1. \( \delta (W - \mu k) = 0 \)
\[ \int B \cdot dB + v \cdot dv - \mu v \cdot dB - \mu v \cdot B = 0 \]
\[ \int (B - \mu v) \cdot dB + (v - \mu B) \cdot dv = 0 \]
Since \( dv, dB \) are arbitrary, in order to vanish the integrand it must be that \( B - \mu v = 0 \), \( v - \mu B = 0 \) \( \Rightarrow \mu = 1 \), \( v = 2B \).

2. \( \delta (W - \lambda H) = 0 \)
\[ \int v \cdot dv + B \cdot SB - 2A \cdot SB - \frac{1}{2} B \cdot SA = 0 \]
Note \( B \cdot SA = (\nabla \times A) \cdot SA = A \cdot \nabla \times SA - \nabla \cdot (SA \times A) \)
Note \( \int \nabla \cdot (SA \times A) = \oint (SA \times A) \cdot da = 0 \) if \( SA \cdot da = 0 \) 
\[ \Rightarrow \int v \cdot dv + (B - \lambda A) \cdot SB = 0 \]
\( \Rightarrow v = 0 \), \( B = \lambda A \), so \( \nabla \times B = \lambda A \times A = \lambda B \)
Recognize this as a force-free equilibrium.

3. \( \delta (W - \mu k - \lambda H) = 0 \)
\[ \int B \cdot SB + v \cdot dv - \mu v \cdot dB - \mu v \cdot B - \lambda A \cdot SB = 0 \]
\[ \int (B - \mu v) \cdot dB + (v - \mu B - \lambda A) \cdot SB = 0 \]
\( \Rightarrow v = \mu B \), \( B = \frac{\lambda A}{1 - \mu^2 A} \) (still force free)

21. \( \lambda \to 0 \Rightarrow B - \mu^2 B = 0 \Rightarrow B = 1 \) identical to (a)
\( \mu \to 0 \Rightarrow v = 0 \), \( B = \lambda A \) identical to part (b)
\( \lambda \to 0 \) and \( \mu \to 0 \) \( \Rightarrow v = 0 \), \( B = 0 \)
(uncoupled minimization of W will just kill off both fields).