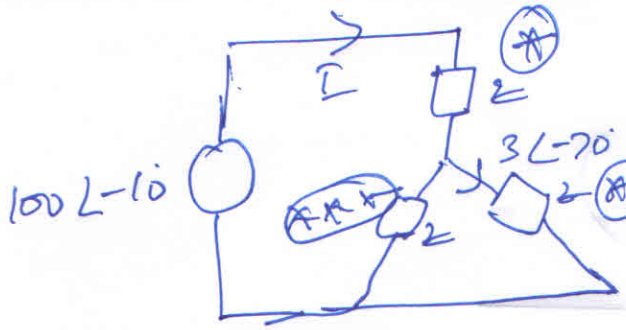
Q.4b.

(a) Power factor of source.



current 'I' drawn from source = $6\angle -70°$ amp.

Therefore, angle bet^{n} Voltage & current = 60°

(Power factor) Cos 60° = 0.5 (lagging) (3)

(b) $Z_{Total} = \frac{3}{2}Z = \frac{100\angle -10}{6\angle -70} = \frac{100}{6}\angle 60° = \frac{3}{2}Z$

$Z = \frac{200}{18}\angle 60° = \frac{100\angle 60°}{9} = \underline{11\angle 60°}$ ohm (5)

(c) Active & Reactive power by Z common

$= (6)^2[(5.5 + j\,9.52)]$

$= (\underbrace{198}_{P_{watt}} + j\underbrace{342.94}_{Q.\,VAR.})$ (5)

(d)

(5) $= 9(5.5 + j\,9.52)$

$= (49.5 + j\,85.68)$

$P + jQ.$

same for 50 Ω (**) & (***)

d

$$\frac{V^2}{X_C} = Q$$

$$574.3 = \frac{(100)^2}{X_L}$$

$$X_C = 19.44 \quad \omega = \frac{1}{\omega C}$$

$$= .000163 \text{ f.}$$

7