

PROGRAM:

clc;

clear all;

nput('enter the distance between conductors in m'); d=input('enter diameter in cm');

r=(d/2)\*10^(-2);

r1=r\*0.7788;

I=4\*10^(-7)\*Iog(D/r1); c=(pi\*8.854\*10^(-12))/(log(D/r));

disp('inducance(in h/m):'); disp(I); disp('capacitance(in f/m):'); disp(c);

OUTPUT :

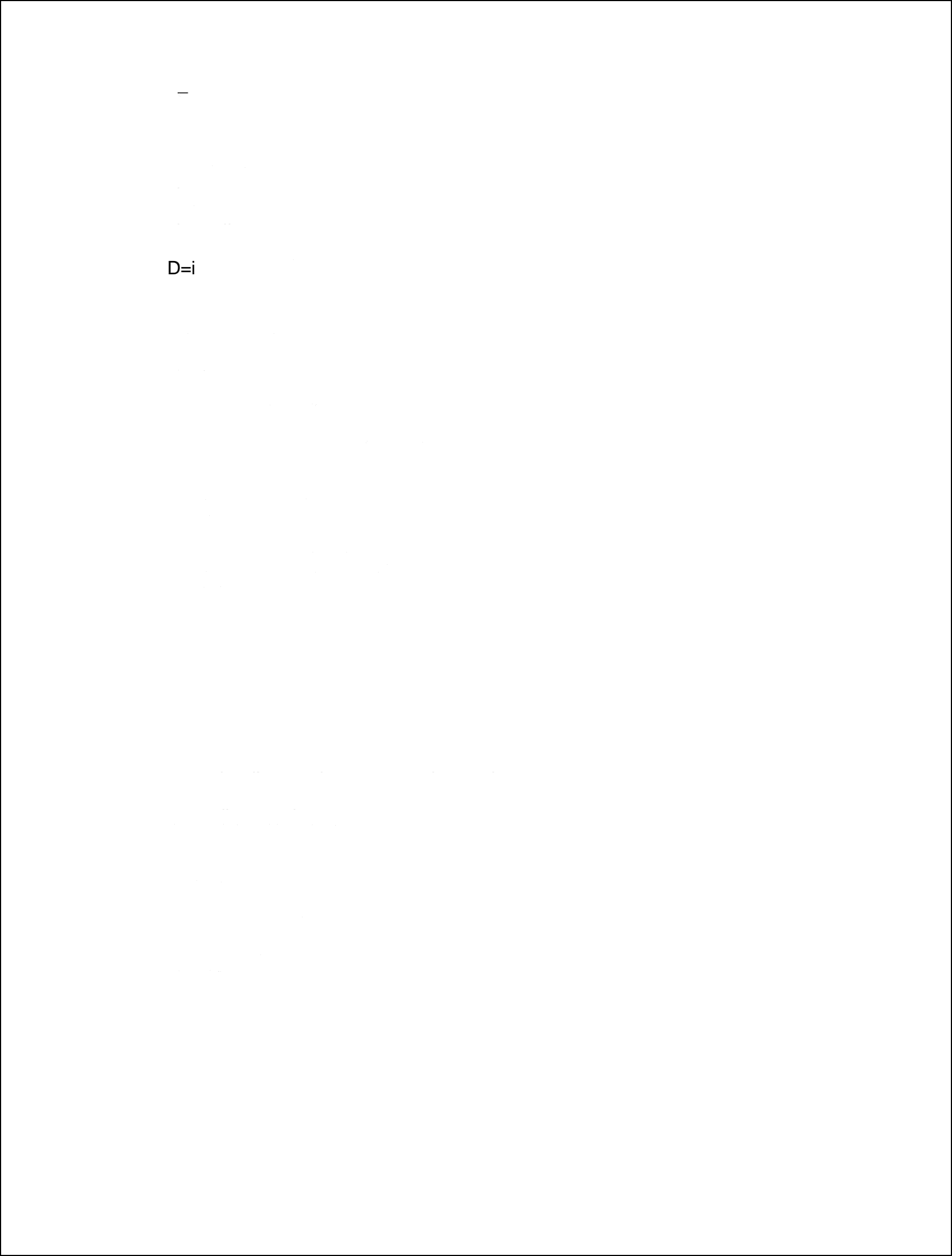
enter the distance between conductors in m4 enter diameter in cm1.5

inductance(in h/m):

2.6117e-06

capacitance(in f/m):

4.4298e-12



1 2.

PROGRAM:

clc;

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nput('enter the distance between conductors in m'); d=input('enter diameter in cm');

r=(d/2)\*10^(-2);

r1=r\*0.7788;

I=2\*10^(-7)\*Iog(D/r1); c=(2\*pi\*8.854\*10^(-12))/(log(D/r));

disp('inducance(in h/m):'); disp(I); disp('capacitance(in f/m):'); disp(c);

OUTPUT :

enter the distance between conductors in m2.5 enter diameter in cm1.5

inductance(in h/m):

1.2118e-06

capacitance(in f/m):

9.5765e-12

1 3.

## PROGRAM:

r=input('enter the radius of the conductors : ');

Dab=input('Enter the spacing between the conductors A and B :'); Dbc=input('Enter the spacing between the conducors B and C '); Dca=input('Enter the spacing between the conducors C and A :');

% computation of GMR and GMD GMRs=0.7788\*r;

GMD=(Dab\*Dbc\*Dca)^(1/3);

disp('The inductance per phase of the three phase lines L in H/m'); L=2\*10^(-7)\*Iog(GMD/GMRs);

disp(L);

disp('The value of capacitance per phase of three phase lines C in F/m'); C=2\*pi\*8.854\*10^(-12)/log(GMD/r);

disp(C);

## OUTPUT:

enter the radius of the conductors : 1.2e-2

Enter the spacing between the conducors A and B : 6 Enter the spacing between the conductors B and C : 5 Enter the spacing between the conductors C and A : 3

The inductance per phase of the three phase lines L in H/m 1.2346e-06

The value of capacitance per phase of three phase lines C in F/m 9.3928e-12

1 4.

## PROGRAM:

disp("Calculation of inducance and capacitance of three phase unsymmetricuntransposed line");

Dab = input("Enter distance between conducors A and B : "); Dbc = input("Enter distance between conductors B and C : "); Dca = input("Enter distance between conductors C and A : "); R = input("Enter radius in cm : ");

r = R\*(10^-2);

r1 r\*exp(-1/4);

% Calculation of inductance %

La = 2\*10^(-7)\*Iog((Dab\*Dca)^(1/2)/r1)-(2\*10^(-7)\*(3)^(1/2)/2\*Iog(Dca/Dab))\*i; Lb = 2\*10^(-7)\*Iog((Dbc\*Dab)^(1/2)/r1)-(2\*10^(-7)\*(3)^(1/2)/2\*Iog(Dab/Dbc))\*i; Le = 2\*10^(-7)\*Iog((Dca\*Dbc)^(1/2)/r1)-(2\*10^(-7)\*(3)^(1/2)/2\*Iog(Dbc/Dca))\*i; Dm (Dab\*Dbc\*Dca)^(1/3);

epsilon = 8.854 \* 10^(-12);

% Calculation of capacitance %

Can (2\*pi\*epsiIon)/(log((Dca\*Dab)/(r\*Dm)) + (1/((3)^(1/2))\*Iog(Dab/Dca))\*i); Cbn (2\*pi\*epsiIon)/(log((Dab\*Dbc)/(r\*Dm)) + (1/((3)^(1/2))\*Iog(Dbc/Dab))\*i); Ccn = (2\*pi\*epsiIon)/(log((Dca\*Dbc)/(r\*Dm)) + (1/((3)^(1/2))\*Iog(Dca/Dbc))\*i); disp("Inductance of line A per phase in Him is : ");

disp(La);

disp("Inducance of line B per phase in Him is : "); disp(Lb);

disp("Inductance of line C per phase in H/m is : "); disp(Le);

disp("Capacitance of Line A per phase in F/m is : "); disp(Can);

disp("Capacitance of Line B per phase in F/m is : "); disp(Cbn);

dtsp( apacitance of Line C per phase in F/m is : ");

OUTPUT:

Calculation of inductance and capacitance of three phase unsymmetric untransposed line

Enter distance between conductors A and B 6

Enter distance between conductors B and C :

4

Enter distance between conductors C and A

2

Enter radius in cm

1.5

Inductance of line A per phase in H/m is : 1.1384e-06 + 1.9029e-07i

Inductance of line B per phase in H/m is : 1.2077e-06 - 7.0229e-08i

Inductance of line C per phase in H/m is

1.0979e-06 - 1.2006e-07i

Capacitance of Line A per phase in F/m is : 1.0173e-11 - 1.1961e-12i

Capacitance of Line B per phase in F/m is :

9.1253e-12 + 3.5092e-13i

Capacitance of Line C per phase in F/m is :

1.1080e-11 + 8.8882e-13i

1 5.

PROGRAM:

%computation of inductance and capacitancd 3 phase hexagonal double

%circuit symmetrical spaced lines

r=input('enter the radius of conductor in meters : ');

% calculation of self GMR of bundled conductor GMRsI=(0.7788\*r);

GMRsc=(r);

%computation of GMD

D=input('enter the symmetrical spacing between the conductors placed in the vertices of hexagon in meters :');

GMD=(3)^(1/4)\*D; GMRL=(2\*D\*GMRsI)^(1/2); GMRC=(2\*D\*GMRsc)^(1/2);

disp('the GMD value is : '); disp(GMD);

disp('the GMR for L estimation is : '); disp(GMRL); disp('the GMR for c estimation is '); disp(GMRC);

%computation of inducance L=2\*(10^(-7))\*Iog(GMD/GMRL); disp('the value of inductance calculated in (H/m) is : '); disp(L);

%computation of capacitance epsilon=8.854\*(10^(-12)); C=2\*pi\*epsiIon/log(GMD/GMRC); disp('the value of capacitance calculated in (F/m) is : '); disp(C);

# OUTPUT:

enter the radius of conductor in meters 0.75e-2

enter the symmetrical spacing between the conductors placed in the vertices of hexagon in meters :3

the GMD value is : 3.9482

the GMR for L estimation is : 0.1872

the GMR for c estimation is : 0.2121

the value of inductance calculated in (H/m) is : 6.0976e-07

the value of capacitance calculated in (F/m) is : 1.9027e-11

1 6.

## PROGRAM:

o ocomputation of 3 phase double circuit unsymmetrical vertically spaced conducors r=input('enter the radius of conductor in meters : ');

ono calculation of self GMR of double circuit conduzor GMRsI=(0.7788\*r);

GMRsc=(r);

AA1=input('enter the distance AA1 in meters '); BB1=input('enter the distance BB1 in meters: '); CC1=input('enter the distance CC1 in meters: ');

ono estimating GMR for inductance calculation

GMRaI=(GMRsI\*AA1)^(1/2); GMRbI=(GMRsI\*BB1)^(1/2); GMRcI=(GMRsI\*CC1)^(1/2);

GMRL=(GMRaI\*GMRbI\*GMRcI)^(1/3);

% estimating GMR for capacitance calculation GMRac=(GMRsc\*AA1)^(1/2); GMRbc=(GMRsc\*BB1)^(1/2); GMRcc=(GMRsc\*CC1)^(1/2);

GMRC=(GMRac\*GMRbc\*GMRcc)^(1/3); disp('the GMR for inductance calculation is '); disp(GMRL);

disp('the GMR for capacitance calculation is '); disp(GMRC);

% getting data to GMD

AB=input('enter the distance AB in meters '); AB1=input('enter the distance AB1 in meters ');

Dab=(AB\*AB1)^(1/2);

BC=input('enter the distance BC in meters : '); BC1=input('enter the distance BC1 in meters ');

Dbc=(BC\*BC1)^(1/2);

CA=input('enter the distance CA in meters '); CA1=input('enter the distance CA1 in meters ');

Dca=(CA\*CA1)^(1/2);

oÉocomputation of GMD

GMD=(Dab\*Dbc\*Dca)^(1/3); disp('the GMD value is '); disp(GMD);

%computation of inducance L=2\*(10^(-7))\*Iog(GMD/GMRL); disp('the value of inductance calculated in (Him) is : '); disp(L);

%computation of capacitance

epsilon=8.854\*(10^(-12)); C=2\*pi\*epsiIon/log(GMD/GMRC); disp('the value of capacitance calculated in (F/m) is : '); disp(C);

## OUTPUT:

enter the radius of conductor in meters : 1e-2 enter the distance AA1 in meters : 7.81025 enter the distance BB1 in meters: 5

enter the distance CC1 in meters: 7.81025 the GMR for inductance calculation is

0.2290

the GMR for capacitance calculation is 0.2594

enter the distance AB in meters : 3

enter the distance AB1 in meters : 5.83095 enter the distance BC in meters : 3

enter the distance BC1 in meters : 5.83095 enter the distance CA in meters : 6

enter the distance CA1 in meters : 5 the GMD value is :

4.5759

the value of inductance calculated in (H/m) is : 5.9900e-07

the value of capacitance calculated in (F/m) is 1.9384e-11

1 7.

## PROGRAM:

o ocomputation of 3 phase double circuit unsymmetrical spacing clc;

r=input('enter the radius of conductor in meters : ');

ono calculation of self GMR of double circuit conducors GMRsI=(0.7788\*r);

GMRsc=(r);

AA1=input('enter the distance AA1 in meters '); BB1=input('enter the distance BB1 in meters: '); CC1=input('enter the distance CC1 in meters: ');

% estimating GMR for inductance calculation

GMRaI=(GMRsI\*AA1)^(1/2); GMRbI=(GMRsI\*BB1)^(1/2); GMRcI=(GMRsI\*CC1)^(1/2);

GMRL=(GMRaI\*GMRbI\*GMRcI)^(1/3);

ono estimating GMR for capacitance calculation

GMRac=(GMRsc\*AA1)^(1/2); GMRbc=(GMRsc\*BB1)^(1/2); GMRcc=(GMRsc\*CC1)^(1/2);

GMRC=(GMRac\*GMRbc\*GMRcc)^(1/3); disp('the GMR for inductance calculation is '); disp(GMRL);

disp('the GMR for capacitance calculation is '); disp(GMRC);

% getting data to compute GMD

AB=input('enter the distance AB in meters '); AB1=input('enter the distance AB1 in meters ');

o oA1B=input('enter the distance AIB in meters ');

%A1B1=input('enter the distance A1B1 in meters : '); Dab=(AB\*AB1)^(1/2);

BC=input('enter the distance BC in meters : '); BC1=input('enter the distance BC1 in meters ');

# o oB1C=input('enter the distance B1C in meters : ');

%B1C1=input('enter the distance B1C1 in meters : '); Dbc=(BC\*BC1)^(1/2);

CA=input('enter the distance CA in meters '); CA1=input('enter the distance CA1 in meters ');

o oC1A=input('enter the distance C1A1 in meters : ');

o oC1A1=input('enter the distance C1A1 in meters : '); Dca=(CA\*CA1)^(1/2);

%computation of GMD

GMD=(Dab\*Dbc\*Dca)^(1/3); disp('the GMD value is '); disp(GMD);

o ocomputation of inducance L=2\*(10^(-7))\*Iog(GMD/GMRL);

disp('the value of inductance calculated in (Him) is : '); disp(L);

o ocomputation of capacitance

epsilon=8.854\*(10^(-12)); C=2\*pi\*epsiIon/log(GMD/GMRC); disp('the value of capacitance calculated in (F/m) is : '); disp(C);

## OUTPUT:

enter the radius of conductor in meters 0.75e-2 enter the distance AA1 in meters : 9.2195

enter the distance BB1 in meters: 8

enter the distance CC1 in meters: 9.2195

the GMR for inductance calculation is : 0.2266 the GMR for capacitance calculation is : 0.2568 enter the distance AB in meters : 3.640055

enter the distance AB1 in meters : 7.8262 enter the distance BC in meters : 3.6401 enter the distance BC1 in meters : 7.8262 enter the distance CA in meters : 7

enter the distance CA1 in meters : 6 the GMD value is : 5.6941

the value of inductance calculated in (H/m) is : 6.4477e-07

the value of capacitance calculated in (F/m) is : 1.7952e-11

1 8.

## PROGRAM:

o ocalculation of inductance and capacitance of a 3 phase horizontal spaced

o obundled conductors

r=input('enter the radius of the sub conductors in meters : '); d=input('enter the bundle spacing distance : '); GMRL=(0.7788\*r\*d)^(1/2);

GMRC=(r\*d)^(1/2);

ono computation of GMD

AB=input('enter the distance between conductor A and B in meters :'); BC=input('enter the distance between conductor B and C in meters :'); CA=input('enter the distance between conductor C and A in meters :'); GMD=(AB\*BC\*CA)^(1/3);

L=2\*(10^(-7))\*Iog(GMD/GMRL); C=2\*pi\*(8.854\*10^(-12))/log(GMD/GMRC);

disp('the value of inductance L ='); disp(L); disp('the value of capacitance c ='); disp(C);

OUTPUT:

enter the radius of the sub conductors in meters : 1.4e-2 enter the bundle spacing distance : 0.36

enter the distance between conductor A and B in meters :12 enter the distance between conductor B and C in meters :12 enter the distance between conductor C and A in meters :24 the value of inductance L =

1.0972e-06

the value of capacitance c = 1.0377e-11