

experiment 1 cartesian to cylinder.sce (C:\Users\Admin\experiment 1 cartesian to cylinder.sce) - SciNotes

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experiment 1 cartesian to cylinder.sce (C:\Users\Admin\experiment 1 cartesian to cylinder.sce) - SciNotes

Spherical to Cartesian coordinate system.sce [X] exp:7 Electric potential difference
exp:9 Capacitance of an isolated and concentric sphere.sce [X] exp 10 Capacitance of co-axial cable p
exp 4 electric field and electric flux density in sphere.sce [X] exp 5 Coulomb's Law.sce [X]
experiment 1 cartesian to cylinder.sce [X] exp 1 cartesian to spherical coordinate system.sce [X]

```
1 clc;  
2 clear;  
3 x=input('Enter the value of x=');  
4 y=input('Enter the value of y=');  
5 z=input('Enter the value of z=');  
6 r=sqrt(x^2+y^2);  
7 p=atand(y/x);  
8 disp([r p z], 'Cartesian to Cylindrical--> |  
9
```

Scilab 6.1.1 Console

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Scilab 6.1.1 Console

Enter the value of x=1

Enter the value of y=2

Enter the value of z=3

2.236068 63.434949 3.

"Cartesian to Cylindrical coordinate system of P(r,p,z) ="

exp 1 cartesian to spherical coordinate system.sce (C:\Users\Admin\exp 1 cartesian to spherical coordinate system.sce) - SciNotes

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exp 1 cartesian to spherical coordinate system.sce (C:\Users\Admin\exp 1 cartesian to spherical coordinate system.sce) - SciNotes

Spherical to Cartesian coordinate system.sce [X] exp:7 Electric potential difference between two points in free space.sce [X]
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experiment 1 cartesian to cylinder.sce [X] exp 1 cartesian to spherical coordinate system.sce [X] exp:3 (ii) transformation cylindric

```
1 x=input('Enter the value of x=');  
2 y=input('Enter the value of y=');  
3 z=input('Enter the value of z=');  
4 r1 = sqrt(x^2+y^2+z^2);  
5 teta = acosd(z/r1);  
6 phi = atand(y/x);  
7 disp([r1 teta phi], 'Cartesian to Spherical coordinate  
8
```

Scilab 6.1.1 Console

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Scilab 6.1.1 Console

Startup execution:

loading initial environment

```
--> exec('C:\Users\Admin\exp 1 cartesian to spherical coordinate  
Enter the value of x=1
```

```
Enter the value of y=3
```

```
Enter the value of z=-3
```

```
4.3588989 133.49152 71.565051
```

```
"Cartesian to Spherical coordinate system of S(r1 teta phi) ="
```

```
--> |
```

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```
1 clc;
2 clear;
3 rho=input('Enter the value of rho=');
4 teta=input('Enter the value of teta=');
5 phi=input('Enter the value of phi=');
6 x = rho * sind(teta) * cosd(phi);
7 y = rho * sind(teta) * sind(phi);
8 z = rho * cosd(teta);
9 disp([x y z], 'Cylindrical to Cartesian coordinate system');
10
```



Enter the value of rho=1

Enter the value of teta=45

Enter the value of phi=2

0.706676 0.0246777 0.7071068

"Cylindrical to Cartesian coordinate system of S(x, y, z) ="

--> |





```
1 clc;
2 clear;
3 rho=input('Enter the value of rho=');
4 teta=input('Enter the value of teta=');
5 phi=input('Enter the value of phi=');
6 x = rho * sind(teta) * cosd(phi);
7 y = rho * sind(teta) * sind(phi);
8 z = rho * cosd(teta);
9 disp([x y z], 'spherical to Cartesian coordinate sy
```

10



Enter the value of rho=1

Enter the value of teta=45

Enter the value of phi=45

0.5 0.5 0.7071068





```
1 clc;
2 clear;
3 q = input('Enter the value of charge q=');
4 r = input('Enter the value of distance b/w two charges');
5 er = input('Enter the value of relative permittivity');
6 e0 = 8.854e-12;
7 D = (q) / (4 * %pi * r^2);
8 E = (q) / (4 * %pi * e0 * er * r^2);
9 disp(D, 'Electric Flux Density D=___ C/m^2');
10 disp(E, 'Electric Field E=___ Newtons/Coulombs or V/m');
11
```



Enter the value of charge q=4e-8

Enter the value of distance b/w two charges r=10e-2

Enter the value of relative permittivity of the medium er=1

0.0000003

"Electric Flux Density D=___ C/m^2"

35950.970

"Electric Field E=___ Newtons/Coulombs or V/m"

-->





```
1 clc;  
2 clear;  
3 q1 = input('Enter the value of charge q1=');  
4 q2 = input('Enter the value of charge q2=');  
5 r = input('Enter the value of distance b/w two charg  
6 er = input('Enter the value of relative permittivity  
7 e0 = 8.854e-12;  
8 F = (q1 * q2) ./ (4 * %pi * e0 * er * r^2);  
9 disp(F, 'Force of COLUMBS LAW F= __ Newtons');  
10
```



Enter the value of charge q1=4e-8

Enter the value of charge q2=6e-5

Enter the value of distance b/w two charges r=10e-2

Enter the value of relative permittivity of the medium er=1

2.1570582

"Force of COLUMBS LAW F= __ Newtons"

--> |





```
1 clc;
2 clear;
3 q = input('Enter the value of charge q: ');
4 r = input('Enter the value of distance b/w two charges r: ');
5 l = input('Enter the value of length l: ');
6 rhoL = q/l;
7 rhoS = q/(4 * %pi * r^2);
8 rhoV = (q/((4/3) * %pi * r^3));
9 disp(rhoL, 'Linear Charge Density rhoL: _____ C/meter');
10 disp(rhoS, 'Surface Charge Density rhoS: _____ C/meter^2');
11 disp(rhoV, 'Volume Charge Density rhoV: _____ C/meter^3');
12
```



Enter the value of charge q: 4e-8

Enter the value of distance b/w two charges r: 2

Enter the value of length l: 4

1.000D-08

"Linear Charge Density rhoL: _____ C/meter"

7.958D-10

"Surface Charge Density rhoS: _____ C/meter^2"

1.194D-09

"Volume Charge Density rhoV: _____ C/meter^3"

-->





```
1 clc;
2 clear;
3 Q = input('Enter the value of charge Q:');
4 pointAx = input('Enter the value of Point Ax:');
5 pointAy = input('Enter the value of Point Ay:');
6 pointBx = input('Enter the value of Point Bx:');
7 pointBy = input('Enter the value of Point By:');
8 e0 = 8.854e-12;
9 r1 = sqrt(pointAx^2 + pointAy^2);
10 r2 = sqrt(pointBx^2 + pointBy^2);
11 v1 = Q/(4*%pi*e0*r1);
12 v2 = Q/(4*%pi*e0*r2);
13 EPD = v1 - v2;
14 disp(EPD, 'ELECTRIC POTENTIAL DIFFERENCE BETWEEN TWO');
15
```



Enter the value of charge Q:1e-9

Enter the value of Point Ax:1

Enter the value of Point Ay:2

Enter the value of Point Bx:4

Enter the value of Point By:5

2.6157911

"ELECTRIC POTENTIAL DIFFERENCE BETWEEN TWO POINTS :---Volts"

-->





```
1 clc;
2 clear;
3 A = input('Enter the value of capacitance area A:');
4 d1 = input('Enter the value of thickness of medium-1 d1:');
5 d2 = input('Enter the value of thickness of medium-2 d2:');
6 d3 = input('Enter the value of thickness of medium-3 d3:');
7 er1 = input('Enter the value of relative permittivity of medium-1 er1:');
8 er2 = input('Enter the value of relative permittivity of medium-2 er2:');
9 er3 = input('Enter the value of relative permittivity of medium-3 er3:');
10 e0 = 8.854e-12;
11 C = (A * e0) / (d1/er1 + d2/er2 + d3/er3);
12 disp(C, 'Capacitance of parallel plate capacitor in three different dielectric material is:');
13
```



Enter the value of capacitance area A:0.01

Enter the value of thickness of medium-1 d1:0.002

Enter the value of thickness of medium-2 d2:0.003

Enter the value of thickness of medium-3 d3:0

Enter the value of relative permittivity of medium-1 er1:4

Enter the value of relative permittivity of medium-2 er2:3

Enter the value of relative permittivity of medium-3 er3:1

5.903D-11

"Capacitance of parallel plate capacitor in three different dielectric material is:"

--> |



exp:9 Capacitance of an isolated and concentric sphere.sce (C:\Users\Admin\exp:9 Capacitance of an isolated and concentric sphere.sce) - SciNotes

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exp:9 Capacitance of an isolated and concentric sphere.sce exp 10 Capacitance of co-axial cable per unit length.sce exp :11 Dielectric

```
1 clc;
2 clear;
3 r1 = input('Enter the value of radius of medium-1 r1:');
4 r2 = input('Enter the value of radius of medium-2 r2:');
5 er = input('Enter the value of relative permittivity of medium - er:');
6 e0 = 8.854e-12;
7 Cisolated = 4 * %pi * e0 * er * r2;
8 disp(Cisolated, 'Capacitance of an isolated sphere :---Farad');
9 Cconcentric = 4 * %pi * e0 * er * ((r1 * r2) / (r2 - r1));
10 disp(Cconcentric, 'Capacitance of two concentric sphere :---Farad');
11
```

Scilab 6.1.1 Console

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Scilab 6.1.1 Console

Enter the value of radius of medium-1 r1:0.12

Enter the value of radius of medium-2 r2:0.16

Enter the value of relative permittivity of medium - er:1

1.780D-11

"Capacitance of an isolated sphere :---Farad"

5.341D-11

"Capacitance of two concentric sphere :---Farad"

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exp 10 Capacitance of co-axial cable per unit length.sce (C:\Users\Admin\exp 10 Capacitance of co-axial cable per unit length.sce) - SciNotes

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exp 10 Capacitance of co-axial cable per unit length.sce (C:\Users\Admin\exp 10 Capacitance of co-axial cable per unit length.sce) - SciNotes

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Spherical to Cartesian coordinate system.sce X exp:7 Electric potential difference between two points in free space.sce
exp:9 Capacitance of an isolated and concentric sphere.sce X exp 10 Capacitance of co-axial cable per unit length.sce X exp :11 Diele

```
1 clc;  
2 clear;  
3 r1 = input('Enter the value of radious of medium-1 r1:');  
4 r2 = input('Enter the value of radious of medium-2 r2:');  
5 er = input('Enter the value of relative permittivity of medium - er:');  
6 Ccoaxial = (2 * %pi * e0 * er) / (log(r2 / r1));  
7 disp(Ccoaxial, 'Capacitance of co-axial cable per unit length:');  
8
```

Scilab 6.1.1 Console

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Scilab 6.1.1 Console

Enter the value of radious of medium-1 r1:0.02

Enter the value of radious of medium-2 r2:0.04

Enter the value of relative permittivity of medium - er:2

1.605D-10

"Capacitance of co-axial cable per unit length :---Farad / met

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```
1 clc;
2 clear;
3 er1=input('Enter the value of relative permittivity of medium - er1: ');
4 er2=input('Enter the value of relative permittivity of medium - er2: ');
5 teta2=input('Enter the value of teta2 of medium - teta2: ');
6 teta1=atand((er1 / er2) * tand(teta2));
7 disp(teta1,'teta1: ');
8
```



```
Enter the value of relative permittivity of medium - er1: 3
Enter the value of relative permittivity of medium - er2 : 1
Enter the value of teta2 of medium - teta2 : 45
71.565051
"teta1 : "
-->
```





```
1 clc;
2 clear;
3 mr2=input('Enter the value of relative permeability of medium - mr2 : ');
4 teta1=input('Enter the value of teta2 of medium - teta1 : ');
5 teta2=input('Enter the value of teta2 of medium - teta2 : ');
6 m1 = (tand(teta1) / tand(teta2)) * mr2 * 4 * 3.14e-7;
7 mr1 = m1 / (4 * 3.14e-7);
8 disp(mr1,'relative permeability of medium - mr1 : ');
9 disp(m1,'permeability of medium - m1 : ');
10
```



Enter the value of relative permeability of medium - mr2 : 0.99

Enter the value of teta2 of medium - teta1 : 60

Enter the value of teta2 of medium - teta2 : 30

2.9700000

"relative permeability of medium - mr1 : "

0.0000037

" permeability of medium - m1 : "

-->





```
1 clc;
2 clear;
3 H = input('Enter the value of magnetic field -- H : ');
4 mr = input('Enter the value of relative permeability -- mr : ');
5 phi = input('Enter the value of magnetic flux -- phi : ');
6 l = input('Enter the value of rectangle length -- l : ');
7 w = input('Enter the value of rectangle width -- w : ');
8 Binphi = phi / (l * w);
9 Binfield = H * mr * 4 * 3.14e-7;
10 disp(Binphi, 'Magnetic flux density -- Binphi :----Wb/m^2 ');
11 disp(Binfield, 'Magnetic flux density- Binfield :----Wb/m^2 ');
12
```



Enter the value of magnetic field - H : 3e-2

Enter the value of relative permeability - mr : 250

Enter the value of magnetic flux - phi : 7

Enter the value of rectangle length - l : 50e-2

Enter the value of rectangle width - w : 20e-2

70.

" Magnetic flux density - Binphi :----Wb/m^2 "

0.0000094

" Magnetic flux density- Binfield :----Wb/m^2 "

--> |

