Q1

```python
#In Calculate the length of transition curve
v= int(input('Enter the value of design speed:65 '))
R= int(input('Enter the value of Radius of curvature:220 '))
N= int(input('Enter the value of slope:150 '))
w= float(input('Enter the value of width of road including extra widening:7.5 '))
emax=float(input(' enter the value for plain terain:0.07 '))
e=(v**2/(225*R))
print('The value of Super elevation :',e) if e<=emax else print(emax)
Ls=(e*N*w/2)
print('The length of transition curve :', Ls)
```

```
Enter the value of design speed:65 65
Enter the value of Radius of curvature:220 220
Enter the value of slope:150 150
Enter the value of width of road including extra widening:7.5 7.5
enter the value for plain terain:0.07 0.07
0.07
The length of transition curve: 39.375000000000001
```

Q2

```python
B = int(input(" Constant B: "))
C = int (input (" Constant C: "))
import numpy as geek
A = int(input ("Total Data Values for EWL Constant: "))
B = int(input ("Total Data Values for AADT: "))
EWL_Constant = []
AADT = []
for i in range (1, A+1):
    print ("Enter EWL Constant:") # Indent this line
    A = float (input()) # Indent this line
    EWL_Constant .append(A) # Indent this line
for j in range (1, B+1): # Fix typo here: i -> j
    print ("Enter AADT: ") # Indent this line
    B = float (input ()) # Indent this line
    AADT. append (B) # Indent this line
product = geek. dot (EWL_Constant, AADT)
# print(" Dot Product # Remove or comment out this line
Total_EWL = product # Fix variable name here: Total EWL -> Total_EWL
print (" Total EWL :", Total_EWL)
print ("EWL after 60 years :", Total_EWL*1.6)
TI = 1.35*((1.6* Total_EWL) + ((product) /2)) **0.11)
print ("Traffic Index : ", TI)
Output = 0.166*TI* (99-B)/(C**0.2) # Assign the result to a variable named Output
print ("Pavement Thickness : ", Output, "cm") # Print the calculated output
```

```
Constant B: 48
Constant C: 16
Total Data Values for EWL Constant: 4
Total Data Values for AADT: 4
Enter EWL Constant:
340
Enter EWL Constant:
1070
Enter EWL Constant:
2460
Enter EWL Constant:
4620
Enter AADT:
1750
Enter AADT:
470
Enter AADT:
320
Enter AADT:
120
Total EWL : 3082000.0
EWL after 60 years : 4931200.0
Traffic Index : 7.577910657490486
Pavement Thickness: 36.84713693326986 cm
```

Q3

```
P = float(input(" Load in kg: ")) # Assign the input value to P
p = float(input(" Tyre pressure kg/cm^2: ")) # Assign the input value to p
n = int (input ("Total Number of layers in a given Pavement : "))
pi = 3.14159

CBR = []

for i in range (1, n+1):
    print ("California Bearing Ratio of Material in %")
    CBR_value = float (input ))
    T = ((1.75*P) / (CBR_value) (P/(p*pi))) ** 0.5 # Now P and p have valid float values
    print ("Thickness Above this layer: ", T, "cm")
print ("Given that bitumen layer of 4 cm ")
```

```
Load in kg: 4085
Tyre pressure kg/cm^2: 7
Total Number of layers in a given Pavement : 3
California Bearing Ratio of Material in %
6
Thickness Above this layer:  31.712749015496838 cm
California Bearing Ratio of Material in %
12
Thickness Above this layer:  20.247765385731117 cm
California Bearing Ratio of Material in %
4.38
Thickness Above this layer:  38.031276487721645 cm
Given that bitumen layer of 4 cm
```