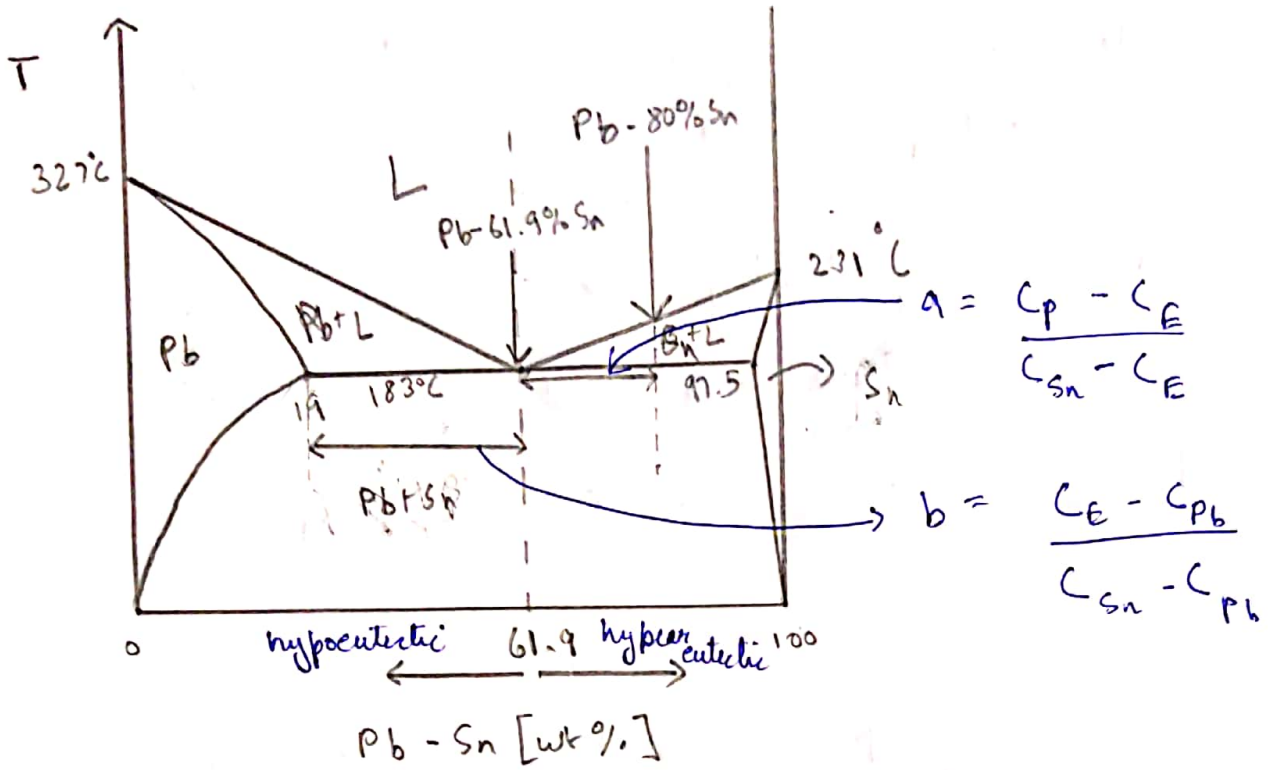
Q2



a) Fraction of proeutectic phase (β)

= Fraction of β just above 183° (T_E)

$= \frac{80 - 61.9}{97.5 - 61.9} = \frac{18.1}{35.6} = 0.508$

b) Fraction of Eutectic Mixture

= 1 - Fraction of proeutectic mixture

$= 1 - \left(\frac{18.1}{35.6}\right) = 0.492$

c) $b(x) = \frac{C_\beta - C_0}{C_\beta - C_\alpha}$ = when $C_0 = 80\%$, $C_\beta = 97.5$, $C_\alpha = 19$

$b(x) = \frac{97.5 - 80}{97.5 - 19} = 0.223$

$b_\beta = 1 - b_x = 0.777$ (In part 4)

* Just above the eutectic temp we have L + β mixture while on cooling slightly below eutectic temp we get (α+β) and β mixture

d) Fraction of total β phase :-

Applying lever rule just below invariant line

$$f_\beta = \frac{C - C_\alpha}{C_\beta - C_\alpha} = \frac{80 - 19}{97.5 - 19} = \frac{61}{78.5} = \boxed{0.777}$$

e) Fraction of β phase that forms part of eutectic mixture

$$f_{eutectic} = f_{total\ \beta} - f_{pro-eutectic\ \beta}$$

$$= \frac{61}{78.5} - \frac{18.1}{35.6} = 0.777 - 0.508$$

$$\Rightarrow \boxed{0.269}$$