

IQRA National University

Name : Hafiz Jamal

ID : 16094

Section : A (Civil Engineering)

Q: no 1: What cause earth quacks? If the Richter magnitude reaches at 8 or above what will be the consequences? Differentiate Primary and Secondary waves.

Ans:- Earthquake is caused by sudden slip on a fault. The tectonic plates are always slowly moving, but they get stuck at their edges due to friction. when the stress on the edge overcomes the friction, there is an earthquake that ~~releases~~ releases energy in the waves that travel through the earth's crust cause the shaking that we feel.

If the Richter magnitude reaches at 8 it will destroy many buildings or may destroy all buildings, bridges & Road.

(2)

Primary waves
① The first kind of body waves is the P waves or Primary.

② Primary waves travel through the earth interior and can pass through both solid and molten rocks.

③ The typical speeds are 330 m/s in air, 1450 m/s in water.

Secondary waves

① The second type of body wave is the S wave or Secondary.

② Secondary is the second wave you feel in the earthquake.

③ S-waves lag behind P-waves as they travel 1.7 times slower.

Q:3 what are the different types of mass wasting? Also explain the protective measures of landslides?

Ans: Following are different types of mass wasting:

① Rock and debris slides:-

It happens when rocks or debris slides down a preexisting surface.

② Rock and debris fall:-

It happens when a piece of rock fall down the slope. Debris falls are similar, except they involve a mixture of soil.

③ Slumps:-

A type of solids where in downward rotation of rock -

4: Flow:

Flow of soil and regolith containing a large amount of water.

5: creep:

A gradual downhill movement of soil and regolith.

6: Solifluction:

Is flow of saturated soil downslope at a rate of a few centimeter per day or / year.

7: Permafrost:

slow landslide due to slowly melting of permanently frozen ground.

⇒ Following are the protective measures for landslides:-

- ① Draining water from slopes.
- ② Revegetation with plants that have deep roots.
- ③ Terracing redistributes mass along a slope and reducing the slope angle.
- ④ Rock bolts can be used to stabilize coherent masses.
- ⑤ Retaining wall can catch debris or stabilize regolith.



(4)
Q4: Differentiate faults, joint & fold?

Ans: Faults

① Faults is fracturing and displacement of rock strata.

Joint

② Joint features along which no displacement has occurred.

Fold

Fold is response to compression force the strata may bend and buckle.

ii) what do the normal faults to the earth crust?
Normal faults create space. Two blocks of crust pull apart, stretching the crust into a valley.

iii) what is the effect of faulting on outcrop?
The most prominent effect observed after faulting and erosion of the upthrust block is horizontal shift between the two parts of the outcrop.

iv) Folds develop in which type of rocks?
Folds occurs when one or a stack of originally flat and planar surfaces, such as sedimentary.

v)

x ————— x ————— x

Qs: Describe tunneling on the basis of geology; also determine geological investigation for tunnels.

Ans: Tunneling on the basis of geology:

- 1: Hard rock tunnels.
- 2: Soft rock tunnels.

Soft ground workers dig soft-ground tunnels through clay, silt, sand, gravel or mud.

Hard rock tunneling through hard rock almost always involves blasting.

Geological investigation for tunnels:

a) Selection of tunnel Route:

There might be many alignments that connect two points. But the final choice would be greatly depend on geological constitution.

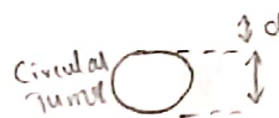
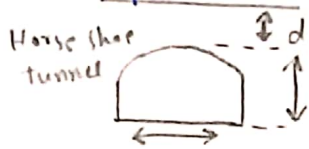
b) Selection of excavation Method:

Tunnel is a complicated process in any situation and involves huge cost. The excavation method are linked with the type of rocks to be excavated.

This is one of the most important aim and object of geological investigations

c) Selection of design for tunnel:

The ultimate dimension and design parameters of a proposed tunnel are controlled, besides other factors, by geological factor constitution of the area along the alignment. Whether the tunnel is to be circular, D-shaped, horse-shoe shaped or rectangular.



d) Assessment of cost and stability:

These aspects of tunneling projects are also closely interlinked with the first three considerations. Since geological investigation will determine the line for actual excavation and its dimension.

- x. — x. — x.

Q02: Describe role of geology in site selection for dam and reservoirs?

Ans:-

Role of geology in dam and reservoirs:-
 most suitable place must be chosen for construction. Ideally it must be a narrow gorge or a small valley with enough catchment area available behind that calculated amount of water can be easily stored in the reservoir created upstream.

All dam should have an adequate spillway for passing flood flows. If a river gorge is narrow then they must not be sufficient spillway width available and a suitable location on the periphery of the reservoir has to be found to locate in a spillway.

Possibility of river diversions during constructions:

The way can be diverted at a particular site for making way of construction of a dam may be effected at the design of a dam and also the construction schedule.

• Sedimentation possibilities;

The site must be strong, impermeable and storage stable slope. Sound as possible and stable. The strong rocks makes the job for designer easy. Impermeable sites endure better inventories. The site must be with respect to seismic shocks failure around dam.

constructionally;

The site should be far from the materials which will be used for construction. Their non availability will make the cost of project high.

Human welfare;

A site selection should be done in such away that it must cause minimum damage to public in the distruction or failure.

