

Student ID: 13639

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Q1

GEOLOGY IN CIVIL ENGINEERING

Of which it is made, the Structure of those materials and the Effects of the Natural Forces acting upon them and is Important to civil Engineering B/L all work performed by civil Engineering Involves Earth and its Features. Fundamental understanding of geology is so Important that it is a requirement in University - Level civil Engineering Programs.

ROLE 07 Engineering Geology

- => Systematic Knowledge regarding site.
- =) The Knowledge of the geological work of natural agents such as water, wind etc.
- => Feature of area and possible design of Foundation.

- =) For a civil Engineering Project to be successful,
 the engineers must understand the Land upon
 Which the Project rests. Geologists study the Land
 to determine whether it is suit Stable Enough
 to support the proposed Project.
- =) They also study water patterns to determine if a particular site is prone to flooding.
- =) Some civil engineers use Geologists to Examine rocks for Important metals, oil, natural gas and ground water.
 - "Engineer in the sysematic explosation of a site."
 - =) The Sysematic Euplosation and Investigation of a new Site may envole five Stages of Procedure.
 - => These Stages are =>

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- Preliminary Investigation using Published Information and other Existing data
- 2) A detailed geological survey of the site,
 Possibly with a Photogeology Study.
- 3 Applied geophsical surveys to provide Information about the Subsurface geology.
- Boring drilling and excavation to provide conf Confirmation of the previous results and Quantitative detail, at critical points on the site.
- (5) Testing of Soil and Rocks to assess their Suitability, particularly their Mechanical Properties (Soil mechanics and rock mechanics) either in Situ or From Sumples.
- => In a Major Engineering Project, Each of these Stages might be Carried out and

reposted on by a consultant specialising in geology, geophsics or engineering (with a detailed knowledge of soil or rocks mechanics)

=) However, even where Services of Specialist

Consultant are Employed, an Engineer will

have Oveall Supervision and responsibility

for the Project.

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Volcanic =

- => Volcanoes also can occur as a result
 of Plate movement. A volcano is vent in
 the Surface of the Earth through which magma
 (Molten rock Called "Lava" When it reaches the
 Surface) and associated gases. Erupt. volcano
 is also the trem used to describe the structure
 produced by material ejected through the
 vent. Materials ejected from the vent Could
 Include:-
 - Cindes Dask colosed Pieces of rock thrown from a volcano
 - Pumice bubbly, Frothy rock that is hardened
 - Ash Fine grained Particles Less than 2mm across.



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Volcanoes Changes

=) Volcanoes can cause changes to the Surface of the Earth in many ways of Course lava flows and Ejection of Cinder, Pumice, and Ash build up to create cones of Volcanoes and Volcanic mountains. In addition, volcanic activity, Such as basalt floods. Lay thick, dense layers of rock on the Landscape Volcanoes also trigger mudflows, avalanches and cracks or fissures in the Earth's surface

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- => The Chemical Composition of a rock
 is generally Expressed in terms of different
 oxides like SiOz, AlzOz, FezOz, Feo, Mgo
 and CaO.
- =) Among different oxides but Silicon dioxide is always predominant in Igneous rocks.
- => Since Silica percent is also reponsible for the formation of different Minerals and their association. It serves as a suitable basis for the Classification of Igneous rock.
- =) When Silica Content Exceeds 66% the igneous Yocks are Called acidic, when it is 52-66% the Yock are could Intermediate.

The bosic rock have 45-52%.

- =) Tectosilicutes also known as Framework
 Silicules, have the highest degree of Polymeriz
 ation.
- =) Its ratio becomes 1:2
- and the Zeolites.
- =) Framework silicules tend to be particularly chemically Stable as a result of Strong Covalent bonds.
- =) Forming 12% of the Earth's crust , quartz (SiOz) is the most abundant mineral species.
- 1) Quart = its high chemical and phsical resistivity.
- 2 Feldspax = most abundant group in the Earth's coust at about 52%.
- 3) Zeolites = Have distinctive Caystal habits occurring in needls, plates, or blockly Masses.

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Q3

Why Does weathering occur?

WEATHERING

Tock near the Surface of the Earth, Plant and Animal Life. Atmosphere and water are the major causes of Weathering.

- =) Weathering breaks down and loose's the Surface minerals of rock so they can be transported away by agents of Exosion Such as water, wind and Ice.
- =) Weathering is happens through processes or Sources in the Environment, Including events like the roots of plants.

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Weathering have 3 types

- 1) Physical weathering =
- =) In which rocks are broken down through an Enternal Force.
- =) Also Known as Mechanical Weathering.
- => 9t's caused by the change Temperature.
- =) Due to Empansion and Contraction rocks breakup.

Physical weathering happen due to the Process of.

- =) changing of temperature.
- => Freezing action of water.
- => Roots growing Plants which disintegrate rocks.

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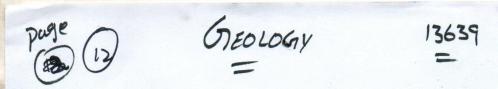
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2 Chemical weathering

- =) Which means rocks are broken down through a Chemical reaction and Change.
- =) Decomposition and disintegration of rocks due to chemical reaction.
- =) water causing a change in the chemical composition of socks.

Types of Chemical weathering

- 1 Solution
- (2) oxidation
- 3) carponation
- 1 Hydration



- 3) Biological weathering
 - => The action of Plants and animals leads
 to breaking of Bocks
 - =) Roots causing disintegration of socks.
 - =) The roots of the trees pened Penetrate into the cracks of the rocks.

Types of Biological Weathering

- 1 Burrowing Animals
- 2 Quarrying
- 3 By Human Excreta.