Q1. A sinusoidal wave of frequency 50Hz has its maximum value of 9.2A. what will be its value at

i) 0.002sec after passing through zero in positive direction.
ii) 0.0045sec after the wave passes through positive maximum. Sketch the waveform of current showing the current value at the above time instants.

Q2. 3 coils A,B and C are connected in series. When a current of 3A is passed through the circuit, the voltage drops are respectively 12V, 6V and 9V on direct current and 15V, 9V and 12Von alternating current. Find for each of the coils i) internal parameters, ii) power dissipated when alternating current flows through the circuit, (iii)the applied voltage across it. Draw the phasor diagram. Find the overall power factor of the circuit.

Q3. A choke coil is connected to a 240V ac supply. When the frequency of the supply is 50Hz, an ammeter connected in series with the choke reads 60A. On increasing the frequency of the supply to 100Hz, the same ammeter reads 40A. Calculate r and L of the coil.

Q4. Power dissipated in a series RC circuit is 25 W, while the current and voltage being 0.4A and 230 V respectively. Find the value of capacitance.(Assume supply frequency of 50 Hz)

Q5. A capacitor is used in series with a tungsten- filament bulb rated at 500W,100V, so that it gives its rated illumination when connected to a 220V,50Hz supply. Calculate the value of the capacitance, current drawn by the supply. Find the power factor.

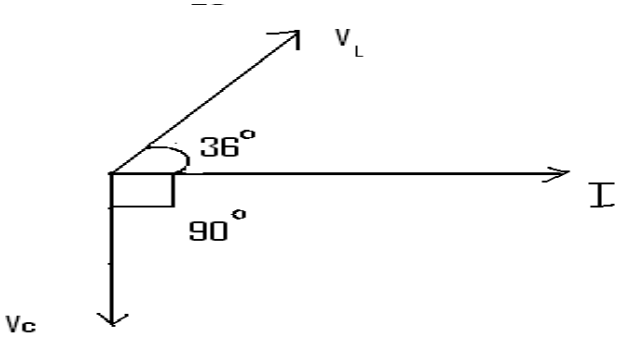
Q6. The following phasor diagram find the following.

(i) Power Factor of the circuit

(ii) Reactive power in the circuit

(iii) Magnitude of supply voltage

Also, Redraw the phasor diagram by taking supply voltage as reference, mentioning all the voltages and current. Current phasor is 10 A , V_C is 6V and V_L is 10 V.



Q7. A coil of power factor 0.6 is in series with a 100μF capacitor. When connected to a 50Hz supply, the potential difference across the coil is equal to the potential difference across the capacitor. Find the resistance and inductance of the coil.

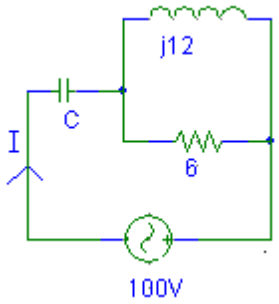
Q8. An emf whose instantaneous value at time t is given by 283 sin(100πt + π/4) Volts is applied to an inductive circuit and the current in the circuit is 5.66 sin(100πt – π/6) Amperes. Determine i) the frequency of the emf, ii) the resistance and inductance of the circuit, iii) the active power absorbed. If series capacitance is added so as to bring the circuit into resonance at this frequency and the above emf is applied to the resonant circuit, find the corresponding expression for the instantaneous value of the current and also find the value of the series capacitance. Draw the phasor diagram representing the circuit before and at resonance.

Q9. A parallel RL circuit has R=4Ω, X_L=3Ω. Obtain its series equivalent such that the series circuit draws the same current and power at a given voltage.

Q10. The admittance of a circuit is (0.05-j0.08)S. Find the values of the resistance and inductive reactance of the circuit if they are a) in parallel b) in series.

Q11. Branch A of a parallel circuit consists of an inductive coil with resistance 50Ω and inductor of 0.1H and branch B consists of a resistor of 45Ωin series with a capacitor of 100μF. Calculate the current, power and power factor of the circuit when the supply voltage is 230V, 50Hz.

Q12. The circuit shown in figure operates at a frequency of 50Hz. Determine the value of C such that the input voltage V and the input current I are in the same phase



Q13. Two impedances Z_1 and Z_2 are connected in parallel. The first branch takes a leading current of 16A and has resistance of 5Ω and while the second branch takes a lagging current at a power factor of 0.8. The total power supplied is 5kW and the applied voltage being (100+j200) V. Determine the complex expressions for branch currents and the total current. Also draw the complete phasor diagram representing the circuit taking voltage as the reference phasor.

Q14. Two coils are connected in parallel across 200V, 50Hz mains. One coil takes 0.8kW and 1.5 kVA and the other coil takes 1kW and 0.6kVAR. Calculate the resistance and reactance of a single coil that would take the same current and power as the original circuit. Draw the phasor diagram representing the original circuit.

Q15. A coil having a resistance of 4Ω and an inductance of 1H is connected in parallel with a circuit comprising a similar coil in series with a capacitor C F and a non

inductive resistor R. Calculate the values of C and R so that the currents in either branch of the arrangement are equal but differ in phase by 90^0. Frequency 50Hz.

Q1. What is a fuse ? Discuss the advantages and disadvantages of a fuse.

Q2. Write the Difference Between a Fuse and Circuit Breaker.

Q3. What is difference between MCB and MCCB?

Q4. What is an Earth Leakage Circuit Breaker (ELCB)?

Q5. Classify the types of cables based on construction.

Q6. Write a short note on Plate Earthing.

Q7. Write a short note on Pipe Earthing.

Q8. Discuss the advantages and disadvantages of Lead Acid Battery.

Q9. Discuss the advantages and disadvantages of Lithium Ion Battery

Q10. Discuss the significance of power factor improvement and its advantages.