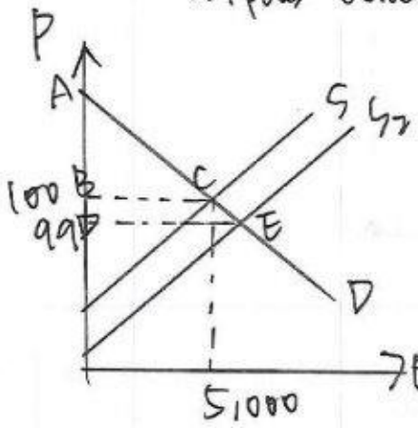
General Instructions

1. 105 minutes. 106 marks. Allocate your time wisely!
2. **OTHER** test booklet: 52 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]** Assume a competitive market and quantities need not be integers. At the initial equilibrium, we have $P^* = \$100$, and $Q^* = 5,000$. **TFU:** A supply shift that causes the price to decrease to \$99 will increase consumer surplus by \$5,000.

~~Uncertain~~ False. We do not know the demand curve equation, when the supply curve shifts out and right until the price decreases to \$99, quantity will increase, but we have no idea how much it will increase. We just know the ~~total~~ consumer surplus will increase. When



False. When the supply shifts out and right, the price will decrease to \$99. The original consumer surplus is the area of triangle ABC. After the supply ~~curve~~ curve shifts, the consumer surplus is the area of ADE. So the change of CS = $S_{ADE} - S_{ABC} = S_{BCED} = (BC+DE) \times (100-99) \times \frac{1}{2}$ $= (5000 + DE) \times 1 \times \frac{1}{2}$. When the change of CS is \$5000, DE = 5000, which means the quantity does not change. When the supply curve shifts out, the quantity will increase. So this situation will not happen.

(2) **[5 Marks]** BobCo sells both BobCalc and BobGraph, each currently priced at \$10 per unit. Decreasing the price of BobCalc by \$1 would increase BobCalc sales by 1000. Decreasing the price of BobGraph by \$1 would increase BobGraph sales by 1000. **TFU:** Both products have the same (own-price) elasticity of demand.

Uncertain.

For BobCalc, $Elasticity_{(BobCalc)} = \frac{\Delta Q\%}{\Delta P\%} = \frac{\Delta Q}{\Delta P} \times \frac{P}{Q_{BobCalc}} = \frac{1000}{1} \times \frac{10.5}{Q_{BobCalc}}$

& $E^{Bobgraph}_{(Bobco)} = \frac{\Delta Q\%}{\Delta P\%} = \frac{1000}{1} \times \frac{10.5}{Q_{Bobgraph}}$. Because we do not know at \$10 per unit, how many BobCalc and Bobtraph will be sold. Therefore, only when the price is \$10 per unit, BobCo will sell the same number of BobCalc and Bobtraph, the elasticities of demand for both products are the same. If different number of BobCalc and Bobtraph will be sell at \$10 per unit, then elasticity of demand is different. When more Bobtraph is sold, $E_{Bobgraph}$ $E_{BobCalc}$ ar

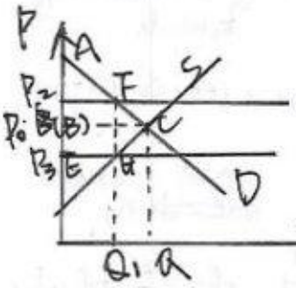
(3) **[5 Marks]** If the government spends \$1,000,000 on a public health project, it will result in \$1,250,000 in benefits. **TFU:** If the government follows the rule "do something as long as the benefits are greater than the costs", then it spends the \$1,000,000 on this public health project.

True. Because the government will spend the \$1000,000 as long as MB>MC. MB=1,250,000 +, MC=1,000,000. Because MB>MC, the government will spend the money.

the change of ~~price~~ quantity domains the price, CS ~~it~~ will become larger; when the demand curve is inelastic, the change of price domains the change of quantity, the CS will decrease.

(4) **[5 Marks]** Assume all benefits accrue to the buyer and all costs are borne by the seller. Assume a perfectly competitive market. **TFU:** The equilibrium price and quantity maximizes consumer surplus.

Uncertain ~~True~~. Because at the equilibrium price, CS = the area of ABE = (AB × BE) × $\frac{1}{2}$ *, when the price is ~~over~~ higher or lower than the equilibrium price, for example, at P_2, ~~only~~ buyers will only buy Q_1, ~~these~~ products, at P_3, sellers will only sell Q_1 products, because ~~for~~ buyers will only buy products when MB > P; sellers will only sell products when P > MC. So $Q_1 < Q$. when $P > P_0$, CS is lower than the CS on P_0. When $P < P_0$, CS = area AFGE, It is uncertain that CS is larger or lower than the CS on P_0.



(5) **[5 Marks]** Assume a perfectly competitive market. **TFU:** If total spending has increased, then the demand curve must have shifted out.

Uncertain. If the demand curve shifted out, price goes up and quantity goes up, total spending increases. If the demand curve does not change, the equilibrium price goes up ~~or the or down~~, or down approaching the unit elasticity point of demand curve, the total spending will increase as well.

Score: 8.0/9.0

(6) **[5 Marks]** You have tickets to see 5 different Raptors games. If someone offered to buy all of your tickets for \$100, you would definitely accept the offer. **TFU:** If *instead* you could sell each of your tickets for \$30 per ticket and sell as many as you like, you would sell them all.

Uncertain. I will only sell the ticket when MB > P = 30; I will sell all together for \$100, because the TB of 5 tickets < \$100. However, if I sell them one by one, ~~I will~~ if the MB of some tickets of them ~~the benefit of~~ MB of ≥ \$30, I will not sell those tickets. When each ticket ≤ 30, I will sell them all.

II. **[12 Marks]** Short Answer. **Be concise, but your use of ECO101 words must be clear to someone who has not yet taken ECO101!**

(1) **[4 Marks]** Consider the following pricing scheme often used by the producers of live theatre: Set a reasonably high ticket price. **If** there are unsold tickets on the day of the show, sell any remaining tickets at a relatively low price. Use the concept of opportunity cost to explain why these producers use this scheme.

OC = explicit cost + implicit cost. For buyers, ~~customers~~ the explicit cost equals the price for ticket. And the implicit cost equals their ~~benefit~~ next best benefit if they do not see the film. The theatre will set a reasonably high ticket price such that ~~the number of buyers whose benefits~~ number of buyers who consider the benefits for the film ≥ the price of tickets approaches the seats in the theatre. ~~If~~ On the day of the show, the implicit cost ~~of~~ of unsold tickets is almost 0. ~~If they do not keeps them.~~ So keeping the theatre will sell them at a low price.

Score: 8.0/8.0

(2) **[4 Marks]** In lecture, we discussed allocating kidneys.

- Write a **normative** statement concerning allocating kidneys.
- Write a **positive** statement concerning allocating kidneys.

For full marks, you must clearly label whether the statement is normative or positive.

Normative statement:

The government should allocate kidneys to the people who needs them more.

Positive statement:

If the kidneys are allocated to the people whose marginal willing to pay is the highest, the allocation is effective.

(3) **[4 Marks]** Assume the person living in an apartment can increase the temperature of her apartment by 1 degree for \$1 each day. In both apartment buildings (the Rex and the Regina), there are 5 occupied apartments. The only difference: Residents of the Rex evenly split the cost of heat used by all residents; residents of the Regina pay for the heat they use.

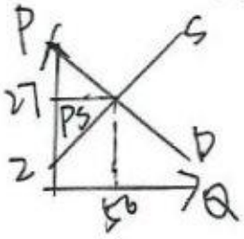
Use "thinking like an economist" to clearly but concisely explain the expected difference in how much heat is used in the two buildings.

Assume 5 person living in 5 occupied apartments are willing to pay a_1, b_1, c_1, d_1, e_1 each day for 1st degree. In Regina, and a_n, b_n, c_n, d_n, e_n for nth degree

When MWTP > \$1, people will pay for it. So in Regina, the total amount of heat in use is the sum of people's MWTP for 1 more degree > \$1. In Rex, they split the cost, so each one more degree is in use when all of 5 people's MWTP for that 1 degree > 1/0.2.

III. **[11 Marks]** Consider a perfectly competitive market where all costs are borne by the seller and all benefits accrue to the buyer. The Canadian supply function is $Q^s(P) = 2P - 4$.

(1) **[4 Marks]** If 50 units are supplied in a competitive market, what is *producer* surplus?



$Q^s(P) = 50 = 2P - 4$ $\quad 2P = Q^s(P) + 4$

$P = 27$ $\quad P = \frac{Q^s(P)}{2} + 2$

$\therefore PS = (27-2) \times 50 \times \frac{1}{2} = 625$

(2) **[7 Marks]** Assume Canada is only Vancouver (demand curve is $MWTP(Q_V) = 50 - Q_V$) and Toronto (demand curve is $MWTP(Q_T) = 50 - \frac{Q_T}{3}$). Calculate:

- $\mathbf{P^*}$ The equilibrium price in Canada (which is also the price in Toronto and Vancouver);
- $\mathbf{Q_C^*}$ The equilibrium quantity in Canada as a whole; and
- $\mathbf{Q_T^*}$ The equilibrium quantity in Toronto.

$\because MWTP(Q_V) = 50 - Q_V$

$Q_V = 50 - MWTP(Q_V)$

$\because MWTP(Q_T) = 50 - \frac{Q_T}{3}$

$Q_T = 150 - 3MWTP(Q_T)$

$\therefore Q^D_{(P)} = Q_V + Q_T = 50 - P + 150 - 3P$

$= 200 - 4P$

When $Q^s(P) = Q^D(P)$,

$2P - 4 = 200 - 4P$

$\therefore P^* = 34$

$\therefore Q_C^* = 200 - 4P = 200 - 34 \times 4 = 64$

$Q_T^* = 150 - 3P$

$= 150 - 3 \times 34 = 48$

$\therefore P^* = 34$

$Q_C^* = 64$

$Q_T^* = 48$

Not graded.

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