2910AM36-ABC4-4697-A82C-345B33EEA713

test-2-crowdmark-7a440

Total Score: 79% (42/53)

Score: 5.0/5.0

GENERAL INSTRUCTIONS

1. 105 minutes. 106 marks. Allocate your time wisely!
2. **OTHER** test booklet: 53 Multiple choice marks.
3. **THIS** test booklet: 53 short-answer and calculation marks.
4. Aids allowed: a non-graphing, non-programmable calculator; a straight edge (i.e., ruler).
5. For **True, False or Uncertain** questions, all marks are earned for the explanation.
6. Show your work. No work, no partial marks.
7. When explanations are needed, be clear, accurate, **and concise.**
   Avoid the temptation to write too much.
8. The final page is blank. If you need to continue an answer on this page, you must write "Continued on final page" in the question's answer space.
9. **Unless otherwise stated, assume quantities need not be integers.**

I. **[30 Marks] TFU** means "True, False or Uncertain?". All marks are earned for the explanation.

(1) **[5 Marks]** You have been given 100 scones for free and a one-day scone monopoly in Boblandia.
   - You know market demand, and know that more than 100 scones are demanded at $1.
   - You must charge the same price for each scone.
   - You must throw out any scone you do not sell by the end of the day.

   TFU: If you throw out any scones at the end of the day, you set the price too high.

Uncertain.

∵ $MR = 0$

∴ A monopolist should set the price at the unit elastic point of demand to maximize total revenue.

① If (100, 1) is below the unit elastic point, the monopolist should still sell at the p^*, the price is not too high.

② If (100, 1) is exactly the unit elastic point, then I sell 100 scones at price = $1

③ If (100, 1) is above the unit elastic point, because I ~~don't~~ only have 100 scones, I should sell 100 scones at price = $1 as well.

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(2) **[5 Marks]** Assume no government interventions. In 2017, the equilibrium quantities for both goods A and B was 100 units. **TFU:** If the 2017 market price was higher for good A than good B, then the marginal cost of the 100th unit of good A was higher than the marginal cost of the 100th unit of good B.

Uncertain. We do not know ~~the elasticity of demand for~~ if it is a competitive market.

~~goods A and B.~~ ① In competitive market: producers produce until price = MC $\therefore$ units = 100, $P_A > P_B$ $\therefore MC_A > MC_B$

② ~~So~~ If ~~the~~ firm has market power: $MR = MC$, and $P > MC$

~~if $MC_A = MC_B$, MB at q = 100, $MR_B < MR_A$ at P_{MC}, MR~~

Let $MC_B > MC_A = 0$, Demand A ≠ Demand B, it is possible ~~to~~ make price A > Price B.

(3) **[5 Marks]** Assume labour is your only factor of production and the price of labour is fixed. BobCo sells a technology that will increase the marginal product of labour for any and all workers you hire. **TFU:** Purchasing this technology will decrease your break even price.

Uncertain

$\therefore$ break-even price = ATC = AFC + AVC = $\frac{FC}{q} + \frac{VC}{q}$

buying the technology will increase MPL, which r_s decrease MC, ~~to producing~~ but FC will increased, ~~and so~~ it depends on the quantity the firm produce. If the firm produce a huge amount of quantity, FC will become pretty small, and over average variable cost will decrease as well, now the break even price average will decrease. If the firm not produce so many units, the break even price may not decrease.

(4) **[5 Marks]** Assume everyone chooses whether or not to drive for Uber, and as the number of drivers increases, each driver's revenue per hour decreases. **TFU:** If the market is in its long-run equilibrium, then no driver is earning a positive economic profit.

Uncertain. In the long-run, many Uber drivers will exit the market, and the price for Uber will increase until $MR = ATC$. If talking about economic profit, we do not know the opportunity cost of the Uber drivers, so if some Uber drivers' MC is low, they could earn a positive economic profit.

(5) **[5 Marks]** Assume a competitive market. There is currently a $10 per unit tax, payable by the sellers, which results in a market price of $100. At this current market price, elasticity of demand is 1.25. **TFU:** Increasing the tax by $1 will decrease government surplus.
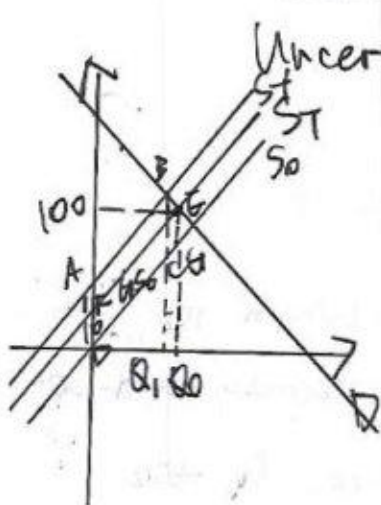
Uncertain. ∵ EGDF is the original GS&GS₀

BCDA is the new GS after increase tax by $1.

After increase tax by $1, the market price will increase less than 1%. ∵ $E_D = 1.25 = \frac{\Delta Q\%}{\Delta P\%}$.

∴ $\Delta Q\% = \Delta P\% \times 1.25$

∵ We do not know the Q_0 and Q_1 also we do not know the price at D.

We cannot calculate the GS₀ and GS₁

So GS₀ may be larger, smaller or equal to GS₁.

(6) **[5 Marks]** Both markets A and B are constant-cost industries. (That is, each firm has access to the same LRATC and input prices do not vary with market output). In each market, the break even price is $100. Elasticity of demand at $P = \$100$ is 0.5 in market A and 1.5 in market B. TFU: A $1 tax in market A will raise more government revenue than a $1 tax in market B.
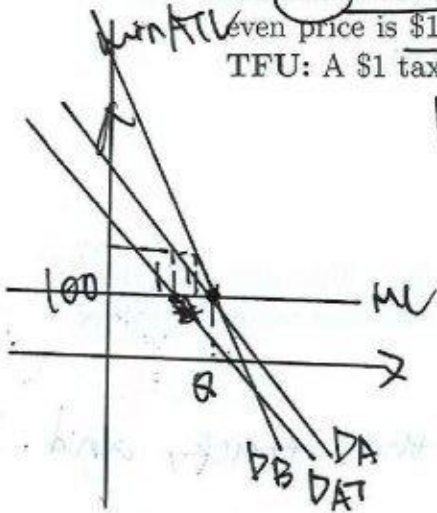
Uncertain. ∴ They have the same LRATC, their marginal cost is the same

because we do not know the Q^* at $P=100$

in both A and B. So we do not know the elasticity of market A and market B.

If $\frac{T}{P_A} < \frac{T}{P_B}$, $GS_A < GS_B$

If $\frac{T}{P_A} > \frac{T}{P_B}$, $GS_A > GS_B$.

II. **[10 Marks]** You have just received a food truck for free! You are considering selling tacos out of your food truck, which is a perfectly competitive market where the market (price) is $10 per order. Anyone selling tacos out of a food truck needs:

$P = 10$

- a food truck; ✓
- taco ingredients;
- labour, which includes at least some of your labour.

(1) **[2 Marks]** You will of course enter the market only if you believe profits will be zero or higher. As a soon-to-be graduate of ECO101, what information do you need that your accountant does not need?

I need the opportunity cost of selling the truck, and ~~using the~~ the cost for taco Ingredients and labour for other things.

(2) **[4 Marks]** You currently work <u>full time</u> at BobCo at <u>$30 per (hour)</u> Hearing about your plan, your boss increases your hourly wage to $40. Explain how this affects your cost curves under the assumption that if you enter the taco <u>market</u>, you can still work as many hours as you like at BobCo at $40 per hour.

The opportunity cost of my ~~time~~ will increase, so the economic cost of the food-truck business will increase as well. My cost curves will shift ~~~~ up.

(3) **[4 Marks]** Now assume that if you enter the taco market, you work full time at your truck and you cannot work anywhere else for pay. Assume that you also need a permit whose price does not depend on the number of tacos sold. Without drawing any other cost curves, **show and explain** how you will use your marginal cost curve and market price for tacos ($10) to figure out the highest permit price you are willing to pay.
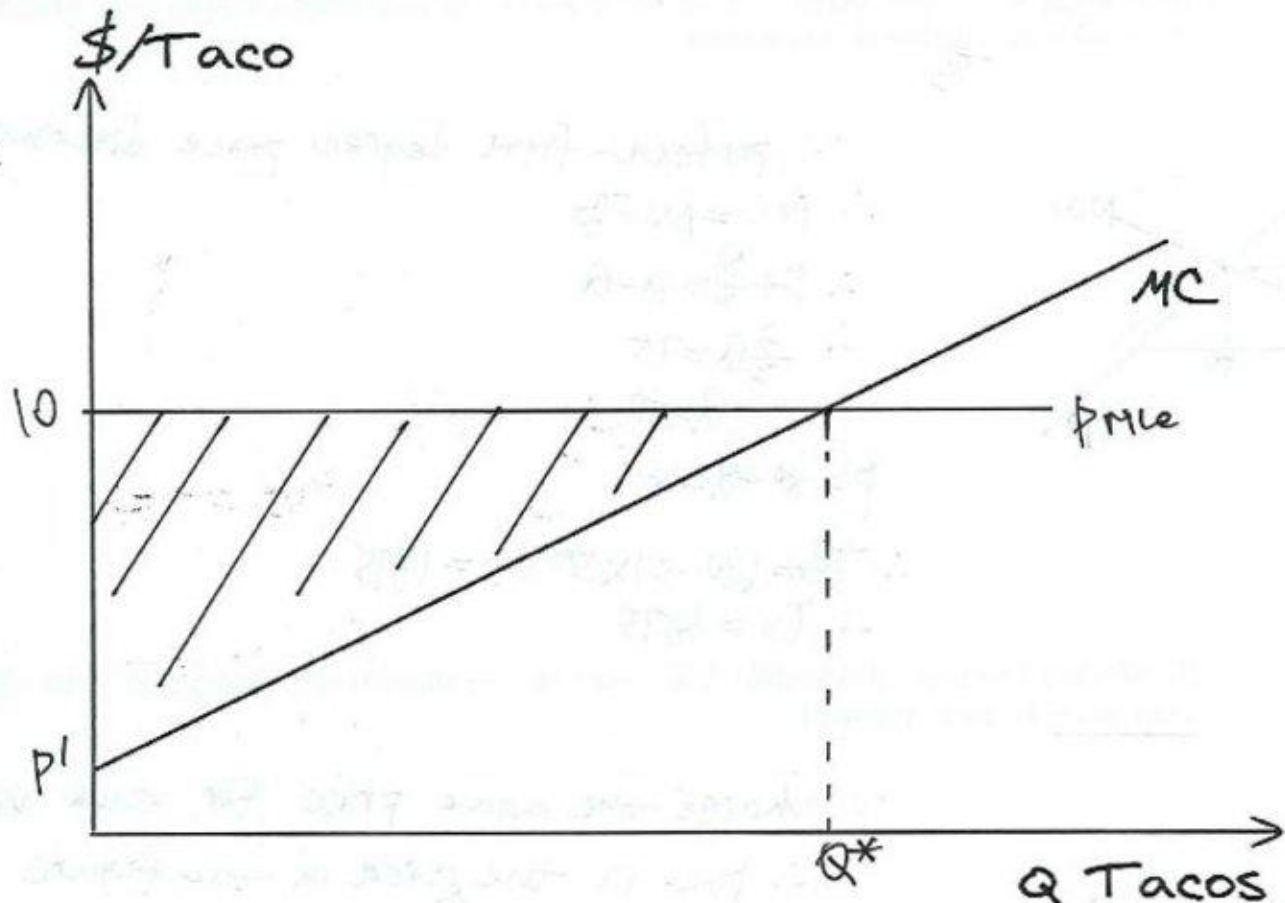

Assume when I have the permit, I can sell Q^* units

tacos at price 10, ~~now~~ now my $PS = (10-p') \times Q^* \times \frac{1}{2} = TR - FC$

Only if my $TR > 0$, I will ~~se~~ start the business, so the highest price

for permit I will pay $\leq (10-p') \times Q^* \times \frac{1}{2}$, which is

the shadow area in ~~the~~ figure.

III. **[13 Marks]** Assume all costs are borne by the monopolist and all benefits accrue to the buyer. A profit-maximizing monopolist faces per-period demand $P(Q) = MWTP(Q) = 80 - Q$. If it chooses to operate, it pays a per-period fixed cost F and faces marginal cost $MC(Q) = 5 + \frac{Q}{2}$. **Hint:** You will note that this last fact means this is **NOT** a natural monopoly.

(1) **[3 Marks]** If the monopolist can engage in perfect in perfect-first degree price discrimination, calculate total surplus in this market.
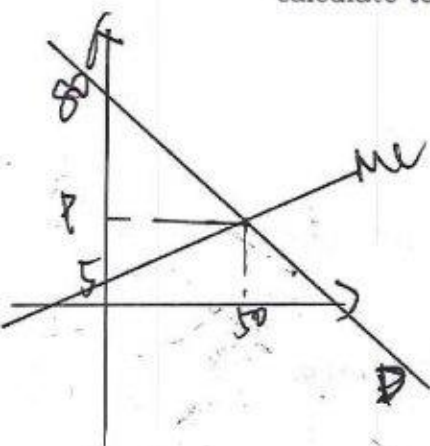
$$\because \text{ perfect-first degree price discrimination}$$

$$\therefore MC = MWTP$$

$$\therefore 5 + \frac{Q}{2} = 80 - Q$$
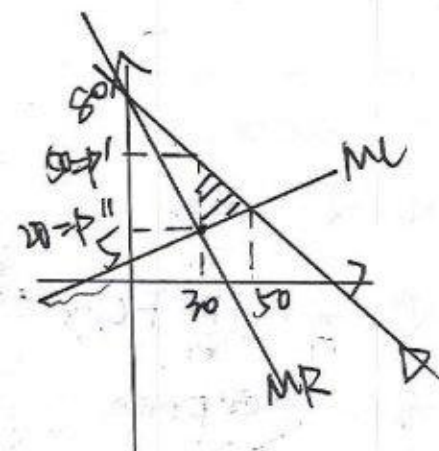
$$\therefore \frac{3}{2}Q = 75$$

$$Q = 50$$

$$P = 80 - Q = 30$$

$$\therefore TS = (80 - 5) \times 50 \times \frac{1}{2} = 1875$$

$$\therefore TS = 1875$$

(2) **[5 Marks]** Calculate deadweight loss under the assumption the monopolist must charge the same price for each unit sold.

$$\because \text{ charge the same price for each unit}$$

$$\therefore DWL \text{ is the area in the figure } \text{shadow}$$

$$\because P(Q) = MWTP(Q) = 80 - Q$$

$$\therefore MR = 80 - 2Q$$

$$\text{when } MR = MC$$

$$80 - 2Q = 5 + \frac{Q}{2}$$

$$\frac{5}{2}Q = 75$$

$$Q = 30$$

$$\therefore P' = 80 - Q = 50 \quad P'' = 5 + \frac{Q}{2} = 20$$

$$\therefore DWL = (50 - 30) \times (50 - 20) \times \frac{1}{2}$$

$$= 20 \times 30 \times \frac{1}{2} = 300$$

$$\therefore DWL = 300$$

(3) **[5 Marks]** Continue to assume that the monopolist must charge the same price for each unit. Assume the government imposes a $5 per unit tax, payable by the monopolist. In the graph below, identify:

- Q^M The monopolist's quantity before the tax is imposed.
- Q_T^M The monopolist's quantity after the tax is imposed.
- Δ**DWL** The **additional** deadweight loss as a result of the tax.
- PS_T Given the tax, the monopolist's producer surplus..

NOTE: For full marks, your graph must be qualitatively correct, but you do **NOT** have to explicitly solve for price and quantity with the tax.

RECALL: Demand $P(Q) = MWTP(Q) = 80 - Q$; Per-period fixed cost $\$F$; and marginal cost $MC(Q) = 5 + \frac{Q}{2}$.
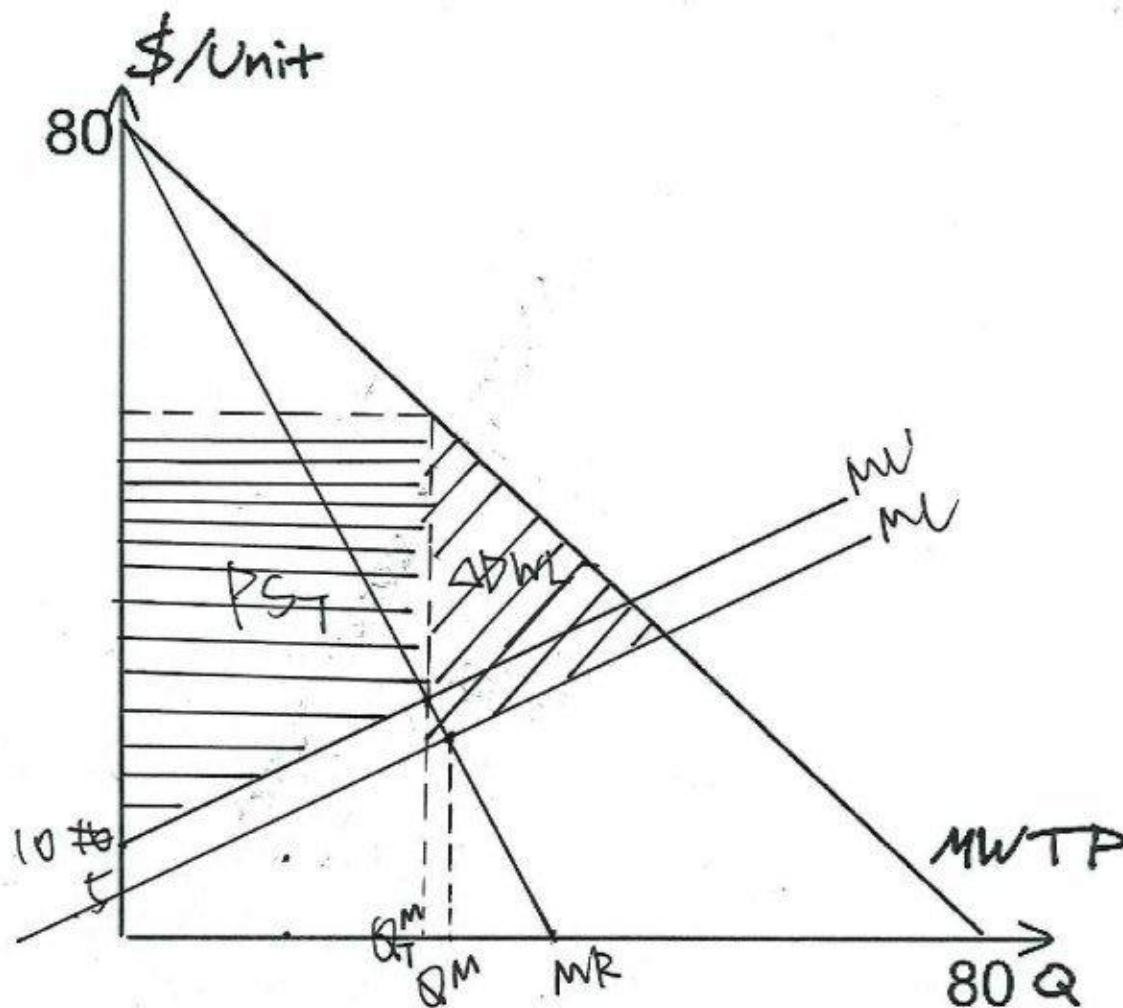
INTENTIONALLY LEFT BLANK. WE WILL LOOK AT THIS PAGE ONLY IF YOUR ANSWER TO A QUESTION REFERS US TO THIS PAGE.