

Assignment 9

Q1

To find BOD at 7th day 25°C

K1 = float(input("Decay Coefficient at 20°C:"))

T = float(input("Temperature of 3rd day BOD:"))

T1 = float(input("Temperature of 7th day BOD:"))

K2 = (K1 * (1.047) ** (T1 - T))

print("The value of K2 is:", K2)

Ultimate BOD

e = 2.718

B1 = float(input("BOD at 3rd day 20°C:"))

t = float(input("Time in days for finding B1:"))

E = (1 - e ** (-0.23 * t))

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

L0 = B1 / E

print("The value of Ultimate BOD (L0) is:", L0)

t1 = float(input("Time in days for finding B2:"))

E1 = (1 - e ** (-K2 * t1))

print("The value of E1 is:", E1)

B2 = L0 * E1

print("The value of BOD at 7th day 25°C is:", B2)

output-

Decay Coefficient at 20°C:0.23

Temperature of 3rd day BOD:20

Temperature of 7th day BOD:25

The value of K2 is: 0.2893751572825015

BOD at 3rd day 20°C:50

Time in days for finding B1:3

The value of E is: 0.49838804582143437

The value of Ultimate BOD (L0) is: 100.32343355585682

Time in days for finding B2:7

The value of E1 is: 0.8680610647811111

The value of BOD at 7th day 25°C is: 87.08686655499413

Q2

Determination of density of sludge removed from aeration tank

M = float(input("Enter the value of initial mass:"))

S = float(input("Enter the value of solid content in sludge (%):"))

Gs = float(input("Enter the value of Specific gravity of sludge solid:"))

Rho_W = float(input("Enter the value of density of water:"))

Ws = (S / 100) * M

m = M - Ws

print("The value of mass of water:", m)

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

Vw = m / Rho_W

print("The value of Volume of water:", Vw)

Rho_S = Gs * Rho_W

print("The value of Density of solid content in sludge:", Rho_S)

Vs = Ws / Rho_S

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

Vt = Vw + Vs

print("The value of total volume of 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 of solid content in sludge (%):2

Enter the value of Specific gravity of sludge solid:2.2

Enter the value of density of water:1000

The value of mass of water: 98.0

The value of Solid Content in sludge: 2.0

The value of Volume of water: 0.098

The value of Density of solid content in sludge: 2200.0

The value of volume of solid content in sludge: 0.0009090909090909091

The value of total volume of sludge: 0.09890909090909092

The value of Density of sludge removed from aeration: 1011.0294117647057