

**Q1)- {15 Marks}**

a)- Given  $\omega = 314$  rad/s, determine how long it will take the sinusoidal waveform to pass through an angle of  $90^\circ$

{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}

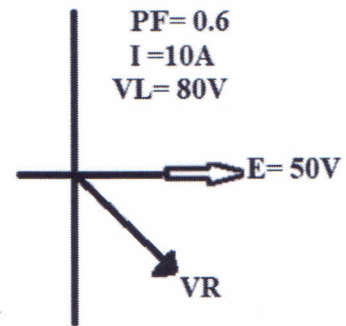
$$i(t) = 7 \sin(377t - 70^\circ)$$



**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}

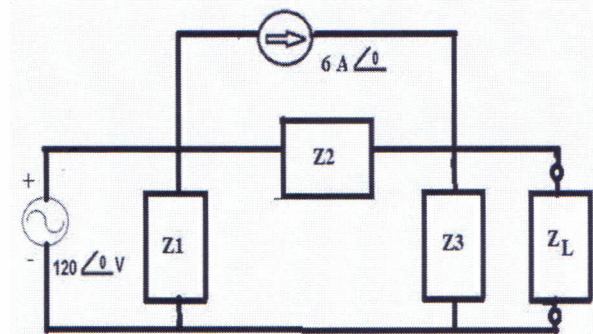


**Q3)- {15 Marks}**

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}



**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}

