EXERCISE 1, Q1

$P = 2$
$Q_S = 200 + 10 \cdot 2 = 220$
$Q_D = 300 - 10 \cdot 2 = 280$
$I = Q_D - Q_S = 280 - 220 = 60$
$PS = P \cdot S_{NS} + ((Q_S - S_{NS}) \cdot P)/2$
In this S_{NS} is the amount supplied at $P = 0$:
$S_{NS} = Q_{S,0} = 200$
So producer surplus is:
$PS = 2 \cdot 200 + [(220 - 200) \cdot 2]/2 = 420$
$CS = (C_{NG} \cdot Q_D)/2$
In this case C_{NG} is the difference between P at $Q_D = 0$ and actual P :
$Q_D = 300 - 10P \Rightarrow Q_D = 0 \Rightarrow P_0 = 30$
$\therefore C_{NG} = 30 - 2$
$CS = (28 \cdot 280)/2 = 3920$

EXCERCISE 1, Q2

$P = 3$
$Q_S = 200 + 10 \cdot 3 = 230$
$Q_D = 300 - 10 \cdot 3 = 270$
$I = 270 - 230 = 40$
$S_{NS} = 200$
$PS = P \cdot S_{NS} + ((Q_S - S_{NS}) \cdot P)/2 = 3 \cdot 200 + ((230 - 200) \cdot 3)/2 = 645$
$C_{NG} = 30 - 3 = 27$
$CS = (C_{NG} \cdot Q_D)/2 = (27 \cdot 270)/2 = 3645$
$\Delta PS = 645 - 420 = 225$
$\Delta CS = 3645 - 3920 = -275$
$G = Tariff \cdot I = 1 \cdot 40 = 40$
Welfare change is -10, we have a welfare reduction of 10

EXERCISE 1, Q3

Before the tariff $Q_S = 220$ so the social benefit is $220^2/1000 = 48.4$
After the tariff $Q_S = 230$ so the social benefit is $230^2/1000 = 52.9$
So we have $\Delta socialbenefit = 52.9 - 48.4 = 4.5$
The welfare change when we excluded social benefits was -10, with the social benefits the welfare change is instead -5.5

Exercise 2

(1)Median of Group Value $J = \{0, 1, \ldots, 100\}$ is 50. Therefore the median voter has an ideal rate of protection of 50%. Candidates B and T will continuously undercut each other until both of them support 50% tariff

(2)

(i)Total welfare at 100% protection is: $1000000 + (30000 - 1000 \cdot 49.5) \cdot 100 = -950,000$

(ii)Groups pay to fabricaate fakke news if benefit $>$ cost. For group j $= 100$, they will pay for fabrication since at j=100 the benefit $= 10000000 > 31000 =$ cost. For groups j $\neq$ 100, we have that that the benefit is

$30000 - 1000j < 31000$

so benefit $<$ cost for j $\neq 100$.

The only group that is willing to pay for fake news in this case is the j $= 100$ group.

Although a 20% level of protection is what the median voter preferences, we have a collective action problem where individual groups wont pay for what they are collectively better off with