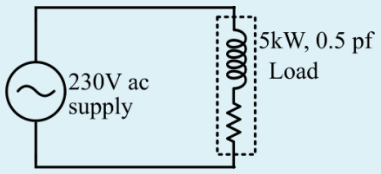
For the 50Hz system show below:



(i) Calculate the real power(P), Reactive power(Q), Apparent power (S) for the load and draw the power triangle [2]

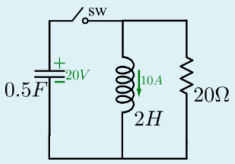
(ii) Calculate additional impedance that must be connected in parallel with the given load such that the source will see unity power factor. Draw the diagram showing how this additional impedance is connected. [10]

(iii) Construct the additional impedance obtained in part (ii) using L, C and R components. [3]

This space can be left blank. Write your response in your answer sheets which you will scan and upload.

Comment:
2+7+0

Question **2**
Complete
Mark 3.00 out of 15.00
Flag question



Consider the circuit shown. The switch SW is closed at t=0. Find the capacitor voltage as a function of time $v_c(t)$ for t>0 using ordinary differential equations.

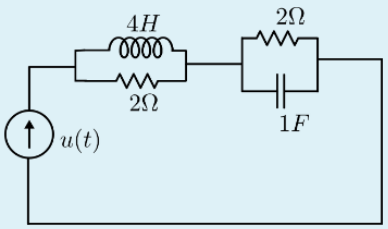
Initial conditions are:
$v_c(0) = 20V$ and $i_l(0) = 10A$.

Make sure to mention:

1. The ODE that describes this circuit [3]
2. Characteristic Equation and its roots [2]
3. Complementary Function and Particular Integral [5]
4. Full solution satisfying initial conditions [5]

Comment:
2+0+1

Question **3**
Complete
Mark 14.00 out of 15.00
Flag question



1. Draw the dual of the circuit shown. [5]
2. For the circuit shown, find the voltage across the current source as function of time $v(t)$. [10]

Comment:
4+10

Question **4**

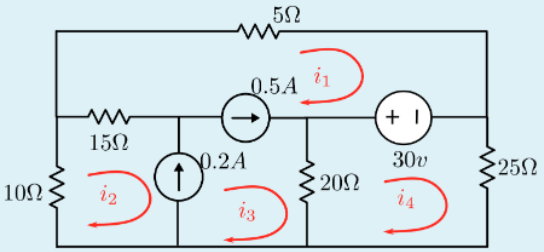
Complete

Mark 0.00 out of 15.00

Flag question

Write the mesh equations for the following circuit in Matrix form and solve the circuit (find all branch currents) [15]

Redraw the circuit on your answer sheet with all the necessary annotations, node names, etc as needed.



Comment: