Assignment 9: Applications of Python in the field of Waste Water Engineering

# DATE:

1. **Determine the BOD at 7" day 25'C if BOD at 3rd day 20°C is found out to be 50 mg/1. Take Decay coefficient as 0.23.**
2. **The sludge from the aeration tank of ASP has solid content by weight of 2% of sludge is put in a sludge thickener where sludge volume is reduced to half. Assume that amount of solids in supernatant from thickener are negligible. The specific gravity of sludge solids is 2.2 and**

density of water is 1000 kg/m'. What is density of sludge removed from aeration. (Hint: Assume initial mass of sludge is 100 kg).

# Q1.

**INPUT**

# To find BOD at 7th day 25C

# To find Decay Coefficient at 25C K= float(input("Decay Coefficient:"))

T= float(input("Temperature of 3rd day BOD:")) TI=float(input("Temperature of 7th day BOD:")) K2 = (K\*(1.047\*\*(TI-T)))

print ("The value ofK2 is:", K2) # To find Ultimate BOD e=2.718

print ("The value ofe is:", e)

Bl = float(input("BOD at 3rd day 20c:"))

t = float(input("time in days for finding B1:")) E = (1 - 2.71828 \*\* (-0.23 \* t))

print ("The value of E is:", E)

# BI = 10 \* E

print ("The value of 10 is:", 10) # To find BOD at 7th day 25C

B2 = float(input("BoD at 7rd day 25c:"))

t1 =float(input("time in days for findinfB2:")) El =(1-e\*\*(-0.289\*t1))

print ("The value ofEl is:", El) B2 = (10\*El)

print ("The value of B2 is:", B2)

# OUTPUT

Decay Coefficient:0.23 Temperature of 3rd day BOD:20 Temperature of 7th day BOD:25

The value ofK2 is: 0.2893751572825015 The value ofe is: 2.718

BOD at 3rd day 20c:50

time in days for finding B1:3

The value of E is: 0.4984236981372012 The value of 10 is: 10

BoD at 7rd day 25c:50

time in days for findinfB2:7

The value ofEl is: 0.8677141604830975 The value of B2 is: 8.677141604830975

# Q2. INPUT

#Determination if density of sludge removed from aeration tank M= float(input("Enter the value of initial mass :"))

S=float(input("Enter the value ofsolid containing sludge in percentage:")) Gs= float(input("Enterthe value of Specific gravity ofsludge solid:"))

Rho\_W= float(input("Enter the value of density of water:"))

Ws= ((S/M)\*100)

m=M- Ws

print("the value ofmass of water:",m)

print("The value of Solid Content in sludge :",Ws)

Vw =m/Rho\_W

print ("The Value of Volume:",Vw)

Rho\_S =Gs \* Rho\_W

print("The value ofDensity of solid content in sludge:", Rho\_S) Vs=(Ws/(Gs\*Rho\_S ))

print("The value of volume of solid content in sludge:", Vs)

Vt= Vw + Vs

print("The value of total volume of solid content in sludge:", Vt)

Rho\_SL= M/ Vt

print("The value of Density of sludge removed from aeration:", Rho\_SL) OUTPUT

Enter the value of initial mass :100

Enter the value ofsolid containing sludge in percentage:2 Enterthe value of Specific gravity ofsludge solid:2.2

Enter the value of density of water:1000 the value ofmass of water: 98.0

The value of Solid Content in sludge : 2.0 The Value of Volume: 0.098

The value ofDensity of solid content in sludge: 2200.0

The value of volume of solid content in sludge: 0.00041322314049586776 The value of total volume of solid content in sludge: 0.09841322314049587 The value of Density of sludge removed from aeration: 1016.1236143768895