

ASSIGNMENT NO 6 APPLICATYION OF PYTHON IN THE FIELD OF SOIL MECHANICS

Q-1

```
# Stress When depth is constant
Q = float(input("Enter the value of Load in kN:"))
N= int(input("Number of data values of radial distance:"))
pi = 3.14159265359
Z = float(input("Depth:"))
r = []
for i in range (1, N+1):
    print("Enter radial distance in m".format (i))
    Value_r = float(input())
    r.append(Value_r)
    Stress = ((3*Q)/(2*pi*Z**2))*(((1/(1+((Value_r/Z)**2))))**2.5)
    print("Stress:",Stress,"kN/m^2")
```

```
Enter the value of Load in kN:2500
Number of data values of radial distance:5
Depth:6
Enter radial distance in m
1
Stress: 30.962130445358056 kN/m^2
Enter radial distance in m
2
Stress: 25.479163627894877 kN/m^2
Enter radial distance in m
3
Stress: 18.98033449112347 kN/m^2
Enter radial distance in m
4
Stress: 13.22290223969301 kN/m^2
Enter radial distance in m
5
Stress: 8.871775810212231 kN/m^2
```

Q-2

```
# Stress when Radius is Constant
Q = float(input("Enter the value of Load in kN:"))
M= int(input ("Number of data values of depth:"))
pi = 3.14159265359
r = float(input("Radial Distance:"))
Z = []
for j in range (1, M+1):
    print ("Enter depth in z".format (i))
    Value_Z = float(input())
    Z.append(Value_Z)
    Stress = ((3*Q)/(2*pi*Value_Z* Value_Z))*(((1/(1+((r/Value_Z)**2))))**2.5)
    print("Stress:", Stress,"kN/m^2")
```

```
Enter the value of Load in kN:2500
Number of data values of depth:6
Radial Distance:5
Enter depth in z
1
Stress: 0.34629643854273023 kN/m^2
Enter depth in z
2
Stress: 2.1085135063018074 kN/m^2
Enter depth in z
3
Stress: 4.781320614736756 kN/m^2
Enter depth in z
4
Stress: 7.0974399578803125 kN/m^2
Enter depth in z
5
Stress: 8.440465463972316 kN/m^2
Enter depth in z
6
Stress: 8.871775810212231 kN/m^2
```

Q-3

```
# Calculating the stress by Boussineq's Theory
Q= int(input("Enter the value of given load:"))
z= int(input("Enter the distance of vertical stress:"))
r= int(input("Enter the distance of horizontal stress:"))
stress = ((3*Q*(1/(1+(r/z)**2))**2.5))/(2*3.14*(z**2))
```

```
print("The value of stress is", stress)
```



```
Enter the value of given load:2500
Enter the distance of vertical stress:6
Enter the distance of horizontal stress:5
The value of stress is 8.876275703713446
```

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