1. An electrical iron carrying 2A at 120V. Find resistance of the device?
2. The essential component of a toaster is an electrical element (a resistor) that converts electrical energy to heat energy. How much current is drawn by a toaster with resistance 12W at 110V?
3. In the given circuit, calculate current I, the conductance G and the power P?



1. A voltage source of 20Sinπt V is connected across a 5KΩ resistor. Find the current

through the resistor and power dissipated.

1. A resistor absorbs an instantaneous power of 20Cos2t mW when connected to a

voltage source V=10Cost V. Find I and R.

1. Write KCL and KVL equations for the given circuits, V=10 volt:



1. Determine the voltage across 1Ω resistor in the given circuit.



1. From the given circuit, find the voltage across ab, cb and db.



1. Determine the number of branches and nodes in the circuit shown. Identify which elements are in series and which are in parallel.



1. A bulb rated 110V , 60W has to be operated from a 230V supply. Show the arrangement.
2. A 50Ω and a 100Ω rheostats are each rated at 100W. What is the maximum voltage that may be applied without causing overheating of either rheostat (i) when they are connected in series and (ii) when they are in parallel.
3. Find Req for the given circuit.



1. Find $i\_{o}$ and $v\_{o }$in the given circuit. Calculate the power dissipated in 3Ω.



1. Find $V\_{1}$ , $V\_{2}$ , $I\_{1}$ , $I\_{2}$ and power dissipated in 12Ω and 40Ω.



1. Two batteries of 24V and 20V with internal resistances of 0.4Ω and 0.25Ω respectively are connected in parallel across a load of 4Ω. Calculate (i) the current supplied by each battery and (ii) voltage across the load.
2. Two coils are connected in parallel and a voltage of 200V is applied to the terminals.The total current taken is 25A and the power dissipated in one of the coils is 1500W. What is the resistance of each coil?
3. Three impedances $Z$ 1 = (5 + 􀁤5)Ω , $Z\_{2}$ = − 􀁤8Ω and $Z\_{3}$ = 4Ω are connected in series to an unknown voltage source V. find I and V, if the voltage drop across $Z\_{3}$ is 63.2∟18.45° V.
4. Obtain the star connected equivalent for the given delta circuit.



1. For the bridge network shown, determine the total resistance seen from the terminals AB using star-delta transformation.



1. Determine the equivalent resistance Req.



1. Obtain the equivalent voltage source for the current source as shown in figure.



1. Two batteries of 24V and 20V with internal resistances of 0.4Ω and 0.25Ω respectively are

connected in parallel across a load of 4Ω. Calculate (i) the current supplied by each battery and (ii) voltage across the load.

1. A resistance R is connected in series with a parallel circuit comprising of resistances of 4Ω

and 6Ω respectively. When the applied voltage is 15V, the power dissipated in 4Ω resistor is 36W, calculate R.

1. In the circuit shown, find current through 0.8Ω using Kirchhoff’s law.



1. Find using KCL, the current through the 6Ω resistor of the circuit shown.



1. Find current through 10Ω resistor in the given circuit, use nodal analysis.



1. Determine the current in 10Ω resistor in the network shown , use star-delta conversion.



1. Determine the current in 10Ω resistor in the network shown , use star-delta conversion.



1. The resistance of two wires is 15Ω when connected in series and 7Ω when connected in parallel, find the resistances of each one.
2. Find the equivalent resistance across the battery terminals with

 (a) Switch S open

 (b) Switch S closed.



1. **An alternating current** $i$ **is given by** $i=141.4 sin (314t)$

 Find i) The maximum value

 ii) Frequency

 iii) Time Period

 iv) The instantaneous value when $i=3 ms$ $i=141.1\sin((314t))$

1. **if** $i\_{1}=4 cos⁡(wt+30^{o})$ and $i\_{2}=4 sin⁡(wt-20^{o})$ **, find their sum and draw phasor diagram.**
2. The voltage V$=12 cos⁡(60t+45^{0})$ is applied to a 0.1H inductor. Find the steady-state current through the inductor.
3. **The voltage** V$=10 cos⁡(100t+30^{0})$  **is applied to a** 50 µF **capacitor, calculate the current through the capacitor, and Draw phasor diagram?**
4. **Find equivalent impedance of below circuit.**

****

1. **Find Z in below figure.**

****

1. **Find impedance Zin of below circuit**.

****

1. **Calculate the value of** $v\_{o}$ **in below circuit.**

****

1. **Find Leq between ‘ab’ terminals in below figure?**

****

1. **Find Ceq** **in below figure.**

****

1. Problem: Find I1, I2 and I3 in the below circuit using mesh analysis.

****

1. **Find I using mesh analysis.**

****

1. **Find the value of *V4* in below circuit.**

****

1. **Calculate the value of I in below figure using node analysis.**

****

1. **Find v and i in below figure using node analysis:**

****

1. **A series RL circuit has a resistor 36Ω and impedance of circuit is 10 Ω, then find power factor.**
2. **A 200 V, 50 Hz, inductive circuit takes a current of 10A, lagging 30 degrees. Find (i) the resistance (ii) reactance (iii) inductance of the coil.**
3. **A 230v, 50 Hz, is applied a series connected resistor 30 ohms and inductor 0.5mH, then find XL, current through the circuit, voltage across each component, and draw phasor diagram between current and voltage.**
4. **A Capacitor of capacitance 79.5μF is connected in series with a non-inductive resistance of 30 across a 100V, 50Hz supply. Find (i) impedance (ii) current (iii) phase angle.**
5. **A non-inductive resistor of 10** Ω **is in series with a capacitor of 100μF across a 250V, 50Hz ac supply. Determine the current taken by the capacitor and power factor of the circuit.**
6. **A 230 V, 50 Hz ac supply is applied to a coil of 0.06 H inductance and 2.5 resistance connected in series with a 6.8 μF capacitor. Calculate (i) Impedance (ii) Current (iii) Phase angle between current and voltage (iv) power factor.**