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Section "A"

Subject Geotechnical &  
Foundation Engineering

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## Quiz:

Write a note on different Software which are used in Geotechnical Engineering.

Ans:

There are different Softwares which can be used in Geotechnical Engineering, some of them are the followings.

### 1) SAP Software:

This Software is mainly used for effective business operation. It is also used for Supply chain management and product life cycle management.

### 2) Z-soils

It is a window based tool, offering a verified approach to numerical simulation of soil and rock mechanics above and underground structures, excavations and underground flow.

3) Slope Stability Software:

This program is used to perform Slope Stability analysis.

The slip surface is considered as circular in this software.

4) All pile:

This is a window based analysis program/software that handles virtually all types of piles including steel pipes, H piles, P.C.C etc.

5) XSTABL:

This program provides an integrated environment for performing slope stability.

6) Clara-W:

This program is for geotechnical slope stability analysis in two or more dimensions.

7) Abacus Software:

It is an effective mechanical device used for counting. A standard abacus is used for addition, subtraction, multiplication and division.

8) 3DEED:

This Software is used for automatic model generation. It is virtual reality Software for deep excavations.

9) Apile:-

Apile is used to compute the axial capacity, as a function of depth of a driven path pile in clay, sand or mixed soil profiles.

10) Adonis:

The goal of adonis is to improve the modeling and computational simulation in geotechnical engineering. It is an easy to use and powerful geotechnical tool.

## Assignment

### Geotechnical Report

#### Question:

Write a Geotechnical report on any Civil Engineering Project near to your home town.

#### Geotechnical Report on Tanda Dam:

##### Introduction:

Tanda Dam or Tanda Lake is a small dam and also a lake view park located in Kohat District of Khyber Pakhtunkhwa the province of Pakistan. The dam supplies water for irrigation to Jurma, Shahpur and many villages by means of canals from Tanda Lake.

It became operational on 17 July 1967, though it was inaugurated by President Ayub Khan in 1962. Covering an area of 405 hectares, the initial capacity of Tanda Dam was to store 65,000 acre feet of water and provide a perennial supply of 260 cusecs of water for irrigation.

## Tests Performed on Dam site for

### Soil Investigation:

Following tests shows their result that are performed on Dam site for the Investigation of soil of that area that helps in preparing a Geotechnical Report.

- 1) Sieve Analysis of soil
- 2) Determination of Moisture content of soil
- 3) Analysis Specific Gravity of soil.
- 4) Determination of Free Swell Index of soil
- 5) Determination of Liquid Limit of soil
- 6) California Bearing Ratio Test (CBR)
- 7) Determination The Plastic Limit of soil
- 8) Unconfined Compression strength

Test Results

Soil Type	Silty clay
AASHTO Classification	A-7-5
% Passing Sieve No. 200	25.40
Liquid Limit (L.L)%	26.5
Plastic Limit (P.L)%	31.0
Plasticity Index (P.I)%	5.5
Optimum Moisture content	10.7
Maximum Dry Density (MDD) ( $\text{kg}/\text{m}^3$ )	1.94
California Bearing Ratio (CBR)%	10.42
Unconfined Compression Strength ( $\text{kN}/\text{m}^2$ )	209.18
Natural Moisture content	13.4
Specific Gravity	2.7