Yassin Dinana
5294480

Assessment 2
Part 2

Test Class 7

Q1:

A- By looking at the values specified for both Agent 1 & Agent 2. It can be seen that for agent 1, $\delta = 0.95$, and for agent 2, $\delta = 0.89$. Meaning that by the following year, Agent 1 will have 95% of his money, but Agent 2 will only have 89% meaning that he is losing 11% of his money but agent 1 is only losing 5%. Making agent 2 more impatient and losing his money in a faster way.

B- As it can be seen in the question, both agents want to split £100 where:
- D1= 0.95
- D2= 0.89

x is the amount that agent 1 gets if he starts the negotiations
y is the amount that agent 2 gets if he starts the negotiations

The equations that will be used in the calculations can be derived using the following formula:

$$\frac{1 - \delta 2}{1 - \delta 1\, \delta 2} \qquad (1)$$

Another equation that can be used to start the derivation could be equations below:

$100 - x = \delta_{2.}$ (equation1)
$100 - y = \delta_1 x$ (equation2)

$$x = \frac{1-0.89}{1-0.95 \times 0.89} \times 100 = 71.19$$

$$y = \frac{1-0.95}{1-0.89 \times 0.95} \times 100 = 32.36$$

$$d2 \times y = 100 - x$$

C- In order to solve this question, the following equation can be used.

$$\frac{\delta 2(1-\delta 1)}{1-\delta 1\,\delta 2}$$

The amount that agent 2 will get if agent 1 starts the negotiation:

$$\frac{0.89(1-0.95)}{1-0.95 \times 0.89} = 0.288 \text{ x } 100 = 28.8$$

The amount that agent 1 will get if agent 2 starts the negotiation:

$$\frac{0.95(1-0.89)}{1-0.95 \times 0.89} = 0.676 \text{ x } 100 = 67.6$$

Q2:

A-

Round 1: The agents will begin with their most favoured bargains, where it prioritizes the utility picked up for them as well as maximising the overall utility.

Agent1 considers deal $\{d_2\}$ and advances $\{d_2\}$

Agent 2 considers deal $\{d_1\}$ and advances $\{d_1\}$

Risk1 = $\frac{15-10}{15} = \frac{1}{3}$

Risk2 = $\frac{5-0}{5} = 1$

Agent1 has a lower risk than Agent 2. Agent1 has a score of only 1/3 risk and agent 2 has a score of 1.

Round 2: Since agent had the lowest risk, it concedes.

Agent1 moves with deal (d_1) and advances (d_1)

Agent2 considers deal (d_1) and advances (d_1)

Risk1 = $\frac{10-10}{10} = 0$

Risk2= $\frac{5-5}{5} = 0$

An Agreement is reached on deal (d_1) as they both have the same score of zero.

B- By looking at the results given in part A above, it can be concluded that the final deal would be d1 which is given to agent 1.