

SIDDAGANGA INSTITUTE OF TECHNOLOGY, TUMKUR
DEPT. OF ELECTRICAL AND ELECTRONICS ENGINEERING
ASSIGNMENT-1

Sub: Introduction to Electrical Engineering (IEE)(ESC02) **Date: 14/11/2024**
Sem/Sec: M-Section **Total Marls: 20**

1	<p>Determine the currents I_1 and I_2 in the network</p> <p style="text-align: center;">fig.(1)</p>
2.	<p>In the given Circuit, the voltage drop across 8Ω resistor is $12V$ and has polarities as shown</p>
3.	<p>Determine the currents I_1 and I_2 in the network</p>
4	<p>In the circuit given find unknowns E_2, R_3, power dissipated in all the resistors individually</p>

5.	A current of 0.9A flows through a series combination of resistor of $120\ \Omega$ and a capacitive reactance of $250\ \Omega$. Find the impedance, power factor, supply voltage, voltage across resistor and capacitor, apparent power, active power & reactive power.
6.	$R=10\ \Omega$, $L=16\text{mH}$, and $C=150\ \mu\text{F}$ are connected in series across 100V, 50Hz supply. Find (a) Impedance (b) Current (c) PF (d) Active power (e) Reactive power (f) $R\ V$ (g) $L\ V$ (h) $C\ V$. Draw the vector diagram.
7	A series of RL circuit consumes 400W power, with a power factor of 0.8 from 120V, 50Hz supply. Calculate the values of R and L.
8	The current in a circuit is $(8-j10)\text{A}$, when the applied voltage is $(50+j25)\text{ V}$, Determine (a) magnitude of current (b) impedance (c) circuit parameters (d) power factor (e) power
9.	A resistance of $20\ \Omega$, an inductance of 0.2 H and a capacitance of 100 F are connected in series across 220 V, 50 Hz mains. Determine the following (a) impedance (b) current (d) Power in watts and VA (e) power factor.
10	Two resistors R_1 and R_2 are connected in parallel and a voltage of 200V is applied between the terminals. The total current taken is 25A and the power dissipated in R_1 is 1500W. Determine R_1 and R_2 .
11	$R=10\ \Omega$, $L=16\text{mH}$, and $C=150\text{F}$ are connected in series across 100V, 50Hz supply. Find(a) Impedance (b) Current (c) PF (d) Active power (e) Reactive power .
12	A 3-phase delta connected load consumes a power of 100KW taking a lagging line current of 200A at a line voltage of 400V, 50Hz. Find the elements of each phase of the load
13	A balanced 3 phase star connected load is fed from a 400V, 3 Phase 50Hz supply. The phase current is 25 A lagging and the total active power absorbed by load is 13.88kW.determine the resistance and inductance of the load per phase and also find the total reactive power.
14	A balanced star connected load each having resistance of $10\ \Omega$ and inductive reactance of $30\ \Omega$ is connected to a 400V, 50Hz, 3 phase supply. Determine the line current.
15	A three phase 400 V, 50 Hz, A.C. supply is feeding a three phase delta connected load with each phase having a resistance of $25\ \Omega$, an inductance of 0.15H and a capacitor of 120pF in series. Determine the line current, volt-ampere, active power and reactive volt-ampere.
16	A balanced delta connected load of $(8+j6)\ \Omega$ per phase is supplied from 3-phase, 440V source. Find i) phase current ii) line current iii) apparent power iv) active power v) reactive power.

17	A balanced 3 phase generator delivers 7.2 kW to a wye connected load with impedance $30-j40\ \Omega$ per phase. Find the line current and line voltage.
18	A balanced 3- ϕ star connected load of 150 kW takes a leading current of 100A, with a line voltage of 1100V at 50 Hz. Find the circuit constants of the load per phase.
19	A balanced star connected load each having resistance of $20\ \Omega$ and inductive reactance of $60\ \Omega$ is connected to a 400V, 50Hz, 3 phase supply. Determine the line current.
20	A balanced delta connected load of $(10+j8)\ \Omega$ per phase is supplied from 3-phase, 440V source. Find i) phase current ii) line current iii) apparent power iv) active power v) reactive power.