1. a) None
   b) C (dominated by A)
   c) A (dominated by B), C (dominated by A and B)

2. a) No. If one councilman changes from yes to no, his payoff increases from -c to 0.
   c) Yes, (y, y, n), (y, n, y), and (n, y, y) are all Nash equilibria. If y, the yes vote changes to yes, his payoff drops from 0 to -c. If a yes vote changes to no, his payoff drops from 0 to 0.
   d) No, (y, y, n), (n, y, n), and (n, n, y) are not Nash equilibria. There are two reasons, either of which alone is sufficient. (1) If the yes vote changes to no, his payoff increases from -c to 0. (2) If a no vote changes to yes, his payoff increases from 0 to 0.
   e) Yes. If one vote changes from n to y, his payoff drops from 0 to -c.
Congress sees that if it passes I, president will veto, giving Congress a payoff of 1;

if it passes A, president will sign, giving Congress a payoff of 0;

if it passes B, president will sign A only, giving Congress a payoff of 0.

i.e.: Congress passes I, president vetoes.

Note that in part (a) president's payoff is 1, in part (b) president's payoff is 0. Thus the president's additional payoff in part (b) resulted in a lower payoff to him.
Congress sees that if it passes I, President will veto,
giving Congress a payoff of 1;
if it passes A, President will sign,
giving Congress a payoff of 0;
if it passes B, President will sign,
giving Congress a payoff of 2.

"Congress passes B, president signs."
(a) For a Nash equilibrium, we need \( \frac{\partial r_1}{\partial p_1} = 0 \) and \( \frac{\partial r_2}{\partial p_2} = 0. \)

\[
\begin{align*}
\frac{\partial r_1}{\partial p_1} &= 10 - 4p_1 - p_2 \\
\frac{\partial r_2}{\partial p_2} &= 10 - 4p_2 - p_1
\end{align*}
\]

Therefore, we solve simultaneously the equations

\[
\begin{align*}
10 - 4p_1 - p_2 &= 0 \\
10 - 4p_2 - p_1 &= 0
\end{align*}
\]

The result is \( p_1 = 2, \ p_2 = 2 \).

Note that \( \frac{\partial r_1}{\partial p_2} = -4 \) and \( \frac{\partial r_2}{\partial p_1} = -4 \). Therefore, this really is a Nash equilibrium.

(b) If the grocery store chooses price \( p_1 \), the gas station will choose price \( p_2 \) to maximize

\[ r_2 = 10p_2 - p_1p_2 - 2p_2^2 \quad (p_1 \text{ fixed}) \]

To find the \( p_2 \) when \( r_2 \) is maximum, find \( \frac{\partial r_2}{\partial p_2} \) and set it equal to 0

\[
\frac{\partial r_2}{\partial p_2} = 10 - p_1 - 4p_2 = 0 \implies p_2 = \frac{10 - p_1}{4}
\]
The generic store, using backward induction, chooses \( p_i \) to maximize

\[
\Gamma_i = 10p_i - 2p_i^2 - p_i (10 - p_i)
\]

\[
= 10p_i - 2p_i^2 - 5p_i + \frac{1}{4}p_i^2
\]

\[
= \frac{15}{4}p_i - \frac{7}{4}p_i^2
\]

\[
\frac{\partial \Gamma_i}{\partial p_i} = \frac{15}{2} - 2 \cdot \frac{7}{4} p_i = 0 \Rightarrow \quad p_1 = \frac{15}{7}
\]

\[
p_2 = \frac{10 - \frac{15}{4}}{4} = \frac{55}{28}
\]