Q1

```
#To 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'"))
ecal= (V*V/(225*R))
print("The value of Super elevation:",ecal) if ecal<emax else print(emax)
Ls=(emax*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: 39.37500000000001
```

Q2

```
R = int(input(" Constant R: "))
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-R)/(C**0.2) # Assign the result to a variable named Output
print ("Pavement Thickness: ", Output, "cm") # Print the calculated output
```

```
Constant R: 48
Constant C: 16
Total Data Values for EWL Constant: 4
Total Data Values for AADT: 4
Enter EWL Constant:
330
Enter EWL Constant:
1070
Enter EWL Constant:
2460
Enter EWL Constant:
4620
Enter AADT:
3750
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:  36.847136933326986 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
M = int (input ("Total Number of layers in a given Pavement : "))
pi = 3.14159

CBR = []

for i in range (1, M+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:  31.712799015896838 cm
California Bearing Ratio of Material in %
12
Thickness Above this layer:  20.247776538573337 cm
California Bearing Ratio of Material in %
4.38
Thickness Above this layer:  38.031276487723645 cm
Given that bitumen layer of 4 cm
```