ECON4240 - Spring semester 2015

Problem 1.

Discussion of Section 2.15 (Examples 1- 4).

Problem 2.

Consider a regulated monopoly that sells its product in an industry in which the consumers are of two different types.

The firm's production costs are public information, and equal to $C(Q) = F + cQ$.

The regulation establishes the amount of the payment that the consumer makes to the monopoly if a product is bought *(T)*, the quantity that the monopoly can sell *(Q)*, and the amount of the subsidy that the government transfers to the monopoly *(S)*.

There is a deadweight loss in the collection of taxes; hence the total social cost of the subsidy is $(1+g)S$, where $g > 0$.

(a) Assume that there is only one representative consumer, whose utility function is known to be $U(Q)$. Formulate the problem that the government must solve, bearing in mind that the monopolist's profits could be negative and that the consumer may decide not to buy. Characterize the optimal regulation policy.

(b) Assume that there is asymmetric information with respect to the consumers. Let $U_G(Q)$ and $U_B(Q)$ be the utility of consumers of type *G* and *B* from the consumption of *Q* units of the good, where $U_G(Q) > U_B(Q)$ and $U_G'(Q) > U_B'(Q)$. Let *q* be the proportion of type-*G* consumers. Formulate the problem that the regulator must solve (maximize social welfare under the conditions of participation of the different consumer types, incentive compatibility to reveal the true characteristic, and participation for the firm for both possible consumer types).

(c) In the above problem, it is easy to calculate the optimal levels for the subsidy in function of the other parameters of the problem (from the first-order conditions with respect to the subsidy). Hence formulate the problem only in terms of $\{(T_G, Q_G), (T_B, Q_B)\}$.

(d) Using the first-order conditions, prove that the incentive compatibility constraint of the consumer who least values the good does not bind. Show that the optimal contract must satisfy: $U_G'(Q) = c$ and $U_B'(Q) > c$. Discuss these results.