CHAPTER-3 TSUNAMI

Tsunami :-

i) Tsunami is propularly called as tidal wave or seismic sea wave.

ii) There are the waves which often affect distance shores originate from under sea or coastal seismic activity, landslide and violent volcanic appreciation.

iii) Whatever may be the cause seawater displaced into a violent motion and swells up up ultimately breaking over land even at very long distances with great destructive power.

Origine and Development:

i) After an earthquake or other generation impulse occurs a simple progressive oscilatory waves with a propagated great distances over the ocean surface in over widening surface.

ii) In deep water a Tsunami can travel as fast as 300 km/h.

iii) The wave length are about 100 - 200 km but the wave applitude are very small around 30-60 cm.

iv) When the wave approach the coast friction with the rising sea bottom reduces the velocity of the waves.

v) As the velocity reduce the wave length become shortened and wave amplitude decreases.

vi) Much likely other water wave Tsunami are reflected by the topography of the sea flow near shoe by the configuration of a coastal land.

vii) As a result there effects very widely from place to place.

Causes of T-sunami :-

i) The most destructive T-sunami in recorded history to place on 26th. dec. 2004 after an earthquake of magnitude 9.1 displace the ocean floor off the indonational island of sumatra.

ii) Two hours later wave as high as 9m struck the island cost of india and shrilanka. some 1200km away. More than 2lakhs people were killed most of them on sumatra. but thousands of after in India shrilanka and thiland.

1st - Nov. 1755 → Bay of Lisbon (portugal)
11th - March - 2011 → pacific (Japan)
28th - August - 1883 → Krakatay, Indonesia.
20th - Sptem. 1498 → Enohunada, Japan.
15th - June - 1896 → coast of sanriku, Japan

Types of Tsunami :-

1. Local Tsunami
2. Regional Tsunami
3. Distant Tsunami

Local T-sunami :-

I) A local tsunami is a tsunami that causes damage in relatively close approximately to the tsunami causing event.

II) Specifically the under water event (usually and earthquake) that produces the a local tsunami happens with in 100km.

III) These Tsunami can be devastating because the time between water events the arrival of the Tsunami can be under and hour and some times less than 10 minutes.

IV) This does not provide sufficient time for coprehensive evacuation.

Regional T-sunami :-

I) A Regional t-sunami is one that cause damage from 100km to 1000km from the under ground water event that cause tsunami.

II) Regional Tsunami provide sightly more warning time than local T-sunami.

Distant Tsunami :-

i) A distant Tsunami also called as ocean-wide tsunami originate with an exceptionally powerfull and destractive event more than 1000km away from land fall.

ii) It may first appear like local tsunami but later it travels a longer distance.

Effects of Tsunami :-

1) Devastation of Home :-

i) Tsunami can destroyed entire building and can cause serious property damage.

ii) Many individual who live in an area hit by Tsunami loss everything they own which leaves from homeless.

2. Loss of life.

i) Tsunami danger are difficult to detect far out at sea since waves do not begin to grain size until they reach shallower water.

ii) As a result they strike with very little warning of an resulting in a huge / loss of human life.

3 Damage to economy :-

i) Daily life for individual in a nation affected by Tsunami changes because of the damage the disaster cause to the economy.

ii) Locations that were priviously popular destination for visiter suffers depreesion as a reesult of lost tourism.

iii) Rebuilding after a Tsunami puts significant financiated strain and difficulty on government as well reesulting and in an economy down term that can affect entire regions of the world.

4. Environmental changes:-

i) In addition to the destruction to the human construction tsunami destroye vegitation such as fresh plate plants.

ii) Thus tsunami has a great impact on environment changes.

5. Diseases and contamination:-

i) After a tsunami contaminated water and food supplies posses a risk to people health.

ii) Food water can carry many sources of contamination such as dirt, oil or impurities so that different diseases increase after a tsunami.

Specific Preparedness

Hazard Mapping

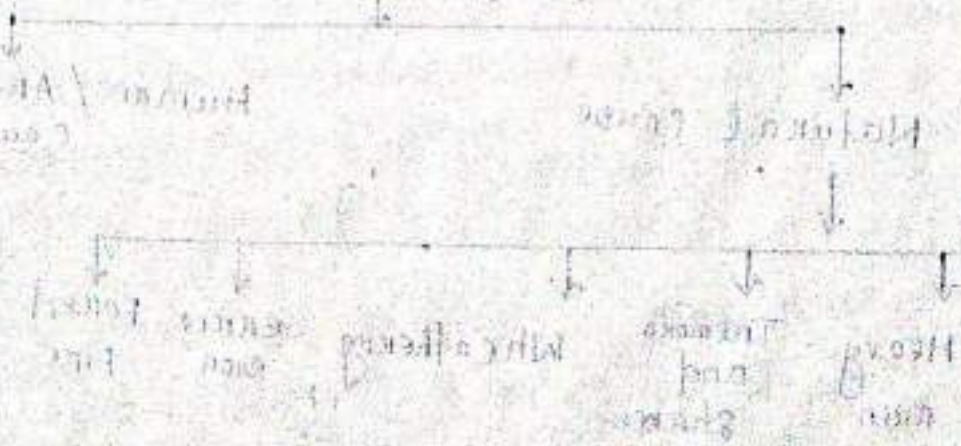
i) Tsunami warning system is used mapping is the first step in the development of effective evacuation plans for community at risk.

ii) Tsunami maps also provide a base for land use planner in communities to reduce risk by locating critical facilities like safe areas which are out of the tsunami flood area.

Tsunami Warning system (TWS)

i) Tsunami warning system is used to detect to advance and issue warning to prevent loss of life and damage of property.

ii) It is made of to equally important component i.e. a network of sensors to detect tsunami and a communication infra-structure to issue timely alarams to permits evacuation from the costal areas.



CHAPTER-4 LANDSLIDE

Landslide :-

i) A Landslide is the rapid mass movement of soil, mud or rocks, downhill due to pull of gravity.

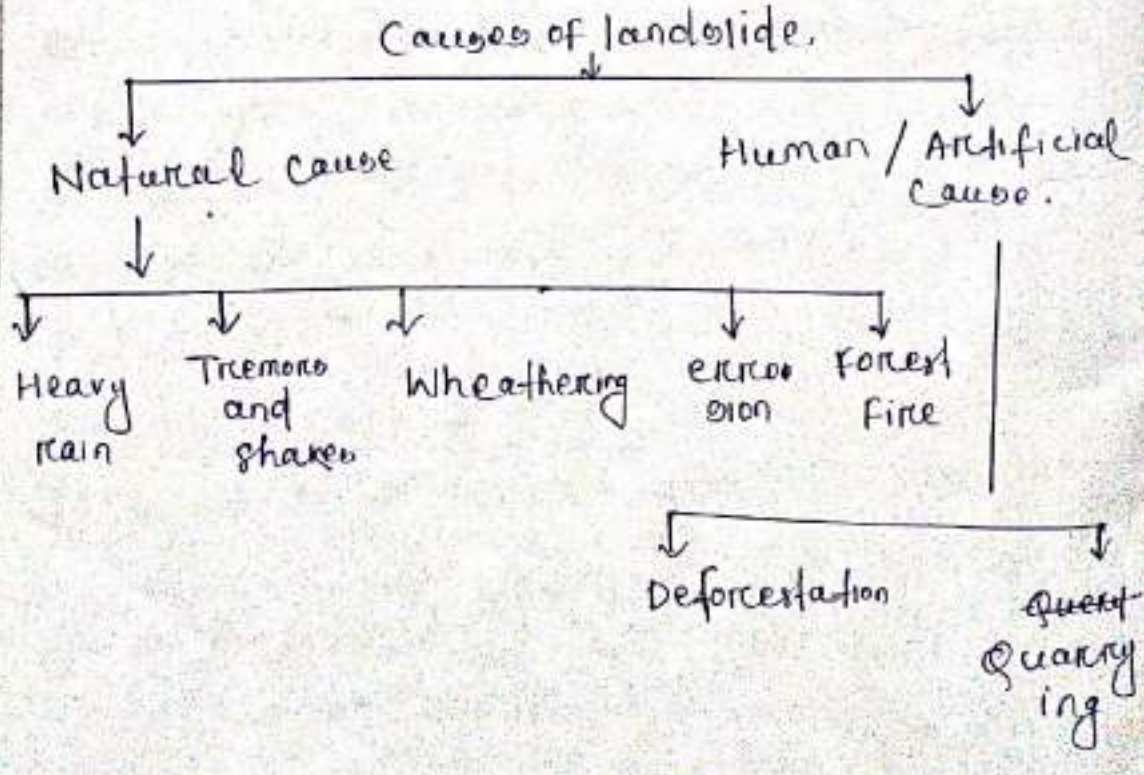
ii) Landslide are very common and occure in a variety of forms.

iii) Landslide may be composed of mud or may contain rocks. most landslide occure gradually but some may be sudden.

iv) A landslide is the movement of rock or earth down a sloped section of land.

v) Landslide are caused by rain, earthquakes, volcanoes or other factors that make the slope unstable.

Causes of landslide.



Natural causes of Landslide

Heavy / prolonged rain

i) Gravity is an invisible force that pulls all objects towards the earth.

ii) The effect of gravity is more prominent on a steep slope or in a hilly area.

iii) When rainfall occurs water enters or infiltrate into the top soil become heavier and therefore suceptable to the effect of gravity.

iv) When large areas of soil become saturated on steep slope, the pull of gravity causes the top layers of the soil to slide down hill therefore resulting a landslide.

2. Tremors and shakes:-

i) An earthquake is the tremors or movement in the earthcrust. There are a deadly and unpredictable type of natural disaster and of are leading reasons for landslides.

ii) Landslides are more likely to takeplace when the earthquake is of higher magnitude.

3) Wheathering:-

i) It is the natural procedure of rock deterioration (reduce strength or quality) that leads to week, landslide susceptive materials.

ii) Wheathering is brought about by the chemical action of water, air, plants and bacteria.

iii) When the rocks are week enough they slip away causing landslide.

4 Erosion :-

Erosion caused by the running water such as streams, rivers and waves without the lateral slope support landslide to occure easily.

5. Forest fire :-

i) Generally forest fire occur due to lighting or due to high atomospheric temparature

ii) It leads to soil erosion. which may further landslide.

Human / Artificial causes:

Deforestation :-

i) Deforestation is the removal or cutting down of trees and other types of vegitation from the land. The roots of the trees also helps to keep the soil in place.

ii) So due to deforestation soil movement takes place more easily and rapidly resulting in landslide.

Quarring :

It refers to the cutting away are excavation of hilly areas so that rocks and minerals can be extracted from the land.

Effect of landslide

1. Damage to economy

i) If the landslide is significant it could drain economy of the reason of country.

ii) After a landslide the area affected normally undergoes. ——

Impact river ecosystem :-

i) The soil and rock sliding down hill can find way into river and block their natural flow.

ii) Many river habitates like fish can be die due to ——— of natural flow of water.

iii) Communities depends on the river water for household activity and irrigation will suffer if the flow of water is Blocked.

Warning system for landslide prediction :-

i) A new type of sound sensor system has been develop to predict the likelyhood of a landslide.

ii) It is the 1st system of its kind in the world that works by measuring and analysis the acoustic behaviour of soil.

iii) The detection system consist of a network of sensor buried across of hill side or embankment that the presence of risk of collapse.

iv) The sensor acting as microphone in the sub-soil record the acoustic activity of the soil across the slope and each transmitter a signal to a central computer for analysis.

v) Noise rate created by interparticle friction are proportional to rates of soil movement.

vi) Once a certain noise rate is recorded the system can send a warning message to the authority responsible for safety in that area. An early warning system allows them to evacuate an area.

Mitigation strategy for landslide.

a) Structural Mitigation

1 Drainage Correction :-

i) The most important mechanism for mass movement is water infiltrating into the land area during heavy rang rain.

ii) Hence the natural way of preventing this situation is by reducing water infiltration and allowing excess water to move down without any disturbances to the soil.

iii) This mitigation process involves the maintenance of natural drainage channel.

2 Construction of Retaining wall.

i) Retaining wall can be build to stop land from slipping.

ii) This wall area can along the road in hill station.

3 vegitation or forestation.

i) Increasing vegitation cover is the cheapest and most effective way of preventing landslide.

ii) These helps to bind the top layer of the soil with layers below while preventing excessive water runoff and soil erosion.

b Non-structural Mitigation.

i) Hazard Mapping.

Hazard mapping will locate area prone to slop failure.

ii) This will ~~prevent~~ permit, to identify avoidance of areas building settlement.

2) Land use practice

Land use practices such as preserving existing natural vegitation in good conditions should be adopted in construction of roads irrigation canels is to be taken to avoid blockage of natural drainage.

3) Awerness Generation

The public should be educated about science that a landslide is eminated so that preliperational safety measure may be taken and also gathering information for the reduction of the impact