Ques 1. Given eqs $g_1 = f_1 + h_2 * f_2 \rightarrow (1)$

$$g_2 = h_1 * f_1 + f_2 \rightarrow (2)$$

taking fourier of (1) & (2)

$G_1 = F(g_1)$ $G_2 = F(g_2)$ $F_1 = F(f_1)$ $F_2 = F(f_2)$ $H_1 = F(h_1)$ $H_2 = F(h_2)$

$$G_1 = F_1 + H_2 \cdot F_2 \rightarrow (3)$$

$$G_2 = H_1 F_1 + F_2 \rightarrow (4)$$

Solving (3) & (4) we get

$$F_1 = \frac{G_2 H_2 - G_1}{H_1 H_2 - 1} \rightarrow (5)$$

$$F_2 = \frac{G_1 H_1 - G_2}{H_1 H_2 - 1} \rightarrow (6)$$

taking fourier Inverse of (5) & (6)

$$f_1 = F^{-1}\left(\frac{G_2 H_2 - G_1}{H_1 H_2 - 1}\right)$$

$$f_2 = F^{-1}\left(\frac{G_1 H_1 - G_2}{H_1 H_2 - 1}\right)$$

Since h_1 and h_2 are blur filters, corresponding H_1 and H_2 are low pass filters. Hence $H_1 H_2$ is ~ 1 for low frequency. Also $F_1(u,v)$ and $F_2(u,v)$ will be very much high for low frequency. The whole resultant image will be Blurred or nearly same intensity for all pixels.