

LOKMANYA TILAK COLLEGE OF ENGINEERING

SUB: BEE

Marks: 20

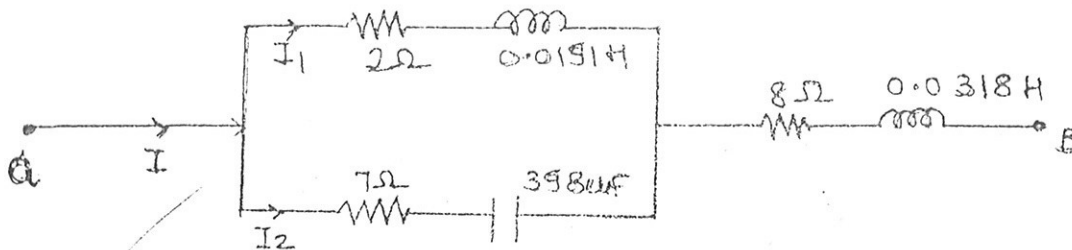
Time:- 1 hr

ANSWER ANY TWO QUESTIONS.

Q1. A) An alternating voltage is given by  $v = 141.4 \sin 314t$ . Find: - 1. Frequency 2. Rms value  
3. average value 4. Instantaneous value of voltage when  $t = 3\text{ms}$ . (4 marks)

B) A choke coil is connected in series with a fixed resistor. A 240V 50Hz supply is applied and a current of 2.5A flows. If the voltage drop across the coil and fixed resistance are 140V & 160V respectively. Calculate the value of fixed resistance and inductance of the coil & power drawn by the coil. (6 marks)

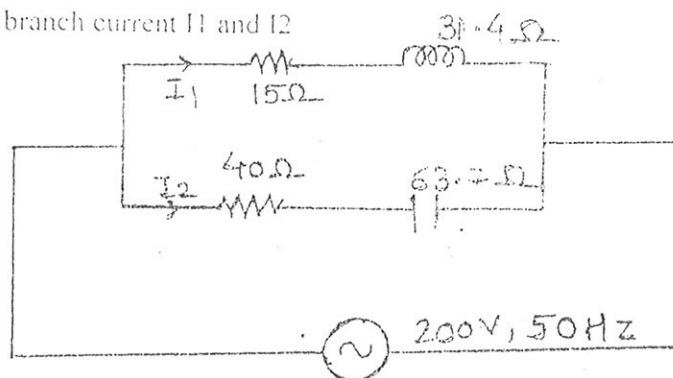
Q2. A) Find the applied voltage  $V_{ab}$  so that 10A current may flow through the <sup>capacitor</sup> circuit. (4 marks)



B) A coil having an inductance of 1H and resistance of 12 ohm is connected in parallel with a variable capacitor. At  $\omega = 2.3 \times 10^6$  radians/second, a resonance is achieved and at this instant  $C = 0.02 \mu\text{f}$ . Find 'L' of coil. (6 marks)

$$\omega = \sqrt{\frac{1}{LC} - \frac{R^2}{L^2}}$$

Q3. A) Calculate branch current  $I_1$  and  $I_2$



B) A 100 ohm resistor is connected in series with a choke coil. When 400V, 50Hz supply is applied to this combination, the voltage across the resistance and choke coil are 200V & 300V. Find power assumed by the choke coil also calculate P.F of choke coil and P.F of the circuit. (6 marks)

$$\begin{array}{r} 2 \\ 64 \\ \times 12.5 \\ \hline 320 \\ 1280 \\ \hline 1600 \end{array}$$