MASTER OF ARTS EXAMINATION, 2017

(1ST Year, 2nd Semester)

ECONOMICS

MICROECONOMICS - II (OLD)

Full Marks: 30

Time: Two Hours

Attempt Question no. 1 and any one from the rest:

(1). Consider the following model of a market for TV that can be produced in different qualities. There are two types of consumers who value quality differently. One are high valuation consumers who has type θ_2 and low valuation consumers who has type θ_1. Therefore $\theta_2 > \theta_1$. The fraction $v \in (0, 1)$ of the consumers have a high valuation for TV quality and remaining fraction (1- v) have a low valuation for TV quality (and the total number of consumers is normalized to one). A consumer of valuation θ consuming one TV of quality q at price t is given by

$$\theta q - t$$

Denote high quality as q_2 and low quality as q_1. Also denote price for high quality TV as p_2 and low quality TV as p_1. If the consumers (both the high- and low-valuation ones) choose not to purchase any TV at all, their payoff is zero. There is a firm that has a monopoly in the TV market. If selling one TV of quality q_1 to each of the low-valuation consumers and one TV of quality q_2 to each of the high-valuation consumers, the firm incurs the production cost profit is therefore given by

$$\frac{1-v}{2}{q_1}^2 + \frac{v}{2}{q_2}^2$$

The firm's total profit is therefore given by

$$(1 - v)t_1 + v\,t_2 - \frac{1-v}{2}{q_1}^2 + \frac{v}{2}{q_2}^2$$

Each consumer knows his or her own θ perfectly. However, the monopoly firm does not know the θ of an individual consumer, but only that a fraction v of the consumers have a high valuation and that the rest have a low valuation. The objective of the firm is to maximize its total profits.

a) Suppose first that types are observable to the monopolist. Find out the first best qualities and prices offered by the monopolist?

b) Now suppose that types are not observable to the monopolist. Find out the optimal second best price quality menus offered by the monopolist. Explain how the optimal second-best qualities differ from the optimal first-best qualities.

c) Can you prove from the incentive constraints that at the optimum second best $q_2 > q_1$?

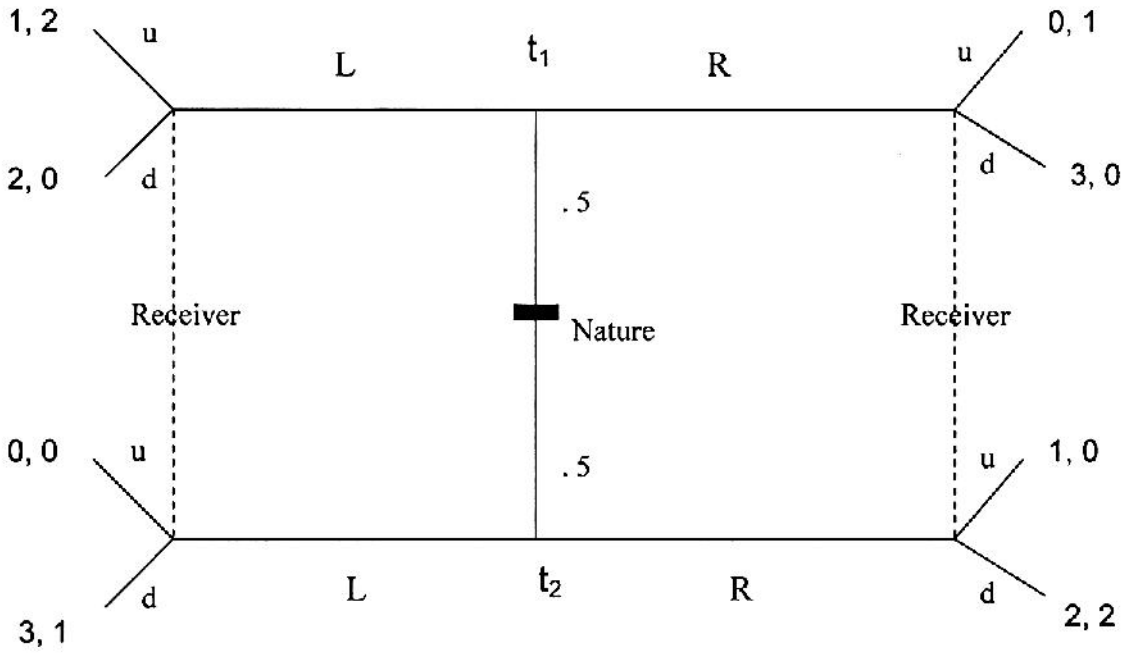
(5+7+3)

(2). (a). Consider a second-price, sealed-bid auction in which bidders simultaneously submit bids with the object going to the highest bidder at a price equal to the second highest bid. Suppose that there are two bidders and that their values for the object are chosen independently from a uniform distribution over [0, 3]. Think of a player's type as being the value that the player places on the object. Player i's payoff is $v - \max_{j \neq i} b_j$ when she wins the object by bidding b_i and her value is v; her payoff is 0 if she does not win the object.

Let $b_i(v)$ denote the bid made by player i of type v. Show that there is a Bayesian Nash equilibrium in which $b_i(v) = \alpha + \beta v$ for all i and v. Determine the values of α and β.

(6)

(b). Check which of the **pooling** Perfect Bayesian Equilibria of the following signalling game survive **requirement 5 and/or requirement 6 (intuitive criterion) whichever is applicable**:



(9)

(3). (a). Explain the following concepts:

(i). Complete information (ii). Perfect information

(4+4)

(b). Consider a standard Cournot duopoly (complete information): two firms simultaneously choose output levels to maximize their profits. The market inverse demand is $P = 1 - q_1 - q_2$ where q_i is firm i's output. Each firm incurs a fixed cost of $\frac{1}{8}$ if it produces positive output (otherwise, its costs are zero). Once the fixed cost is paid it costs each firm zero to produce each additional unit i.e. variable costs are zero. Find the pure strategy Nash equilibrium of this game. (7)