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Q.1: What causes of earthquakes?  
If the richter magnitude reaches at 8 (or) above what will be the consequences? Differentiate primary and secondary waves?

Ans: This sudden release of energy causes the seismic waves that make the ground shake. When two bodies of rocks (or) two plates are rubbing against each other, they stick a little. They don't just slide smoothly, the rocks catch on each other. The rocks are still pushing against each other but not moving after a while. The rocks break because because of all the pressure that's built up when the rocks break the earthquake occurs. During the earthquake and afterward, the plates (or) blocks of rock

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Start moving and they continue to move until they get stuck again. The spot underground where the rock breaks is called the focus of earthquake. The place right above the focus is called the epicenter of the earth quake.

When the richter magnitude reaches to 8 (or) above then it will change to destruction of houses, building, roads and bridges etc.

Primary waves:

Wave of energy that travel through the earth of causing particles in rocks to compress and stretch apart in the direction of the wave typically speed are 330 m/s in air 1450 m/s in water about 5000 m/s in

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### Secondary waves:

Wave of energy that travel through the earth by causing particles in rocks to move in right angle to the direction of the wave. Secondary wave travel 1.7 time slower, but however they do more damage because they bigger shake and shake the ground horizontal and vertically.

Q.2 Describe the role of geology in selection of sites for dams and reservoirs?

Answer:

- ① Topographical studies
- ② Reservoir location
- ③ Mineralogy studies
- ④ Structural Geological studies.
- ⑤ Geological factors like conditions, water tightness of foundation, reservation availability of construction material

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Q.3) What are the different types of mass wasting? Also explain the protective measure of land slides?

Ans:- Types of mass wasting:

Fast movements:

- Slumps
- Rock & Debris fall
- Rock & Debris Slides
- Flow

Slow movements:

- Creep
- Solifluction
- permafrost

\* protective measure of land slides:

- Draining water from slopes:

if we want to reduce landsliding then we have to drain water from slopes so that they ~~can~~ will not sliding of soil.

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\* Revegetation with plants that have deep roots:

For reducing of landsliding Revegetation of plant is the best way. When we revegetate the landslide place ~~of~~ that will be not slide because the roots of vegetable of deep roots can compress the soil and then they cannot slides.

(\*) Tracing redistributes mass along a slope and reduces the slope angles.

If we wants to reduce the landsliding it is also a best way to protect the sloped area with some specific smooth surfaces.

(\*) Retaining walls:-

Retaining walls are the way to reduce landsliding.

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because when soil are start sliding then the Retaining wall are stop them and safe the area from land sliding.

(\*) Rock bolts:

Rock bolts is also ~~type~~ used for land sliding and it plays a big roll in <sup>reducing</sup> land sliding.

(Q5) Describe tunnels on the basis of geology? Also determine the geological investigation for tunnels?

Ans:- Tunnels on the basis of geology:

- ① Hard rock tunnels
- ② Soft rock tunnels.

Hard Rock Tunnels:

Tunnelling through hard rock almost always involves blasting.

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Soft rock Tunnels:

Soft ground (earth) workers dig soft-ground tunnels through clay, silt, sand, gravels or mud-

Geological Investigation for tunnels:

(a) Selection of Tunnel Route:

There might be available many alternate alignments that could connect two points through a tunnel. However, the final choice would be greatly dependent on the geological constitution along and around different alternatives. The alignment having least geologically negative factors would be the obvious choice.



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Q. No (4): Different fault, joint and fold?

Ans: Fold:

In response to compression force structures may permanent wave like deformation in layered rock (or) Sediments.

The effects of fold (or) rock are Shattering and joining along the axial planes and stressing of lands in the Synclinal region dams placed on the upstream limbs have the risk of leakage from beneath the dam.

fault:

The structure and bedrock along which rocks on one side have moved relative to the other side, dams found on the fault zones are most

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~~is~~ liable to the Shocks during on earth quake. Generally the small scale on zone can be treated effectly by grouting.

Joint:

Fracture along <sup>which</sup> ~~with~~ no displacement has occurred. A fracture on a rock without noticeable movement. A joint is a break of nature origin in the continuity on either a layer (or) body of rocks. That lack any visible or measurable movement parallel to the surface of fracture.

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(A) What do the normal faults cause to the crust of the earth?

Ans: Due to the inclined nature of the fault land and downward ~~more~~ displacement of a part of the strata, normal fault cause an extension in the crust wherever they occur.

(b) Fold develop in which types of rocks?

Ans: In structural geology, a fold occurs when one (or) strata of originally flat and planar surface such as sedimentary strata.

(c) What is the effect of faulting and out crop?

Ans: In dip faults which occur parallel to the dip of the outcrop, the most prominent effect observed after faulting and erosion up through block is a horizontal shift b/w the two parts of the outcrop.