

# E-Commerce and Security

## E-Auction competition

Monday Feb 26.

The competition will take place at Trade Extensions' Negotiation Server; you will actually be testing a beta version of a new auction interface, constructed for large projects.

You will get a login name and password via an automatically sent email invitation.

You will see two different auction projects,

- Auction Competition, Traditional
- Auction Competition, Combinatorial

You must participate in both auctions.

The auctions occur at specified time slots and last for a short time period, see below.

No particular instructions on how to place bids, view your current status, etc will be given, you will have to find it out by yourself.

### Rules of the Game

In this competition, your task is to sell items in two on-line auctions. Your goal is to generate as high surplus as possible, i.e. earn as much money as possible. **You will be rewarded in proportion to your success: After the auctions are finished, a sum of 500 SEK will be distributed among the participants in proportion to their surplus.**

It may happen that someone gets negative surplus (by selling too cheap). We use the following punishment: Negative surplus will have the effect that the total price sum is decreased. The following formula will be used:

Let P be the sum of all participants' positive surplus.

Let N be the sum of all participants' negative surplus.

Total price sum =  $500 P / (P + N)$

**In other words, if you end up with negative surplus, you will decrease the income for all others.**

# Auction Scenarios

In your company, you produce 104 different products:

A1, A2, A3, A4,

B1, B2, B3, B4,

.....

Z1, Z2, Z3, Z4

For each product, you have a production cost. There is also a cost for transportation, which is independent of the number of products you sell. If you sell anything in one of the auctions you will have to pay 1000 Euro for transportation. If you sell in both auctions, your total transportation cost will be 2000 Euro.

The production costs vary between the participants. Each production cost is a random number between 1000 and 3000 Euro. The values for all bidders can be found in a separate document.

You will participate in two auctions, and you can sell the same product in both of them. The two auctions will be of different type:

- The Traditional auction will be a straight-forward first-price (English) auction on each product. That is, for each product, the seller with the lowest price will win.
- The Combinatorial auction will be a bit more sophisticated. Here, sellers can submit bids on combinations of products. The winning bids will be the combination of bids that gives the lowest total cost.

The two auctions will open at the same time Monday Feb 26<sup>th</sup> 10.30, and they will be open for at least three hours. As long as new valid bids arrive, the auction will be extended; if no bid has arrived within 10 minutes, it may be closed.

**Note that you must bid in both auctions. You do not have to win anything, but you must take part.**

## Example

Assume that you manage to sell the following:

Traditional	A3 for 2200 and T3 for 1700
Combinatorial	A3, A4, T3 for a total of 5750

Also, assume that your production cost is

A3	1020
A4	2750

T3	1105
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We can then compute your surplus as revenue minus cost.

Traditional

$$\text{Revenue: } 2200 + 1700 = 3900$$

$$\text{Cost: } 1020 \text{ (A3)} + 1105 \text{ (T3)} + 1000 \text{ (transportation)} = 3125$$

$$\text{Surplus: } = 1175$$

Combinatorial

$$\text{Revenue: } 3750 = 5750$$

$$\text{Cost: } 1020 \text{ (A3)} + 2750 \text{ (A4)} + 1105 \text{ (T3)} + 1000 \text{ (transportation)} = 4875$$

$$\text{Surplus: } = 875$$

The total surplus becomes 2050.