growth rate of 9.42% is equal to that of Mexico's population. Bihar with 8.07% is the third most populous state in India and its population is more than Germany's West Bengal with 7.79% growth rate, Andhra Pradesh (7.41%) and Tamil Nadu (6.07%) are at fourth, fifth and sixth positions respectively.

Some of the reasons for India's rapidly growing population are poverty, illiteracy, high fertility rate, rapid decline in death rates or mortality rates and immigration from Bangladesh and Nepal.

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Alarmed by its swelling population, India started taking measures to stem the growth rate quite early. In fact India by launching the national family planning program in 1952 became the first country in the world to have a population policy.

Whereas India has missed almost all its targets to bring the rate of population growth under control. China's one child policy in 1978 has brought tremendous results for the latter.

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\* Causes of over population

\* The fertility rate

\* Early marriage and universal marriage system:

\* Poverty and illiteracy:

\* Age old cultural norm:

\* Illegal migration

\* Effects of over population \*

\* Unemployment

\* manpower utilization:

\* pressure on infrastructure

\* Resource utilization:

\* Decreased production and increased costs:

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\* Inequitable income distribution \*

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\* Environmental pollution \*

\* Introduction \*

Environmental pollution is a problem both in developed and developing countries. Factors such as population growth, urbanization, invariably place greater demands on the planet and stretch the use of natural resource to the maximum. It has been argued that the carrying capacity of earth is significantly smaller than the demand placed on it by large numbers of human population and overuse of natural resource often result in nature's degradation. /

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Environmental pollution is the contamination of the physical and biological components of the earth atmosphere system to such an extent that normal environmental processes are adversely affected. Any undesirable change in physical, chemical, or biological characteristics of any component of the environment i.e. air, water, which can cause harmful effects on various forms of life or property is called environmental pollution. /

## \* Different types of pollution \*

### \* air pollution \*

Air pollution is defined as any chemistry of the air of the atmosphere that disturbs the natural composition and chemistry of the air. This can be in the form of particulate matter such as dust or excessive gases like carbon dioxide or other vapors.

### \* Sources of air pollution \*

\* vehicle or manufacturing exhaust;

\* Forest fires

\* volcanic eruptions

\* Dry soil erosion

\* Building construction or demolition

## \* effects of air pollution \*

- \* Increased smog (Smoke + fog)
- \* Higher rain acidity
- \* Crop depletion from:
- \* inadequate oxygen;
- \* Higher rates of asthma
- \* global warming is
- \* also related to increased air pollution.

### \* Water pollution \*

Water pollution involves any contaminated water whether from chemical, particular or bacterial matter that degrades the water's quality and purity. Water pollution can occur in oceans, rivers, lakes and underground. Reservoirs and as different water source flow together the pollution can spread.

## \* Causes of water pollution \*

- \* Increased sediment from soil erosion
- \* Improper waste disposal and littering
- \* Leaching of soil pollution into water supplies
- \* organic material decay in water supplies

## \* effects of water pollution \*

- \* Decreased quantity of drinkable water
- \* Lowering water supplies for crop irrigation
- \* Impacting fish and wildlife population that require water of certain purity of survival

## \* Soil pollution \*

Soil or land pollution is contamination of the soil that prevents natural growth and balance in the land whether it is used for cultivation, habitation, or a wildlife preserve.

Some soil pollution, such as the creation of landfills, is deliberate while much more is accidental and can have widespread effects.

## \* Sources of soil pollution \*

- \* Hazardous waste and sewage spills
- \* Non-sustainable farming practices, such as the heavy use of inorganic
- \* Strip mining, deforestation and other destructive practices
- \* household dumping and littering

## \* effects of soil pollution \*

\* Poor growth and Reduced crop yields;

\* Loss of wildlife habitat

\* water and visual pollution;

\* Soil erosion

\* Desertification

## \* Effects of water pollution

\* Decreased quantity of drinkable water

\* lowering water supplies for crop irrigation

\* Impacting fish and wildlife populations that require water of certain purity for survival

## \* Noise pollution \*

Noise pollution refers to undesirable levels of noise caused by human activity that temporary while other source are more permanent.

\* Source of noise pollution

\* Traffic

\* Airports

\* Railroads

\* Manufacturing plants

\* construction or demolition

\* Concerts

\* Effects of noise pollution \*

\* Hearing loss  
\* wildlife disturbances  
\* id. general degradation  
\* of life systems

\* Radioactive pollution \*

\* Nuclear power plant accidents or leakage  
Radioactive pollution is rare extremely detrimental and even deadly when it occurs because of its intensity and the difficulty of reversing damage there are strict government regulations control Radioactive pollution.

\* Sources of Radioactive pollution \*

\* Nuclear power plant accidents or leakage

\* Improper nuclear waste disposal

\* Uranium mining operation

\* Effects of Radiation pollution \*

\* Birth defects Cancer,

\* Sterilization,

\* other health problems for human and wildlife populations.

It can also sterilize the soil and contribute to water and air pollution.

## \* Thermal pollution \*

Thermal pollution is excess heat that creates undesirable effects over long periods of time. The earth has a natural thermal cycle, but excessive temperature increases can be considered a rare type of pollution with long term effects. Many types of thermal pollution are confined to areas near their sources, but multiple source can have wider impacts over a greater geographic area.

### \* Source of thermal pollution \*

\* Power plants

\* Urban sprawl

\* Air pollution particulates that trap heat

\* Deforestation

\* Loss of temperature moderating water supplies

## \* Effects of thermal pollution

\* As temperature increase mild climatic changes are observed

\* Wildlife population are unable to recover from swift changes.

## \* Light pollution \*

Light pollution is the over illumination of an area that is considered obtrusive. It is an unwanted consequence of outdoor lighting and includes such effects as sky glow, light trespass and glare.

## Source of light pollution

- \* Large cities
- \* Billboards and advertising
- \* Night time sporting events and other night time entertainment

## Effects of light pollution

- \* Makes it impossible to see stars
- \* Interfering with astronomical observation and personal enjoyments
- \* Degrade the quality of life for residents

- \* Personal pollution
- Personal pollution is the contamination of one's body and lifestyle with detrimental action. It is a kind of pollution that we create as humans like smoking cigarettes and burning of plastics etc.

## \* Causes of personal pollution

- Excessive smoking, drinking or drug abuse
- Emotional or physical abuse
- Poor living conditions and habits
- Poor personal attitudes

## \* Adverse effects of pollution

- \* Environment degradation
- \* Human health
- \* Global warming
- \* Ozone layer depletion
- \* Infertile land

## Epidemics

### Introduction →

An epidemic is a disease that appears as new cases in a given human population during a given period at a rate that substantially exceeds what is "expected". It relates to the occurrence of more cases of a disease than would be expected in a community or region during a given time period. From the Greek "epi" upon + "demos" people of population = "epidemos" = "upon the population". Epidemics generally follow a pattern depending on the geographical and environment condition,

The distribution and characteristics of the most population and their culture behavior

### Definition

\* An epidemic → is the abnormally high level of a disease at a particular time. It usually refers to infectious diseases such as heart disease and diabetes and conditions such as obesity.

### \* Types of Epidemics \*

- \* Common source epidemics
- \* point source or single exposure epidemics
- \* continuous or multiple exposure epidemics
- \* Propagated epidemics
- \* Seasonal epidemics
- \* cyclical epidemics
- \* epidemic of non-communicable diseases

## \* Industrial Accidents and Chemical Releases \*

### \* Introduction \*

An Industrial accident is a sudden and unanticipated event that can result in injuries, fatalities, property damage and lost production time.

Thus, an accident is an unplanned and uncontrolled event in which an action or reaction of an object, a substance, a person or a radiation results in personal injury. It is important to note that self-inflicted injuries cannot be regarded as accidents.

### \* Causes of Industrial Accidents \*

- \* Human error:
- \* Improper training
- \* Manufacturing defects:
- \* Improper maintenance:
- \* Unsafe conditions:
- \* Unsafe acts:
- \* Risky Behavior:
- \* Unsafe procedures:
- \* Known and unknown dangers:
- \* Slips and fall:
- \* Falling objects:
- \* Chemical Burns:
- \* Improper lifting

### Chemical disasters

- \* A chemical accident is the unintentional release of one or more hazardous substances which could harm human health or environment.

### Causes of Chemical disasters

- \* warnings went unheeded
- \* training and operator error
- \* wrong indication of process condition

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### \* Multi-purpose project and Resettlement Issues \*

#### \* Multi-purpose projects \*

Projects which serve more than one purpose are called as multipurpose projects.

A multipurpose project is a large scale hydro project often including dams for water retention, canals for irrigation, water processing and pipe lines to supply water to cities and power generation."

Resettlement and Rehabilitation

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"Resettlement is the process of moving people to a different place to live because they are no longer allowed to stay in the area where they used to live."

# \* <sup>मानवीय</sup> Humanitarian assistance in emergencies \*

## \* Introduction \*

Humanitarian assistance is generally accepted to mean the aid and action designed to save lives, alleviate suffering and maintain and protect human dignity during and in the aftermath of man-made crises and natural disasters, as well as to prevent and strengthen preparedness the occurrence of such situations."

## Objective of Humanitarian assistance

- \* To save lives.
- \* Alleviate suffering.
- and..

Secretary-general Ban  
Ki-moon Remark to  
launch the first world  
Humanitarian day  
in headquarters 19  
Aught August 2009.

## \* Flood \*

### \* Introduction \*

Flooding is a Result of heavy or continuous Rainfall exceeding the thirsty capacity of soil and the flow capacity of rivers streams and coastal areas. This cause a waterway to overflow its banks into adjacent lands.

## \* Flood \*

A flood usually caused by rain, heavy thunders torms, and melting of snow. flood result from days of heavy rain and / or melting snows, when rivers rise and go over their banks.

Flood is high water flow or an overflow of rivers of streams from their natural or artificial banks spread over close low lying areas. it's considred to be a temporary condition of two or more acres of dry land either:

- \* overflowed with inland or tidal waters
- \* Rapid or Runoff of surface waters
- \* mudflows

### \* characteristics of a flood \*

- \* River flooding
- \* Storm flood
- \* Ebo flash floods
- \* Human cause of flooding

## \* Flood plains in India \*

India being a peninsular country and surrounded by the Arabian Sea, Indian Ocean and the Bay of Bengal is quite prone to flood.

## \* Drainage Basin \*

A drainage basin or watershed is an extent or an area of land where surface water from rain, melting snow, or ice converges to a single point at a lower elevation usually the exit of the basin, where the waters join another water body such as a River, lake, reservoir, estuary, wetland, sea, or ocean.

## \* Dam and Barrage \*

Dams are artificial barriers across a flowing River or any other natural water body that are meant to obstruct, direct, or slow down the flow of water, thus creating a reservoir or lake.

A barrage is an artificial obstruction at the mouth of a river that is used to increase its depth to assist in navigation or for irrigation purposes.

## Landslides

### \* Introduction \*

The term landslide includes a wide range of movement such as Rock falls, deep failure of slopes and shallow debris / dust flows. Landslides are rock, earth and / or debris flowing or sliding down slopes due to gravity. Landslides take place when dirt, pebbles and boulders slide down a slope together.

### Definitions

A landslide is a downward or outward movement of soil, rock or vegetation under the influence of gravity /

## \* Causes of Landslides \*

\* Natural causes of landslides

\* Earthquakes:

\* Gravity works more effectively on steeper slopes. Gravity causes landslides.

\* Wave action can damage the beach or the toe of a bluff, cutting into the slope and setting the stage for future slides.

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### \* Coastal Hazards \*

#### \* Introduction \*

#### \* Coastal Hazards \*

are physical phenomena that expose a coastal area to risk of property damage, loss of life and environmental degradation.

#### \* Coastal Erosion \*

coastal erosion involves the breaking down and removal of material along a coastline by the movement of wind and water.

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### \* climate change \*

#### \* Introduction \*

climate change is a broader term that refers to long-term changes in climate including average temperature and precipitation. Climate change is identifiable change in the climate of earth as a whole that lasts for an extended period of time (decades or longer).

greenhouse gases act like a blanket around earth trapping energy in the atmosphere and causing it to warm.

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## \* Global warming \*

It is the increase of the earth's average surface temperature due to a build-up of greenhouse gases in the atmosphere. Global warming is the increase in average temperature of the oceans and atmosphere, both observed and predicted. The surface temperature of earth depends on a balance of incoming and outgoing heat. When outgoing heat, or energy, exceeds incoming energy, an ice age occurs. Global warming results when incoming energy levels are greater than outgoing energy levels!

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## \* Natural causes of global warming \*

- \* Sunspots :
- \* Arctic tundra :
- \* Permafrost :
- \* Water vapor :
- \* Man made (anthropogenic) cause \*
- \* Burning of fossil fuels :
- \* Electricity production :
- \* Automobiles :
- \* Deforestation :
- \* Fluorocarbons :
- \* Fertilizer use :
- \* Mining :
- \* Production Increase :

## \* Impact of Global Warming \*

- \* Reduced yields :
- \* Increase Irrigation :
- \* planting and harvesting changes :
- \* Decreased arability :
- \* more pests :
- \* Risks to fisheries :
- \* Decline in drinking water :
- \* Decline in Irrigation supplies :
- \* Higher shipping costs :
- \* Disruptions to power supply :
- \* Damage to property and Infrastructure :
- \* poor air quality :

## \* Earthquake \*

### \* The earth's Interior \*

The earth has several distinct layers, including the crust, mantle, outer core, and inner core. It is believed that the outer core is liquid and that the other layers are essentially solid.

## \* Earthquake \*

An earthquake is a sudden tremor or movement of earth's crust which lasts for a very short time. It originates naturally at or below the surface of the earth.

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## \* Definition \*

An earthquake is a movement or shaking of the earth's crust. Most earthquakes occur along a fault. A fault is a crack or break in the earth's crust along which there has been some movement.

## \* Measuring earthquakes

\* The Richter scale measures the amount of energy released by the earthquake.

\* It is a logarithmic scale meaning that a 6 is 10 times more powerful than a 5.

Seismic waves

is a wave of energy that is generated by an earthquake or other earth vibration and then travels within the earth or along its surface. Seismic waves are the waves of energy caused by the sudden breaking of rock within the earth or an explosion.

## \* Types of seismic waves:

\* Body waves:

\* P waves (compression waves)

\* S wave (transverse wave)

\* Surface waves:

\* Love wave:

\* Rayleigh wave:

\* Nature of destruction in earthquake / effects of earthquake \*

\* Landslides / rock falls:

\* Soil Liquefaction

\* Fires

\* Release of hazardous materials

\* Tsunami \*

\* Introduction \*

Tsunami is a Japanese word with the English translation "harbor wave". Represented by two characters: the top character "tsu" means harbor, while the bottom character "nami" means "wave". In the past, the scientific community sometime referred to tsunamis as "tidal waves". A tsunami (pronounced TSOO-NAH-MEE) is a wave train, or series of waves, generated in a body of water by an impulsive disturbance that vertically displaces the water column.

earthquakes, landslides, volcanic eruptions, explosions, and even the impact of cosmic bodies, such as meteorites, can generate tsunamis.

### Definition

A tsunami is a giant wave (or series of waves) created by an undersea earthquake, volcanic eruption or landslide.

A tsunami can be generated by any disturbance that displaces a large water mass from its equilibrium position.

### Location of tsunami

Tsunamis have been generated in all of the world's oceans, but they are much more common in the Pacific and Indian Ocean because of the greater number of subduction zones and submarine volcanoes there.

## Volcanoes

### \* Introduction \*

An opening in the earth's crust through which molten lava, ash, and gases are ejected. A mountain formed by the materials ejected from a volcano. A volcano is a vent or chimney that connects molten rock (magma) from within the earth's crust to the earth's surface. The volcano includes the surrounding cone of erupted material. A volcanic event could be

### \* Characteristics of volcanoes.

- \* A volcano is formed by eruptions of lava and ash.
- \* Volcanoes are usually cone shaped mountains or hills.

### Causes of volcanoes

- \* Spreading plate margins
- \* Subducting plate margins
- \* Predicting eruptions
- \* Interesting fact :

## \* Effects of volcanoes \*

### positive effects

- \* Ash add to the soil fertility - farming
- \* New minerals may be discovered
- \* promote tourism
- \* Research and education purposes
- \* geothermal energy - Renewable energy

## \* Negative effects \*

- \* Loss of life
- \* Loss of property (economic loss)
- \* air pollution (ash, smoke, gases, acid rain etc.)
- \* Water pollution
- \* Lahars (mudflows with water)
- \* Earthquakes
- \* Increase in temperature of the area

## \* geographic Distribution of volcanoes \*

\* active volcanoes generally occur close to the major tectonic plate boundaries. many are located along the earth's plate boundaries. active volcanoes are rare in australia because there are no plate boundaries on this continent.

