Q1

P2

	A	B	C
P1 A	0, 0	60, 132	0, 104
B	132, 60	52, 52	12, 70
C	104, 0	70, 12	24, 24

a.)
For P1: A is dominated by C.
For P_2: A is dominated by C.

b.)

	B	C
B	52, 52	12, 70
C	70, 12	24, 24

c.) For both P1 & P2,
B is dominated by C.

Q2.
a.) Let the highest bid be b.
If $b > 100$, then
$\pi(b_{100}) = \pi(b_{95}) = 0$.
If $95 < b < 100$, then
$\pi(b_{100}) = 0 = \pi(b_{95})$.
If $b < 95$, $\pi(b_{100}) = 0$ &
$\pi(b_{95}) = 5$.
Hence b_{95} weakly dominates b_{100}.

b.) If $b > 95$, $\pi(b_{95}) = \pi(b_{60}) = 0$

If $60 < b < 95$, $\pi(b_{95}) = 5$,
$\pi(b_{60}) = 0$.

If $b < 60$, $\pi(b_{60}) = 40$, $\pi(b_{95}) = 5$

$\Rightarrow$ b_{60} does not dominate b_{95}
and b_{95} does not dominate b_{60}.

3.) $V_1 > V_2$, $b_1 = V_1$, $V_2 < b_2 < V_1 = b_1$

Player 1 wins and gets $\pi_1 = V_1 - b_2 > 0$. Player 2 gets $\pi_2 = 0$.
player 1 has no incentive to bid $b_2 < b_1 < V_1$ or $b_1 > V_1$
because π_1 is still $V_1 - b_2$. Player 1
has no incentive to decrease $b_1 < b_2$
since π_1 becomes 0.

Player 2 has no incentive to increase $b_2 > b_1$ since
$\pi_2 = V_2 - b_1 < 0$. Also, $b_2 < V_2$ would result
to $\pi_2 = 0$.

$\rightarrow$ $V_2 < b_2 < V_1 = b_1$ is N.E.

b) $V_2 < b_2$ is weakly dominated by $\hat{b}_2 = V_2$

because:

(i) If $\hat{b}_2 = V_2 < b_2 < b_1 \longrightarrow \pi(\hat{b}_2) = \pi(b_2) = 0$.

(2) If $\hat{b}_2 = v_2 < b_1 < b_2 \rightarrow \pi(b_2) = v_2 - b_1 < 0$

$\pi(\hat{b}_2) = 0$

(3) If $b_1 < \hat{b}_2 = v_2 < b_2 \rightarrow \pi(b_2) = \pi(\hat{b}_2) = v_2 - b_1 > 0$

$\rightarrow$ $\hat{b}_2$ weakly dominates b_2.

4.)

		q	$1-q$
		h	t
p	H	$\underline{1}, -1$	$-1, \underline{1}$
$1-p$	T	$-1, \underline{1}$	$\underline{1}, -1$

No PSNE.

$EU_1(H) = 1q + (1-q)(-1)$

$EU_1(T) = -1q + (1-q)(1)$

1 is indifferent when: $q - 1 + q = -q + 1 - q$

$\rightarrow q = \frac{1}{2}$

Likewise, $EU_2(h) = EU_2(t) \rightarrow p = \frac{1}{2}$.

$\Rightarrow$ MSNE: $p = \frac{1}{2}$, $q = \frac{1}{2}$,

or: play H $\frac{1}{2}$ of the time; T $\frac{1}{2}$ of the time

play h $\frac{1}{2}$ of the time; t $\frac{1}{2}$ of the time.

$\rightarrow$ q $1-q$

5.)

		q	$1-q$
		h	t
p	H	0, 0	4, 1
$1-p$	D	1, 4	2, 2

$$Eu(H) = 0q + 4(1-q)$$
$$Eu(D) = 1q + 2(1-q)$$
$$Eu(H) = Eu(D) \Rightarrow 4(1-q) = q + 2(1-q)$$
$$\Rightarrow q = 2/3$$
$$Eu(h) = Eu(d) \Rightarrow 0p + 4(1-p) = 1p + 2(1-p)$$
$$\Rightarrow p = \frac{2}{3}$$

b.) $Eu_1 = \frac{2}{3}\cdot\frac{2}{3}\cdot(0) + \frac{2}{3}\cdot\frac{1}{3}\cdot 4 + \frac{1}{3}\cdot\frac{2}{3}\cdot 1 + \frac{1}{3}\cdot\frac{1}{3}\cdot 2$

$= \frac{8}{9} + \frac{2}{9} + \frac{2}{9} = \frac{12}{9} = \frac{4}{3}$

$Eu_2 = \frac{2}{3}\cdot\frac{2}{3}\cdot 0 + \frac{2}{3}\cdot\frac{1}{3}\cdot 1 + \frac{1}{3}\cdot\frac{2}{3}\cdot 4 + \frac{1}{3}\cdot\frac{1}{3}\cdot 2$

$= 4/3$

6.)

		q	$1-q$
		L	R
p	U	a, 0	0, b
$1-p$	D	0, c	d, 0

$1-p$	D	$0, c$	$d, 0$

$EU(U) = EU(D) \Rightarrow aq = d(1-q) \rightarrow q = \frac{d}{a+d}$

$EU(L) = EU(R) \Rightarrow c(1-p) = bp \rightarrow p = \frac{c}{b+c}$

$$EU_1 = a \cdot pq + d(1-p)(1-q) = a\left(\frac{d}{a+d}\right)\left(\frac{c}{b+c}\right) + d\left(\frac{a}{a+d}\right)\left(\frac{b}{b+c}\right) > 0$$

$$EU_2 = c(1-p)q + b(1-q)p = c\left(\frac{b}{b+c}\right)\left(\frac{d}{a+d}\right) + b\left(\frac{a}{a+d}\right)\left(\frac{c}{b+c}\right) > 0$$

Pareto Efficient since $EU_1, EU_2 > 0$ while any outcome result to either $u_1 = 0$ or $u_2 = 0$.

7.)

		q: S	$1-q$: W
p	M	$-m, w^0$	$-m, w^*-e$
$1-p$	N	$-w^*, w^*$	$0, w^*-e$

$EU(M) = EU(N) \Rightarrow -m = -w^* q + 0$

$\rightarrow q = \frac{m}{w^*}$

$EU(S) = EU(W) \rightarrow w^0 p + w^*(1-p) = w^* - e$

$$\rightarrow p = \frac{-e}{W^0 - W^*} = \frac{e}{W^* - W^0}$$

b.) As $m \uparrow$, $q \uparrow$. As $W^* \downarrow$, $q \uparrow$.

As $e \uparrow$, $p \uparrow$. As $W^* - W^0 \uparrow$, $p \downarrow$.

Shirking rises when cost of monitoring (m) rises and when efficiency wage falls.

monitoring rises when effort (e) rises or when job becomes more difficult. As gap in wage $(W^* - W^0)$ falls, more monitoring is needed.

c.) Yes, since the probability of monitoring would fall as the cost m rises. In this model, p is not a function of m. It is a function of effort and wages. $p = \frac{e}{W^* - W^0}$.