Industrial Organization
Midterm Fall 2021 – Solution Topics

Question I

False. A HHI equals one does not imply that there is a single producer charging its monopoly price in a given market. Take the example of an asymmetric Bertrand game: the most efficient firm will charge a price equal to the opponent's marginal cost (- ε). In this case, the HHI equals one, but the firm is not charging its monopoly price.

Question II

True. When a firm differentiates its product, its long-run profit can be positive or not. In a monopolistic competition setting, long-run profits are zero if there is free-entry and exit of the market. However, if we relax this assumption, then firms can indeed have a positive economic profit in the long-run.

Question III

i) $P = MC = 2;\ \pi_I = \pi_D = 0$

ii) $Q^{RD} = 9 - P$

iii) The domestic firm acts as a monopolist over the residual demand. $P = 5.5$

iv) The importer will also set a $P = 5.5$. Setting a price above 5.5 means that this firm will not sell any unit. A price below 5.5 is not profit-maximizing.

v) $\pi_D = 12.25;\ \pi_I = 3.5$

vi) Both firms win with the imposition of the VER.

vii) Yes, the VER can be seen as a collusion mechanism, as it allows firms to escape from the Bertrand Paradox (P=MC), having both positive profits.

Question IV

i) *Alpha* is a monopolist. $P^M = 6.$

ii) The yearly profit for firm *Alpha* is $4 \times 6 - 2 \times 4 = 16.$ The patent should last at least 10 years $(\frac{160}{16})$ in order for *Alpha* to embark on the R&D project, as after the patent expires profits from competition are zero (Bertrand Paradox).

iii) The optimal duration of the patent is 10 years. The duration of the patent should be as short as possible (to avoid the DWL caused by the monopoly market structure under the patent) but long enough to ensure that *Alpha* embarks on the R&D project and invents the medicine.

iv) The optimal duration of the patent should decrease. When competing *à la Cournot* (after the patent expires), firms will have positive profits. As such, firm *Alpha* will have the opportunity to cover the R&D costs after the patent expires, decreasing its optimal duration.

v) *Alpha* will quote its monopoly price. $P_A = 6, Q_A = 4$

vi) Firm *Beta* will serve the other consumers (monopolist over the residual demand).
$Q^{RD} = 10 - P - 4 = 6 - P; P_B = 4$

vii) $Q_A = 4; Q_B = 2$