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 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. Consider a simultaneous ascending auction with combinatorial bidding where three bidders 1, 2 and 3 bid for spectrum licenses A and B (bids must be integers). The valuations of each individual license per bidder are v_A and v_B, and the combined valuations are v_{AB} (see table below). At the end, the winning bids are chosen to optimize seller's result. What are the likely outcomes of the auction? What would be a socially optimal outcome? Assuming a randomizing equilibrium strategy, what is the probability of inefficient allocation?

Bidder	v_A	v_B	v_{AB}	Budget
1	4	0	0	3
2	0	4	0	3
3	$1+\varepsilon$	$1+\varepsilon$	$2+\varepsilon$	2

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

Year	0	1	2	3	4	5
Revenues	0	5	7	9	9	12
Operating costs	0	-2	-3	-3	-2	-2
Depreciation	0	-3	-3	-3	-3	-3
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?

4. Explain the European Union regulation for lowering prices of international mobile roaming.

5. Define schematically the economic nature of digital goods.