**NTU SSS Economics HE1001**

**Problem Set 1: Perfect Competition**

**This problem set will be discussed during the tutorials in Week 9 (16-17 Oct)**

1. True or False? The demand curve a perfectly competitive firm faces is the same as its

average revenue curve and its marginal revenue curve, and the firm will maximize profit at P=MC. Use graph to explain your answer.

True.

1. An individual firm in a perfectly competitive market is a price-taker and thus the demand curve the firm faces is a horizontal line (P=P\*). Since the price is fixed, P=MR=AR.
2. Using the profit maximization first-order condition (MR=MC), the firm will produce at q=q\* such that MR=P=MC.
3. Suppose you are the manager of a firm operating in a competitive market. Your cost of

production is given by C = 200 +2 \* q2 , where q is the level of output and C is total cost. The fixed cost of production is $200.

* 1. If the price of the product is $100, how many units of product should you produce to maximize profit?
  2. What will the profit level be?
  3. At what minimum price will the firm produce a positive output?

1. MR=MC=> 100=4q => q\*=25
2. Profit=100\*25-(200+2\*252)=2500-1450=1050
3. An individual firm would continue its operation when MC is above AVC (because profit maximization condition ensures that P=MR=MC). Based on the total cost function, MC=4q and AVC=2q. Thus, MC=4q is always greater than AVC =2q for any positive q. So, the firm should continue its operation (i.e. produce a positive output) as long as the price is positive.
4. In the local consumer good market, there are 1,000 producers that have identical short-run

cost functions. They are: TC (q) = 0.025q2 + 200, where q is the unit of product

produced each period. If the local market is perfectly competitive, what is each producer's short-run supply curve? Derive the local market supply curve.

An individual firm’s supply curve is P=MC=> P=0.05\*q (since MC=0.05q and AVC=0.025q, MC is always greater than AVC for any positive q)

An individual firm’s supply curve is q=20P and there are 1000 firms=>

Market supply curve is 1000\*q=1000\*20P=> Q=20000P => P=(1/20000) \* Q

1. Please discuss whether the telecommunications services in Singapore is a perfectly competitive market.

No

1. Buyers will incur transaction cost if they switch to another telco company. (e.g., you may need to pay registration fee when switching to a new telco services provider.)
2. The quality/scope of telco services differ among the service providers. (e.g., Singtel has faster mobile network than M1.)