

OHM'S LAW

R CIRCUIT

```
V=input('Enter Voltage (Volts) : ');
R=input('Enter Resistance (Ohms) : ');
I=V/R;
fprintf("\nOHM'S LAW (R Circuit) : \n")
```

OHM'S LAW (R Circuit) :

```
fprintf('Current,I : %.2f A\n',I);
```

Current,I : 2.50 A

RL CIRCUIT

```
V=input('\nEnter Voltage (Volts) : ');
R=input('Enter Resistance (Ohms) : ');
L=input('Enter Inductance (Henry) : ');
XL=2*pi*60*L;
Z=sqrt(R^2+(XL)^2);
I=V/Z;
fprintf("\nOHM'S LAW (RL Circuit) : \n")
```

OHM'S LAW (RL Circuit) :

```
fprintf('Inductive Reactance,XL : %.2f Ohms\n',XL);
```

Inductive Reactance,XL : 3.77 Ohms

```
fprintf('Impedance,Z : %.2f Ohms\n',Z);
```

Impedance,Z : 10.69 Ohms

```
fprintf('Current,I : %.2f A\n',I);
```

Current,I : 4.68 A

RC CIRCUIT

```
V=input('\nEnter Voltage (Volts) : ');
R=input('Enter Resistance (Ohms) : ');
C=input('Enter Capacitance (Farad) : ');
XC=1/(2*pi*60*C);
Z=sqrt(R^2+(XC)^2);
I=V/Z;
fprintf("\nOHM'S LAW (RC Circuit) : \n");
```

OHM'S LAW (RC Circuit) :

```
fprintf('Capacitive Reactance,XC : %.2f Ohms\n',XC);
```

Capacitive Reactance,XC : 1.77 Ohms

```
fprintf('Impedance,Z : %.2f Ohms\n',Z);
```

Impedance,Z : 10.16 Ohms

```
fprintf('Current,I : %.2f A\n',I);
```

Current,I : 4.92 A

RLC CIRCUIT

1. $X_L = X_C$

```
V=input('\nEnter Voltage (Volts) : ');
R=input('Enter Resistance (Ohms) : ');
L=input('Enter Inductance (Henry) : ');
C=input('Enter Capacitance (Farad) : ');
XL=2*pi*60*L;
XC=1/(2*pi*60*C);
Z=sqrt(R^2+(XL-XC)^2);
I=V/Z;
fprintf("\nOHM'S LAW (RLC Circuit) : XL=XC \n")
```

OHM'S LAW (RLC Circuit) : XL=XC

```
fprintf('XL = %.2f Ohms, XC = %.2f Ohms\n', XL, XC);
```

XL = 3.77 Ohms, XC = 3.77 Ohms

```
fprintf('Impedance,Z : %.2f Ohms\n',Z);
```

Impedance,Z : 10.00 Ohms

```
fprintf('Current,I : %.2f A\n',I);
```

Current,I : 5.00 A

2. $X_L > X_C$

```
V=input('\nEnter Voltage (Volts) : ');
R=input('Enter Resistance (Ohms) : ');
L=input('Enter Inductance (Henry) : ');
C=input('Enter Capacitance (Farad) : ');
XL=2*pi*60*L;
XC=1/(2*pi*60*C);
Z=sqrt(R^2+(XL-XC)^2);
I=V/Z;
fprintf("\nOHM'S LAW (RLC Circuit) : XL>XC \n");
```

OHM'S LAW (RLC Circuit) : $X_L > X_C$

```
fprintf('XL = %.2f Ohms, XC = %.2f Ohms\n', XL, XC);
```

XL = 3.77 Ohms, XC = 1.77 Ohms

```
fprintf('Impedance,Z : %.2f Ohms\n',Z);
```

Impedance,Z : 10.20 Ohms

```
fprintf('Current,I : %.2f A\n',I);
```

Current,I : 4.90 A

3. $X_L < X_C$

```
V=input('\nEnter Voltage (Volts) : ');  
R=input('Enter Resistance (Ohms) : ');  
L=input('Enter Inductance (Henry) : ');  
C=input('Enter Capacitance (Farad) : ');  
XL=2*pi*60*L;  
XC=1/(2*pi*60*C);  
Z=sqrt(R^2+(XL-XC)^2);  
I=V/Z;  
fprintf("\nOHM'S LAW (RLC Circuit) :  $X_L < X_C$  \n");
```

OHM'S LAW (RLC Circuit) : $X_L < X_C$

```
fprintf('XL = %.2f Ohms, XC = %.2f Ohms\n', XL, XC);
```

XL = 3.77 Ohms, XC = 26.53 Ohms

```
fprintf('Impedance,Z : %.2f Ohms\n',Z);
```

Impedance,Z : 24.86 Ohms

```
fprintf('Current,I : %.2f A\n',I);
```

Current,I : 2.01 A