# *UNIVERSITY OF OSLO*
# *DEPARTMENT OF ECONOMICS*

Exam: ECON4820 – Strategic competition, spring 2004

Date of exam: Wednesday, June 2, 2004

Time for exam: 9:00 a.m. – 12:00 noon

The problem set covers 2 pages

Resources allowed:
- No resources allowed

The grades given: A-F, with A as the best and E as the weakest passing grade. F is fail.

Until recently the stated objective of Norwegian competition law was to ensure economic efficiency. With the recent reform a new paragraph has been added that emphasises the interest of consumers. The change of objective may have implications for how the competition authorities treat market developments, such as mergers.

Consider the following market model. Demand is linear and given by $p = 1\text{-}Q$, where $p$ is market price and $Q$ is total supply. There are two firms, 1 and 2. Output $q_i$ of firm $i$ is produced at constant unit costs, denoted $c_i, \quad i = 1, 2.$ For simplicity, let

$$c_1 = 0 \quad and \quad c_2 = c < \frac{1}{3}.$$

### *Question A (20%)*

Assume first that the two firms compete in Cournot fashion. Derive the following equilibrium values for profits, market price and consumer surplus:

$$\pi_1^D = \frac{1}{9}[1+c]^2, \quad \pi_2^D \frac{1}{9}[1-2c]^2, \quad p^D = \frac{1}{3}[1+c], \quad CS^D = \frac{1}{18}[2-c]^2.$$

The sum of producer and consumer surplus becomes (you do not need to show this)

$$W^D = \pi_1^D + \pi_2^D + CS^D = \frac{1}{18}\left[8 - 8c + 11c^2\right]$$

### *Question B(20%)*

Assume next that the two firms operate as a single entity. Derive the following equilibrium values for profits, market price and consumer surplus:

$$\pi_{1+2}^{M} = \frac{1}{4}, \quad p^{M} = \frac{1}{2}, \quad CS^{M} = \frac{1}{8}$$

The sum of producer and consumer surplus becomes

$$W^{M} = \pi_{1+2}^{M} + CS^{M} = \frac{3}{8}$$

***Question C(30%)***

Compare the two outcomes above and discuss the merit of a merger between the two firms (hint: $W^{M} < W^{D} \quad if \quad c < \frac{5}{22}$ and *vice versa*). Does the conclusion depend on to what extent consumer interests are taken into account?

***Question D(30%)***

Discuss how the above conclusions might be affected by different assumptions regarding (i) economies of scale, (ii) number of firms, (iii) entry (or exit) following a merger, (iv) differentiation of products and (v) capacity constraints. Does a consumer-welfare standard always lead to a more restrictive policy towards mergers than a standard based on total welfare?