Economics 160 Homework #3 Answer Key

11. SETS:

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
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<tbody>
<tr>
<td>31</td>
<td>21</td>
<td>42</td>
<td>42</td>
<td>42</td>
</tr>
</tbody>
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1. IF 2 GO D, 1 SHOULD GO A.
2. IF 2 GO E, 1 SHOULD GO C IF 2 GO F, 1 SHOULD GO A.
3. B IS A DOMINATED STRATEGY IF 2 CROSS IT OUT.
4. IF 1 GO A, 2 SHOULD GO D.
5. IF 1 GO C, 2 SHOULD GO F.
6. IF 1 GO E, 2 SHOULD GO D.
7. E IS A DOMINATED STRATEGY.
8. IF 2 GO D, 1 SHOULD GO A.
9. C IS A DOMINATED STRATEGY.
10. IF 1 GO A, 2 SHOULD GO D.
11. F IS A DOMINATED STRATEGY.

Solution: 1 GO A, 2 GO D

NOTICE THIS IS A NASH EQUILIBRIUM AS WELL, THAT IS, IF 1 GO A, 2'S BEST RESPONSE IS D, IF 2 GO D 1'S BEST RESPONSE IS A.

\[ T_1 = [180 - P_1 - \left( P_2 - \frac{P_1 + P_2}{2} \right)] (P_2 - 20) \]

\[ T_2 = [180 - P_2 - \left( P_2 - \frac{P_1 + P_2}{2} \right)] (P_2 - 20) \]

Utilizing the three price options, each firm leads to the following payoff matrix: Note: 1's \( T_1 \) (T1) listed 1st, 2's \( T_2 \) (T2) listed 2nd.

<table>
<thead>
<tr>
<th></th>
<th>74</th>
<th>84</th>
<th>94</th>
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<tbody>
<tr>
<td>74</td>
<td>S724, S824, S624,</td>
<td>6264</td>
<td></td>
</tr>
<tr>
<td>84</td>
<td>S724, S994,</td>
<td>6264</td>
<td></td>
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<tr>
<td>94</td>
<td>S824,</td>
<td>6144, S994, 6464</td>
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<td>2</td>
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<td>84</td>
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<td>6144, 6364</td>
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<td>94</td>
<td>S624,</td>
<td>5994, 6364</td>
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1. Selecting \( P_1 = 84 \) is a strategy dominating strategy. That is, if 2 go 74, I should go 84. IF 2 go 84, I should go 84. IF 2 go 94, I should go 84.

2. 1 always chooses 84. Using similar logic for 2, 2 always chooses 84 (irrespective of 1's choice), leading to its strategy, dominant strategy of \( P_2 = 84 \).

If \( P_1 = 84 \), \( P_2 = 84 \) is also a NASH EQUILIBRIUM, why? IF \( P_1 = 84 \), 2's best response is \( P_2 = 84 \), IF \( P_2 = 84 \), 1's best response is \( P_1 = 84 \) Mutually best response (ie, NASH EQUILIBRIUM).
A. Let (10, 90) = Sara takes 10%, Brian takes 90%
   (90, 10) = Sara takes 90%, Brian takes 10%
   (50, 50) = Each gets 50%

A = Accept offer, R = Reject offer
S = Sara, B = Brian

Sara's payoff listed 1st, Brian's payoff listed 2nd.

Using backwards induction, Sara is the last player to conceivably move, and based on the game tree, she would always accept Brian's offer, knowing that Brian would always offer (10, 90). Based on these strategies, Brian would accept at two left nodes, but reject at right node, thus leaving Sara to offer (50, 50) to begin with, leading her to get $5 and Brian to get $5.
A. OWN-PRICE ELASTICITY \( \alpha_{\text{Acute}} = -0.05 \) \( \text{From Page 37 of the Cross-Price Elasticity} \quad \beta_{\text{NAC}} = 0.01 \) \( \text{Notes: These values being low suggests} \)
\( \text{Acute} \& \text{Non-Acute} \) \( \text{Care are not substitutes} \)
\( \text{and therefore} \) \( \text{are considered different} \)
\( \text{Product Markets.} \)
\( \text{Hence don't consider NAC data in evaluating the geographic extent of hospital market. Do Oahu \& Maui hospitals operate} \)
\( \text{in same market, or are they in two different markets? For Oahu:} \)
\[ \text{LOFI} = \frac{\text{Local Consumption}}{\text{Local Supply}} = \frac{45,000}{48,000} = 0.94 \quad \text{94\% of Patients} \]
\( \text{in Oahu hospitals are residents of Oahu.} \)
\[ \text{LIFO} = \frac{\text{Local Consumption}}{\text{Local Consumption}} = \frac{45,000}{45,000} = 1 \quad \text{100\% of Patients of Oahu go to Oahu hospitals, not Maui hospitals.} \]
\( \text{Note: If LOFI was low, this would suggest lots} \)
\( \text{of patients from Maui go to Oahu for services (i.e., Oahu hospitals "export" these services to Maui).} \)
\( \text{Suggesting the relevant market is Oahu + Maui, if LIFO was low, this would suggest lots of patients from Oahu} \)
\( \text{go elsewhere (Maui) for service (i.e., Oahu patients "import" from Maui hospitals). Since} \)
\( \text{LOFI \& LIFO > 0.90, Oahu hospitals are considered to operate in a geographic market} \)
\( \text{different from Maui hospitals.} \)
\( \text{Note that the relevant market is simply Oahu hospitals,} \)
\( \text{market quantity (Q) = 48,000.} \)
\( \text{Before Mergers:} \quad M_A = \frac{20,000}{48,000} \approx 0.4167 \)
\[ \text{Mergers:} \quad M_B = \frac{20,000}{48,000} \approx 0.4167 \quad \text{\( \Rightarrow HHI = (0.4167)^2 + (0.4167)^2 + (0.1666)^2 \approx 3750 \)} \]
\[ \text{M_C = \frac{8,000}{48,000} \approx 0.1666} \]
B. AFTER MERGER:

\[
\begin{align*}
S^A &= \frac{20,000}{98,000} = 0.2041 \\
S^C &= \frac{28,000}{98,000} = 0.2857 \\
\end{align*}
\]

\[
HHI = (0.2041)^2 + (0.2857)^2 = 0.5139
\]

Using the Merger Guidelines, after the merger, HHI > 1800 & it increased from 3750 to 5139 (i.e. more than 100) → FTC likely challenge the merger.