

Instructions

- Duration: 1 hour.
- No document allowed
- Calculators not allowed.
- Answers **must** be included on the Answer matrix at the bottom of this page.
- Multiple choice questions:
 - Grading for each question:
 - * No answer: 0 point
 - * Correct answer: 3 point
 - * **!!!! Wrong answer: -1.5 point !!!!**
- Problem set:
 - Correct answer: 9 points (Requires that both numbers provided in answer table are correct.)
 - Incorrect answer can give between 0-4.5 points depending on answer.
 - Please read carefully, be brief and precise.
- Total number of marks: 6 for multiple choice questions and 9 for problem set
 ⇒ Total = 15 (Seminar attendance last 5 points.)

Question	1	2	3		Grade total
Answer			No bargaining	Merged	✓
Grade					✓

Note: For questions 1 to 3 provide your answer in row *Answer*. Leave row *Grade* empty. For questions 1 and 2 answers should be (A, B, C, or D) and for question 3 the answers should be numbers (i.e. the production of L in each scenario).

PART 1. Questions

1. The definition of a *public good* is a good that satisfies,

- A. *rivalry* and *excludability*
- B. *rivalry* and *non-excludability*
- C. *non-rivalry* and *excludability*
- D. *non-rivalry* and *non-excludability*

2. Let the *Egalitarian* social welfare function be defined as,

$$W(u_1, \dots, u_N) = \sum_i u_i - \lambda \sum_i [u_i - \min_i(u_i)], \quad \lambda \geq 0$$

This specification of the *Egalitarian* social welfare allows it to be transformed into,

- A. the *Benthamite* (Utilitarian), **but not** the *Rawlsian* social welfare function
- B. the *Rawlsian*, **but not** the *Benthamite* (Utilitarian) social welfare function
- C. the *Benthamite* (Utilitarian) **and** the *Rawlsian* social welfare function
- D. not any of the *Benthamite* (Utilitarian) or the *Rawlsian* social welfare functions

3. Problem set: Assume two firms, a steel producer and a laundry with the following cost functions and prices for steel (S) and laundry (L),

- The cost of producing steel is: $C_S(S) = S^2 + 8$
- The costs of producing laundry is: $C_L(L, S) = L^2 + LS + 4$
- The fixed costs: $C_S(0) = C_L(0, S) = 0$
- Price of steel, $p_S = 6$, price of laundry, $p_L = 9$

Hence, the production of steel has an effect on the cost of producing laundry. (1) What will be the profit maximizing strategies for the two firms if no transfer/bargaining goes on between them? State the amount of laundry produced in the table on the Answer sheet. (2) What would be the profit maximizing strategies if the two firms merged, i.e. the externality would be internalized. State the amount of laundry produced in the table on the Answer sheet.

PART 2. Calculation sheet for Question 3