Section 1

1. In this semester, the most surprising thing I learned is the limited attention. In standard model, people use all accessible information to make decisions. However, according to the Simon who is the Nobel price, we are limited to process all information to be completely rationally and we only try our best to achieve the most satisfactory results. It is surprised to me because it even can help explain the real reason for my procrastination. In my study life, I sometimes procrastinate the big assignments which need many days until 2~3 days before due. I just understand it is a procrastination but I don't know the theory behind that. After learning the limited attention in Econ 455, I can figure out that because of my inattention to all available information, such as professor's reminder on coming due date, and my true ability, I become overconfident and procrastinate. Also, I am surprised by the fact that the limited attention can even explain why people pay more attention to today rather than future (the inattention to future) and why people tend to buy umbella for future if it is rainy currently (the inattention to the true probability).

2.

(a) individual bought the season ticket, and at the time of purchase, no matter they received discount or not, they opened the negative account and plan to balance out that negative account by attending plays. The standard model

says individuals make decisions on future outcomes rather on ticket price paid before (which is sunk cost), and individual would make rational decisions. However, people paid full price attend more plays than those paid with discounts. That is to say humans make decisions based on past experience rather than future outcome. Therefore, it is inconsistent with standard model. On the other hand, the behavior economics' mental accounting explains this sunk cost fallacy. Though all individuals want to balance out the negative account, the individual paid full price gain more incentives to go to plays to balance out the account than those paid at discount since people paid full price opened a larger negative account. Therefore, it is consistent with behavior economics.

(b) Firstly, choice avoidance means for a lot choices, we find stressful and want to avoid a decision. It could explains why I choose to live in a apartment having only 4 available units rather than another having 12 available units. 12 available units makes me feel stressful to make decision, so I decide to live in the apartment with only 4 units available.

Secondly, the preference for the salience means I tend to choose the apartment which is more salient. Specifically, the B apartment has a big advertisement on campus where C apartment has no advertisement, so the B apartment is more salient to me. Thus, I would choose the B apartment to live.

Thirdly, the preference for the familiar means when facing a complex decision, I tend to choose the one I am most familiar with. That is to say, because for this year I live in B apartment, I am more familiar with that. Thus I will choose to live in B apartment rather than C apartment which is a strange to me.

(C) When consumer can afford either target product and the competitor's product, the policy maker have used the decoy effect to make customers toward the target product. Policy maker introduces a decoy product that is worse than target product in all aspects but is better than competitor's product in at least one aspect. In this case, consumer will affected by the introduced decoy to choose the policy maker's target product.

Also, policy maker also have utilized humans' limited attention to set the default to increase the donations or other loan programs' enrollment.

(d) Transaction utility is human's perceived value of a deal relative to the reference point. The example is that I perceive the frozen burger with 50% discount is a good deal and I will purchase that. This is attributed to my transaction utility.

Acquisition utility is the human's measured value

of a product relative to its price. One example is I like ice cream, and I have a high value of that ice cream.

Section 2

3.

(a) $E(U) = 20 \times 0.25 + 15 \times 0.5 + 10 \times 0.25$

$= 15$

(b) currently is hot, $E(U) > 16$, find α?

$P(hot)[(1-\alpha)u(b, hot) + \alpha \cdot u(b, hot)] + P(mild)[(1-\alpha)v(b, mild) + \alpha u(b, hot)] + P(cool)[(1-\alpha)u(b, cool) + \alpha u(b, hot)] > 16$

$0.25 \times 20 + 0.5 \times (15(1-\alpha) + 20\alpha) + 0.25 \times (10(1-\alpha) + 20\alpha > 16$

$5 + 0.5(15 - 15\alpha + 20\alpha) + 0.25(10 - 10\alpha + 20\alpha) > 16$

$5 + 0.5(15 + 5\alpha) + 0.25(10 + 10\alpha) > 16$

$20 + 2(15 + 5\alpha) + 10 + 10\alpha > 64$

$10\alpha + 10\alpha > 64 - 20 - 10 - 30$

$20\alpha > 4$

$\alpha > 0.2$

(C) Because Susan has the projection bias of $\alpha > 0.2$, her perceived value depend on current state which is hot. Then, because $U(hot)$ is the highest and Susan's perceived value depends on that, her final perceived utility will be higher than actual utility (at least $16 > 15$).

4. $P(NA) = 0.6 \rightarrow P(A) = 0.4$

$P(a|A) = 0.8 = P(na|NA) \rightarrow P(na|A) = P(a|NA) = 0.2$

(a) $P(NA \mid na\,na\,a\,a) = \dfrac{P(na \cdot na \cdot a) \cdot P(NA)}{P(na, na, a)}$

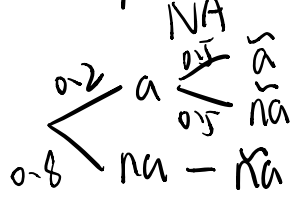
$= \dfrac{P(na \mid NA) \cdot P(na \mid NA) \cdot P(a \mid NA) \cdot P(NA)}{P(na\,na\,a\,a \mid NA) \cdot P(NA) + P(na\,na\,a\,a \mid A) \cdot P(A)}$

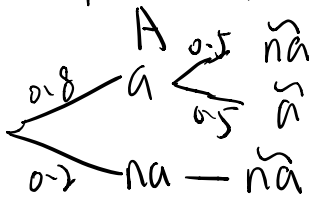
$= \dfrac{0.8 \times 0.8 \times 0.2 \times 0.6}{0.2 \times 0.8^2 \times 0.6 + 0.2^2 \times 0.8 \times 0.4} = \dfrac{0.0768}{0.0768 + 0.0128}$

$\approx 85.7\%$

$\therefore$ Updated belief: $P(NA) = 85.7\%$, $P(A) = 1 - P(NA) = 14.3\%$

(b) Sophisticated, misinterpretation for $0.5 = p$





$P(\tilde{na} \mid NA) = 0.2 \times 0.5 + 0.8 = 0.9$

$P(\tilde{a} \mid NA) = 0.2 \times 0.5 = 0.1$

$P(\tilde{a} \mid A) = 0.8 \times 0.5 = 0.4$

$P(\tilde{na} \mid A) = 0.2 + 0.8 \times 0.5 = 0.6$

$P(NA \mid na\,na\,a\,a) = \dfrac{P(na \mid NA) \cdot P(na \mid NA) \cdot P(a \mid NA) \cdot P(NA)}{P(na\,na\,a\,a \mid NA)\,P(NA) + P(na\,na\,a\,a \mid A)\,P(A)}$

$= \dfrac{0.9^2 \times 0.1 \times 0.6}{0.9^2 \times 0.1 \times 0.6 + 0.6^2 \times 0.4 \times 0.4} = \dfrac{0.0486}{0.0486 + 0.0576}$

$\approx 45.76\%$

updated belief: $P(NA) = 45.76\%$, $P(A) = 1 - P(NA) = 54.24\%$

(c) Misinterpret at $0.5 = p$.

For naive, $\tilde{q} = 0$

0.2 → $a-\tilde{a}$, 0.8 → $na-\tilde{na}$

$P(\tilde{a}|NA)=0.2$

$P(\tilde{na}|NA)=0.8$

(NA)

0.8 → $a-\tilde{a}$, 0.2 → $na-\tilde{na}$

$P(\tilde{a}|A)=0.8$

$P(\tilde{na}|A)=0.2$

(A)

$$P(NA|nanaa)=\frac{P(na|NA)P(na|NA)P(a|NA)\cdot P(NA)}{P(nanaa|NA)P(NA)+P(nanaa|A)P(A)}$$

$$=\frac{0.8^2\times0.2\times0.6}{0.8^2\times0.2\times0.6+0.2^2\times0.8\times0.4}\approx\frac{0.0768}{0.0768+0.0128}$$

$\approx 85.7\%$

updated belief: $P(NA)=85.7\%$, $P(A)=1-P(NA)$

$=14.3\%$

5. $P(VE)=0.4$ $P(SE)=0.4$ $P(NE)=0.2$

$P(S|VE)=0.7$ $P(S|SE)=0.5$ $P(S|NE)=0.3$

$P(US|VE)=0.3$ $P(US|SE)=0.5$ $P(US|NE)=0.7$

(a) $$P(SE|S,US,S,S)=\frac{P(S,US,S,S|SE)\cdot P(SE)}{P(S,US,S,S|SE)\cdot P(SE)+P(SUSSS|NE)\cdot P(NE)+P(S,US,SS|VE)\cdot P(VE)}$$

$$=\frac{0.5^4\times0.4}{0.5^4\times0.4+0.3^3\times0.7\times0.2+0.7^3\times0.3\times0.4}\approx35.745\%$$

(b) $P(S,US,S,S|VE)=\frac{7}{10}\times\frac{3}{9}\times\frac{6}{8}\times\frac{5}{7}=0.125$

$P(S,US,S,S|SE)=\frac{5}{10}\times\frac{5}{9}\times\frac{4}{8}\times\frac{3}{7}\approx0.0595$

$P(S,US,S,S|NE)=\frac{3}{10}\times\frac{7}{9}\times\frac{2}{8}\times\frac{1}{7}\approx0.0083$

(c) $P(SE|S,US,S,S) = \frac{P(S,US,S,S|SE)\cdot P(SE)}{P(S,US,S,S|SE)P(SE)+P(SUSSS|NE)\cdot P(NE)+P(SUSSS|VE)P(VE)}$

$= \frac{0.0595\times 0.4}{0.0595\times 0.4+0.00832\times 0.2+0.125\times 0.4}$

$= \frac{0.0238}{0.0238+0.00166+0.05}$

$\approx 31.54\%$