

**ELEC-E7820 / S-38.3041 Operator Business**

Each question is worth max 6 points. Answers must be short and concise. Note that you can take part in the exam only if you have already participated the obligatory mobile operator business game session.

1. Explain the logic of following economic terms briefly (max 5 sentences per term, the rest is not graded).

- a. Nash equilibrium
- b. Economic efficiency
- c. Two-sided markets: value rule
- d. Metcalf's Law
- e. Switching cost
- f. Consumer surplus

2. What is the customer satisfaction model of American Customer Satisfaction Index and how is it used in practise?

3. Consider a multi-object simultaneous ascending auction (SAA) with three spectrum bidders (Bidder 1, 2 and 3), each with a budget 20, and valuations  $v$  for two spectrum objects (A and B) as shown in the table below.

	$v_A$	$v_B$	Budget
Bidder 1	15	30	20
Bidder 2	15	0	20
Bidder 3	0	5 with probability of 0.9 15 with probability of 0.1	20

- a. What could be the likely outcomes of this auction?
- b. What would a socially optimal outcome?
- c. What kind of detailed rules would secure that the outcome is socially optimal?

4. Consider two services (A and B) for which two customers (1 and 2) have different levels of willingness to pay as shown in the table below. What should be the price set by the operator to get maximum benefit, maybe by making both customers buy both services? If service bundling is allowed, how does the operator's optimal pricing strategy change?

	Customer 1	Customer 2
Service A	\$50	\$150
Service B	\$150	\$100

5. Define schematically the economic nature of digital goods. How can the producer turn digital goods profitable?