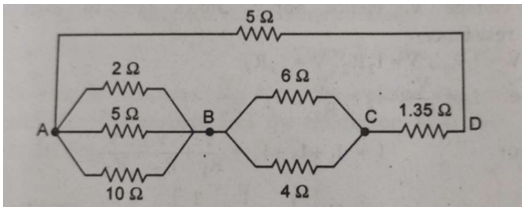
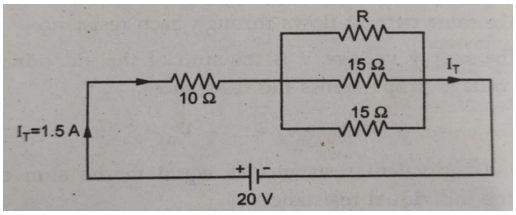
1. Find the resistance between the points A and D using MATLAB




```
Rab=1/(1/2+1/5+1/10); % Resistance between point A and B
Rbc=1/(1/6+1/4); % Resistance between the point B and C
Rcd=1.35;% Resistance between the point C and D
Rad=Rab+Rbc+Rcd;
Req=1/(1/5+1/Rad);
fprintf('The equivalent resistance is %.2f Ohm\n', Req)
```

```
The equivalent resistance is 2.50 Ohm
```

2. A resistance of 10Ωis connected in series with the two resistances each of 15Ωarranged in parallel. What resistance must be shunted across this parallel combination so that the total current taken will be 1.5A from 20V supply applied

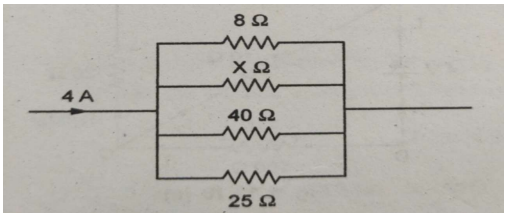



```
V=20; % Voltage value
It=1.5; % Current Value
Vp=V-10*It; % Voltage of parallel combination
Ir=It-Vp/15-Vp/15; % current through resistor R
R=Vp/Ir; % Resistance value
fprintf('The resistance value is %.2f Ohm\n', R)
```

```
The resistance value is 6.00 Ohm
```

3. The current flowing in 8Ω resistor is 2.5A. Find i) current in other resistors

ii) value of resistor X iii) the equivalent resistance



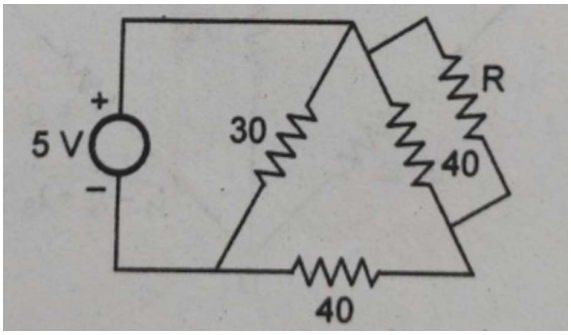

```
It=4; % Total current
Vp=8*2.5; % Voltage of the parallel combination
I8=Vp/8; % Current through 8 Ohm resistor
I40=Vp/40; % Current through 40 Ohm resistor
I25=Vp/25; % Current through 25 Ohm resistor
Ix=It-I8-I40-I25; % Current through X Ohm resistor
X=Vp/Ix; % Value of X ohm resistor
Req=1/(1/8+1/X+1/40+1/25); % Rquivalent resistance value

fprintf('The current in resistor2 is %.2f A\nThe current in resistor3 is %.2f A\nThe current in resistor4 is %.2f A\n',Ix, I40, I25);
```

```
The current in resistor2 is 0.20 A
The current in resistor3 is 0.50 A
The current in resistor4 is 0.80 A
```

```
fprintf('The value of resistor X is %.2f Ohm\nThe Equivalent resistance is %.2f Ohm\n',X,Req);
```

```
The value of resistor X is 100.00 Ohm
The Equivalent resistance is 5.00 Ohm
```

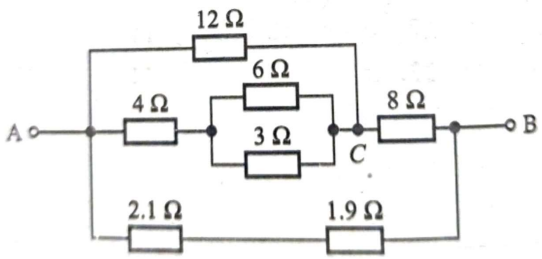
4. Find the value of resistance R so that current drawn from the source is 250mA




```
V=5; % Value of voltage
I=250e-3; % Value of current
Re=V/I; % Equivalent resistance value
syms R
Rp=40*R/(40+R); % Resistance of parallel combination in terms of R
Rs=Rp+40;
Req=30*Rs/(30+Rs); % Equivalent resistance value in terms of R
R=solve(Req-Re==0); % Resistance value
fprintf('The resistance value is %.2f Ohm\n',R);
```

```
The resistance value is 40.00 Ohm
```

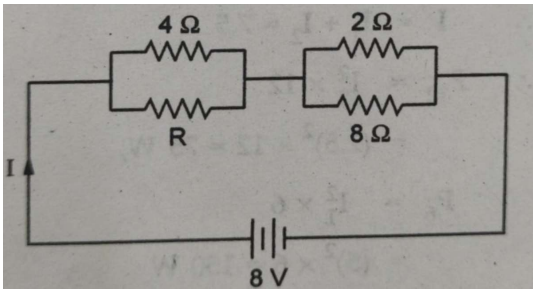
5. Find resistance between points A and B




```
Rp=1/(1/6+1/3); % resistance of parallel combination of 6 ohm and 3 ohm
Rac=1/(1/12+1/(4+Rp)); % resistance between the points A and C
Rab1=Rac+8;
Rab2=2.1+1.9;
Req=1/(1/Rab1+1/Rab2); % The equivalent resistance value
fprintf('The equivalent resistance value is %.2f Ohm\n',Req);
```

```
The equivalent resistance value is 3.00 Ohm
```

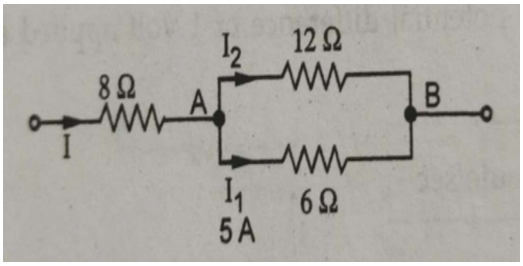
6. The total power consumed by the network is 16W find the value of R and total current




```
syms R
Req1=1/(1/4+1/R);
Req2=1/(1/2+1/8);
Req=Req1+Req2;
V=8;
R=solve(V^2/Req==16);
Req1=1/(1/4+1/R);
Req=Req1+Req2;
I=V/Req;
fprintf('The value of R is %.2f Ohm\nThe total current is %.2f A\n',R,I);
```

```
The value of R is 6.00 Ohm
The total current is 2.00 A
```

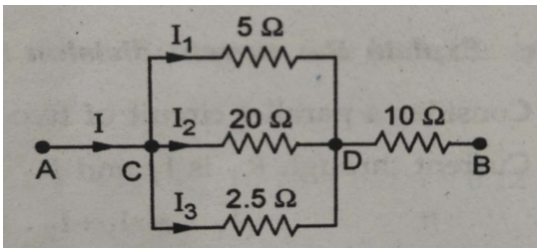
7. An 8Ωresistor is in series with a parallel combination of two resistors 12Ωand 6Ω. If the current in the 6Ωresistor is 5 A, determine the total power dissipated in the circuit.




```
R=8;
R1=6;
R2=12;
I1=5;
Vab=I1*R1;
I2=Vab/R2;
I=I1+I2;
P=I^2*R+I1^2*R1+I2^2*R2;
fprintf('The power dissipated is %.2f W\n',P)
```

```
The power dissipated is 675.00 W
```

8. The total power dissipated in the given circuit is 488W. Calculate current flowing in each resistance and potential difference between A and B.




```
P=488;
R1=5;
R2=20;
R3=2.5;
R4=10;
Rp=1/(1/R1+1/R2+1/R3);
Req=Rp+R4;
I=sqrt(P/Req);
V=sqrt(P*Req);
Vcd=V-I*R4;
I1=Vcd/R1;
I2=Vcd/R2;
I3=Vcd/R3;
fprintf('The value of I is %.2f A\nThe value of I1 is %.2f A\nThe value of I2 is %.2f A\nThe value of I3 is %.2f A\n',I,I1,I2,I3);
```

```
The value of I is 6.50 A
The value of I1 is 2.00 A
The value of I2 is 0.50 A
The value of I3 is 4.00 A
```

```
fprintf('The potential difference between A and B is %0.2f V\n',V)
```

```
The potential difference between A and B is 75.04 V
```