Assignment 8: Applications of Python in the field of Water Supply Engineering

DATE:

1. **A 200 ml sample of water having initial pH of 10 requires 30 ml of 0.02N H,SO, to titrate a sample to pH of 4.5 and 11 ml of 0.02N H,SO, to titrate the sample to pH of 8.3**
   1. **Calculate the total alkalinity of water**
   2. **Find the concentrations of alkaline species in mg/l as CaCO3**

Q1. INPUT

# To determine alkalinity of given sample

H2S04\_reg = float(input("Enter the volume of H2S04 required in ml:")) Sample = float(input("Enter the value of sample in litres:"))

Alkalinity\_Removed = H2S04\_reg

print("Alkalinity Removed: ", Alkalinity\_Removed, "'mg")

Alk\_mgperlit = Alkalinity\_Removed / Sample print("Total Alkalinity:", Alk\_mgperlit, "mg/lit")

OH= float (input("Enter the value of OH-Alkalinity present : ")) #Alkalinity removed till pH of 8.3

H2S04\_req = float (input("Enter the volume of H2S04 required in ml :"))

Alkalinity\_Removed = H2S04\_req

print("Alkalinity Removed: ",Alkalinity\_Removed, "mg")

CO3\_Combined = Alkalinity\_Removed/Sample

print ("Carbonate Alkalinity upto pH8.3:",CO3\_Combined, "mgperlit" )

CO3 = CO3\_Combined - OH print("Carbonate Alkalinity:", CO3,"'mg/lit")

HCO3 = Alk\_mgperlit - 2\*CO3 - OH print("Bicarbonate Alkalinity:", HCO3, "mg/it")

OUTPUT

Enter the volume of H2S04 required in ml:30 Enter the value of sample in litres:0.2

Alkalinity Removed: 30.0 'mg Total Alkalinity: 150.0 mg/lit

Enter the value of OH-Alkalinity present : 5

Enter the volume of H2S04 required in ml :11 Alkalinity Removed: 11.0 mg

Carbonate Alkalinity upto pH8.3: 55.0 mgperlit Carbonate Alkalinity: 50.0 'mg/lit

Bicarbonate Alkalinity: 45.0 mg/it