(1) We can show that

$$
\begin{aligned}
P(x_8) &= \{\{\omega_1,\omega_2,\omega_3\},\{\omega_4\},\{\omega_5\}\},\\
P(x_2,x_3) &= \{\{\omega_1\},\{\omega_2\},\{\omega_3\},\{\omega_4\},\{\omega_5\}\} = P(x_2)\vee P(x_3),\\
\sigma(x_7) &= \{\{\omega_1,\omega_5\},\{\omega_2,\omega_3\},\{\omega_4\},\{\omega_1,\omega_4,\omega_5\},\{\omega_2,\omega_3,\omega_4\},\{\omega_1,\omega_2,\omega_3,\omega_5\},\emptyset,\Omega\},\\
\sigma(x_3,x_6) &= \{\{\omega_1,\omega_2\},\{\omega_3,\omega_4\},\{\omega_5\},\{\omega_1,\omega_2,\omega_5\},\{\omega_3,\omega_4,\omega_5\},\{\omega_1,\omega_2,\omega_3,\omega_4\},\emptyset,\Omega\}\\
&= \sigma(x_3)\vee\sigma(x_6).
\end{aligned}
$$

(2) x_1 and x_7 are $(P_1 \vee P_2)$-measurable, x_6 is $(P_1 \wedge P_2)$-measurable, x_8 is $(P_1 \wedge P_3)$-measurable and x_5 is P_i-measurable for every i.

(3) Since x_3 is P_2-measurable and P_3 is finer than P_2, x_3 is also P_3-measurable.

(4) Since x_2 is P_1-measurable, $3x_2 = (0,3,3,12,6)$ is still P_1-measurable.

(5) $x_2 - 2x_3 = (-2,-1,-5,-2,-2)$ is $(P_1 \vee P_2)$-measurable.

(6) $(x_3,x_4) = ((1,0),(1,0),(3,2),(3,4),(2,5))$ is $(P_2 \vee P_3)$-measurable.

(7) $x_2x_4 = (0,0,2,16,10)$ is $(P_1 \vee P_3)$-measurable.