

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 underlying 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. Assume a 5-year network investment project with the following annual figures:

Year	0	1	2	3	4	5
Revenues	0	5	7	9	10	12
Operating costs	0	-2	-3	-3	-2	-2
Depreciation	0	-3	-3	-2	-2	-1
Interests and taxes	0	0	-0.3	-0.6	-0.9	-1.3
Investments	-12	0	0	0	0	0

Calculate the annual profit&loss statements of the project including EBITDA, EBIT and net income. Make a cash flow analysis of the project including the discounted payback period, NPV (using 5% discount rate), and IRR. Would you invest in this project? Why?

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

200 250

5. Define schematically the economic nature of digital goods.

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