**Q1)- {15 Marks}**

a)- Given **w**= 314 rad/s, determine how long it will take the sinusoidal waveform to pass through an angle of 90° **{7Marks}**

b)-The current through a 0.2-H coil is provided. Find the sinusoidal expression for the voltage across the coil. Sketch the v and i curves **{8Marks}**

$$i(t) = 7\sin(377t - 70°)$$

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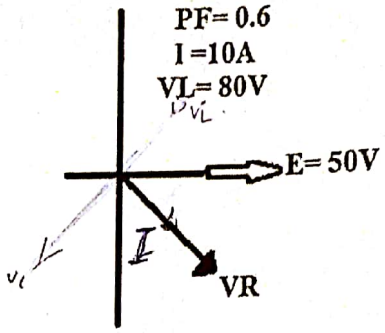
**Q2)-** **{15 Marks}**

The phasor diagram of Series RLC circuit is shown in the fig:

1- Find The value of the series elements. **{6 Marks}**

2- Complete the phasor diagram . **{4 Marks}**

3- Determine $P_{av}$ **{2 Marks}**

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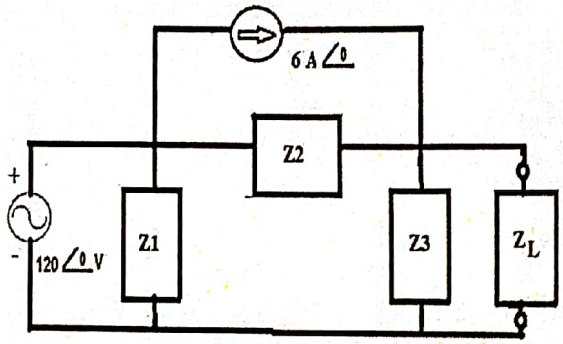
**Q3)-** **{15 Marks}**

In the circuit shown,given that:

$Z_1$=3- J4 , $Z_2$ = 4.426 +J4.426 ,and $Z_3$ =2-J3

a)- Determine the value of $Z_L$ for maximum power to the load. **{6 Marks}**

b)-Find $P_{max}$ **{9 Marks}**

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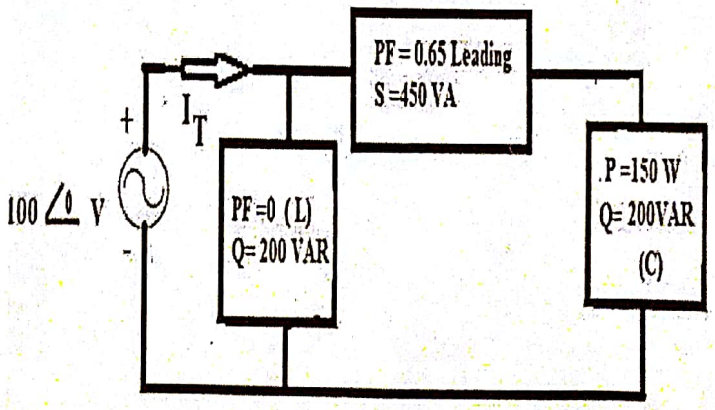
**Q4)-** **{15 Marks}**

For the System shown:

a)- Draw the power triangle. **{9 Marks}**

b)- Find total power factor. **{3 Marks}**

c)- Determine the total current $I_T$. **{3 Marks}**

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