

Q1 Define the equation for resonance frequency (f_r) in parallel resonance circuit- [2] Dec 12

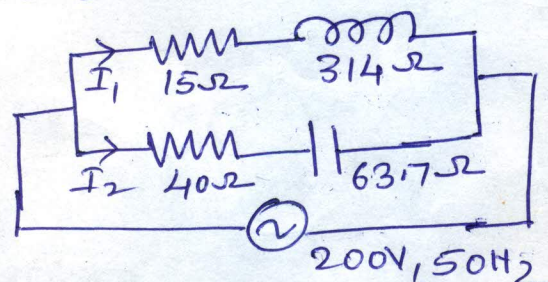
Q2 A 100Ω resistor is connected in series with a choke coil. When a $400V, 50Hz$ supply is applied to this combination, the voltage across the resistance and the choke coil are $200V$ and $300V$ respectively. Find the power consumed by the choke coil. Also calculate the power factor of the choke coil and power factor of the circuit.

Ans: $P_{coil} = 150W$; $pf_{coil} = 0.25$ (lagging) $pf_{circuit} = 0.6875$ (lagging)
marks [08] Dec 12

Q3 A voltage of $150V, 50Hz$ is applied to a coil of negligible resistance and inductance $0.2H$. Write the time equation for voltage and current.

Ans: $v = 212.13 \sin(100\pi t) = V$
 $i = 3.38 \sin(100\pi t - 90^\circ)$ [05] Dec 12

Q4 Calculate the branch current I_1 & I_2 for the circuit shown in Fig.



Ans: $I_1 = 5.75 \angle -64.47^\circ A$
 $I_2 = 2.66 \angle 57.87^\circ A$
[04] Dec 12

Q5 A resistor and capacitor are connected in series with a variable inductor. When the circuit is connected to a $230V, 50Hz$ supply, the maximum current obtained by varying the inductance is $2A$. The voltage across the capacitor is $500V$. Calculate the resistance, inductor and capacitor of the circuit

Ans: $R = 115\Omega$; $C = 12.73\mu F$; $L = 0.795H$
[07] Dec 12

