

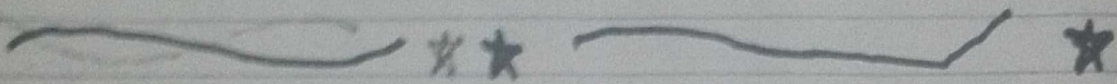
(11)

Paper = Earthquake Engineering

ID = 17929

Program = B. Tech (Civil)

Exam = Mid Term



Ans:-

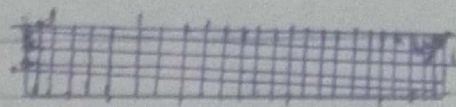
(a) Seismic waves:-

Seismic waves are energy that travel through the earth layers and are result of earthquake, volcanic eruptions, magma movement and large man-made explosions that give out low frequency acoustic energy.

Types of Seismic Waves:- There are

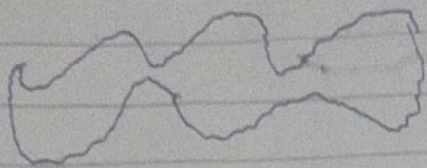
two types of seismic waves.

P-waves:- They propagate within a body ~~dist~~ of rock. The faster of these body waves is called the primary or P-wave. It motion is the same as that of a sound wave.



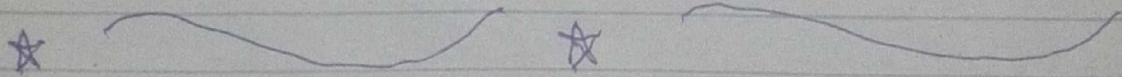
P wave

S-waves:- The slower wave through the body of rock is called S-waves. It shears the rock sideways at right angles, direction of travel.



S-waves

P-waves and S-waves are body waves. The P-waves travel 60% faster than S-waves. P-waves are a compression wave that apply a force.



(b) Seismic Risk:-

Seismic risk refers to the risk of damage from earthquake to a building system.

Seismic risk has been defined for most management purposes as the potential economic loss called seismic

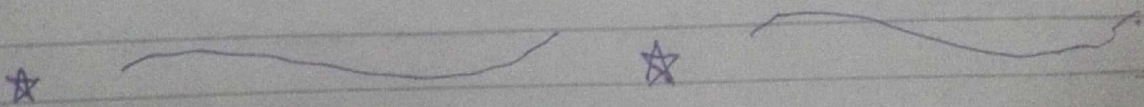
risk.

Seismic Risk is Recent earthquake
 in Haiti. Large earthquake occur
 less frequently increase day by day
 there are ten times as many magnitude
 6 or large earthquakes in a given
 time period than magnitude 7.

Seismic Risk minimized:

1) Secure you belonging. The largest
 financial loss you incur during an earthquake
 will be yours.

2) Put latches on cabinet doors
 and fail cabinets.



Ans:-

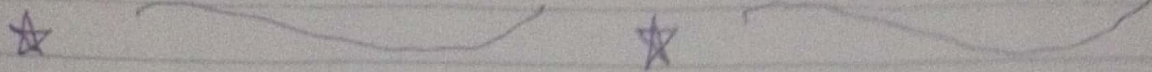
(a) Soft Story Effect:-

(5)

In Shaking a building as earth quake ground motion will search for every structures weakness. These weaknesses are usually created by sharp changes in stiffness, strength or ductility and effects of these weakness are accentuated by poor distribution of reactive masses.

Safety Storage Effect minimized

The ability to do this depend on the size of the facades a long steel frame can never approach a long concrete wall in stiffness. This is however a good solution for wood frame.



(b) mechanisms to Dissipate energy:-

which dissipate energy imparted to the structure by earthquake.

1:- Base Isolation :- Base isolation as known as seismic base isolation is one the most popular means of protecting a structure against earthquake forces.

Principle :- The main principle of base isolation is to fix and isolate the structure from the ground movement.

Types :-

(1) :- Laminated Rubber :-

(7)

The bearing is very stiff and strong in the vertical but flexible in the horizontal directions. Kinetic energy by converting that energy into heat.

Spherical Isolation:- Spherical Sliding Isolation Systems are another type of base Isolation. The building is supported by bearing pads that have curved surface.

(2) Seismic Dampers:- Another method for controlling seismic damage in buildings is the installation of seismic dampers.

Types:-

1. Die cast:- Energy is absorbed by silicone-based fluid passing through piston-cylinder attachment.

2. Friction:- Energy absorbed by surface with friction and the rubbing.

3. Yielding:- Energy absorbed by metallic components that yield.



Ans. 2. EFFECT OF Chamfered walls:-

Stress distribution resistance is obtained by concentrating the load on walls at the corners of the loading. The center of gravity is at the center of the plate and

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longitudinal walls being placed as distant as possible from the center produce the greatest torsional resistance. Although the arrangement of walls is symmetrical the longitudinal walls have been moved close to the center of rigidity and the sections produced have a greatly reduced influence on the torsional resistance of the total arrangement.

