```
import math

# To find Decay Coefficient at 25C
K1 = float(input("Decay Coefficient: "))
T1 = float(input("Temperature of 3rd day BOD: "))
T2 = float(input("Temperature of 7th day BOD: "))

# Calculate K2
K2 = K1 * (1.047 ** (T2 - T1))
print("The value of K2 is:", K2)

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

# Input for BOD at 3rd day
B1 = float(input("BOD at 3rd day 20C: ")) t =
float(input("Time in days for finding B1: "))

# Calculate E
E = (1 - math.exp(-0.23 * t))  # Assuming decay coefficient of 0.23
print("The value of E is:", E)

# Calculate BOD at 0 days B0 = B1 / E
print("The value of B0 is:", B0, "mg/lit")

# Input for BOD at 7th day t1 = float(input("Time
in days for finding B2: "))

# Calculate E1
E1 = (1 - math.exp(-0.289 * t1))  # Assuming decay coefficient of 0.289
print("The value of E1 is:", E1)

# Calculate B2 using B0 and E1
B2_calculated = B0 * E1
print("The value of B2 is:", B2_calculated, "mg/lit")
```

```
Decay Coefficient: 23
     Temperature of 3rd day BOD: 20
     Temperature of 7th day BOD: 25
     The value of K2 is: 28.93751572825015
     The value of e is: 2.718
     BOD at 3rd day 20C: 50
     Time in days for finding B1: 3
     The value of E is: 0.49842393093394455
     The value of B0 is: 100.31621055255157 mg/lit
     Time in days for finding B2: 7
     The value of E1 is: 0.8677419049620279
     The value of B2 is: 87.04857964344298 mg/lit
```

```
# 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 containing sludge in percentage: "))
Gs = float(input("Enter the value of Specific gravity of sludge solid: "))
Rho_W = float(input("Enter the value of density of water: "))

# Calculate mass of water removed Ws = (S / M) * 100 m = M - Ws

# Display mass of water and solid content in sludge print("The value of mass of
water:", m) print("The value of Solid Content in sludge:", Ws)

# Calculate volume of water removed Vw = m / Rho_W print("The Value of Volume:",
Vw)

# Calculate density of solid content in sludge Rho_S = Gs * Rho_W print("The
value of Density of solid content in sludge:", Rho_S)

# Calculate volume of solid content in sludge Vs = (Ws /(Gs* Rho_S))2 print("The
value of volume of solid content in sludge:", Vs)

# Calculate total volume of solid content in sludge Vt = Vw + Vs print("The value
of total volume of solid content in sludge:", Vt)

# Calculate density of sludge removed from aeration tank Rho_SL = M / Vt
print("The value of Density of sludge removed from aeration:", Rho_SL)
```

```
Enter the value of initial mass: 100
Enter the value of solid containing sludge in percentage: 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: 0.098
The value of Density 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
```