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91399

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NZQA

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Level 3 Economics, 2016

91399 Demonstrate understanding of the efficiency of market equilibrium

2.00 p.m. Friday 25 November 2016
Credits: Four

Achievement	Achievement with Merit	Achievement with Excellence
Demonstrate understanding of the efficiency of market equilibrium.	Demonstrate in-depth understanding of the efficiency of market equilibrium.	Demonstrate comprehensive understanding of the efficiency of market equilibrium.

Check that the National Student Number (NSN) on your admission slip is the same as the number at the top of this page.

You should attempt ALL the questions in this booklet.

If you need more room for any answer, use the extra space provided at the back of this booklet.

Check that this booklet has pages 2–10 in the correct order and that none of these pages is blank.

YOU MUST HAND THIS BOOKLET TO THE SUPERVISOR AT THE END OF THE EXAMINATION.

Excellence

TOTAL 23

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QUESTION ONE: CHANGES IN THE TAXI MARKET

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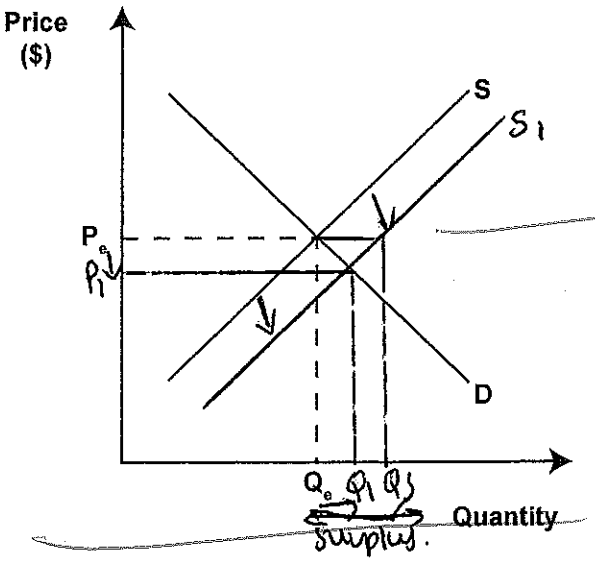
New Zealand has some of the most expensive taxis in the world. Uber is a mobile app allowing consumers with smartphones to submit trip requests to Uber drivers who are using their own cars as taxis. With the arrival of Uber in New Zealand late last year, the future of the taxi industry is set to be changing ...

Sources (adapted): http://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=11255026, https://en.wikipedia.org/wiki/Uber_(company)

Graph One: New Zealand taxi market



(a) (i) On Graph One, show the impact on the market for taxi rides in New Zealand of the increased number of suppliers brought about by the arrival of Uber. Clearly label the new equilibrium price (P_1) and the new equilibrium quantity (Q_1).

(ii) Using Graph One and the concept of market forces, fully explain how equilibrium in the New Zealand taxi market would be restored.

An increased number of suppliers brought about by the arrival of Uber would increase supply in the NZ taxi market, shifting the supply curve to the right ($S \rightarrow S_1$). This creates a surplus of ($Q_S - Q_e$) taxi rides at the original equilibrium price, P_e. In response, taxi drivers will lower prices so as to sell off excess 'rides'. As the price decreases ($P_e \rightarrow P_1$), the quantity of taxi rides demanded increases from Q_e to Q_1, as taxi rides become more affordable (Law of Demand) while the quantity of taxi rides supplied decreases from Q_S to Q_1, as at the lower price, supplying taxi rides becomes relatively less profitable (Law of supply). This continues until equilibrium in the NZ taxi market is restored at a price of P_1, and a quantity of Q_1 taxi rides

A possible intervention by the government that would also result in lower taxi fares is a maximum price control. Graph Two below shows a maximum price (P_{max}) set below the equilibrium price, P_e.

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(b) (i) Use Graph Two to complete Table One in order to show the changes as a result of a maximum price control.

Graph Two: New Zealand taxi market – maximum price control

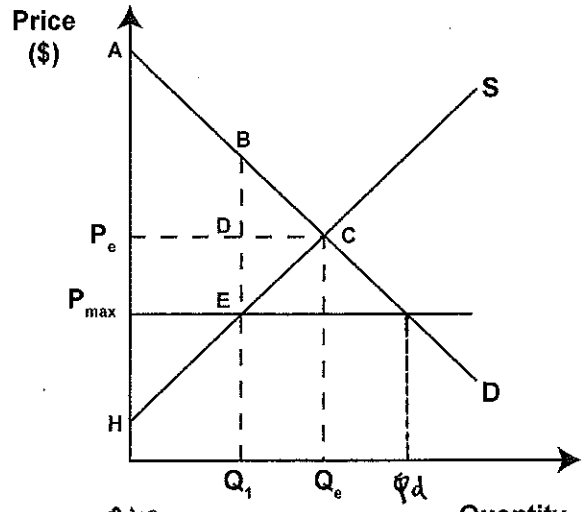

Table One

	Labels from Graph Two
Consumer surplus **before** maximum price	Pe, C, A.
Consumer surplus **after** maximum price	Pmax, E, B, A.
Producer surplus **before** maximum price	Pe, C, H.
Producer surplus **after** maximum price	Pmax, E, H.
Deadweight loss	E, B, C.

Also, because there is a shortage of (Qd - Q1) taxi rides created, some consumers are now missing out on taxi rides.

(ii) Using both Graph Two and Table One, compare and contrast the impact on consumers, producers, and allocative efficiency in the New Zealand taxi market as a result of a maximum price.

A maximum price will decrease the price paid for taxi rides by consumers, from Pe to Pmax. However, because Pmax this has reduced the quantity of taxi rides supplied to Q_1, this means that the quantity of taxi rides consumed decreases to Q_1. Assuming that the decrease in quantity is outweighed by the ~~increase~~ decrease in price, then consumer surplus will increase from (Pe, C, A) to (Pmax, E, B, A) as on Graph Two. (table one. However, if the decrease in quantity consumed outweighs the decrease in price, then consumer surplus will ~~increase~~ decrease from (Pe, C, A) to (Pmax, E, B, A). Producers in the taxi market are now receiving a lower price (Pmax) as on Graph Two and are selling a lower quantity of rides (Q_1), as on Graph Two so producer surplus decreases from ~~from~~ (Pe, C, H) to (Pmax, E, H) because producers have fewer rides (units) with which to gain a surplus. (see back)

E8

QUESTION TWO: IMPACT OF TARIFF REMOVAL ON IMPORTED GOODS

ASSESSOR'S USE ONLY

New Zealand imports a wide range of goods from all over the world, including electronic equipment, pharmaceuticals, vehicles, toys, clothing, and footwear. The demand for some of New Zealand's imports is elastic; demand for others is inelastic.

The removal of tariffs has varying impacts if applied to imports with different elasticities of demand.

(a) (i) Use Graph Three and the values provided to complete Table Two. The first two calculations have been done for you.

Graph Three: Imported Goods with Elastic Demand

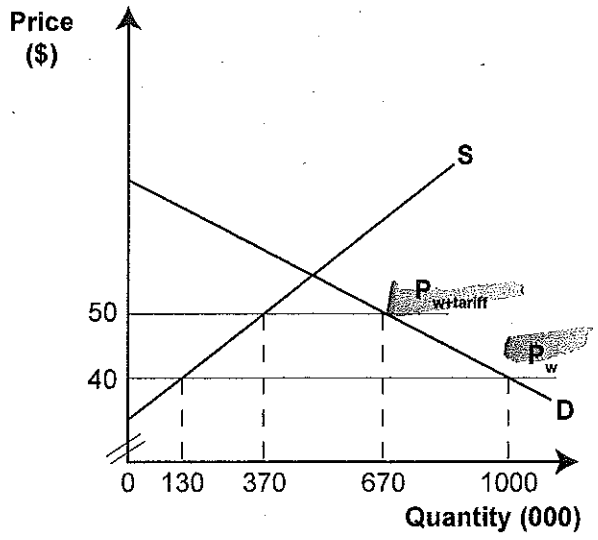

Table Two

Removal of tariff	Values from Graph Three (Elastic)	Circle One
Change in consumer surplus	$8.35 m	(Increase) Decrease No change
Change in producer surplus	$2.5 m	Increase (Decrease) No change
Tariff revenue for the government	$3.00m	Increase (Decrease) No change
Change in allocative efficiency	$2.85m.	(Gain) Loss

(ii) Referring to Graph Three and Table Two, fully explain the impact on consumers, producers, the government, and allocative efficiency of the tariff removal from imported goods that are **elastic** in demand.

The tariff removal on imported goods will make it cheaper to import goods into NZ, thereby decreasing the world price from $P_{w+tariff}$ to P_w. Consumers ~~don't~~ will gain a surplus will increase by $8.35m as on Table Two, because consumers are now purchasing a greater quantity (330000 more units) ~~and a~~ from 670,000 to 1000,000 units), and are also obtaining these at a lower price (from $50 to $40, a reduction of $10) (as on graph three). This means they have more units with which to gain a surplus, so consumer surplus decreases. Producers, however, (by $8.35 m.)

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are now selling their goods for a lower price ($50 → $40, a decrease of $10 as on Graph Three) and are selling a lower quantity (370,000 to 130,000 units, a decrease of 240000 units as on Graph Three). This means they have fewer units with which to gain a surplus, so producer surplus decreases by $2.5m as shown on Table Two. As a result of the tariff removal, the government loses tariff revenue of $3.00m as shown on Table Two, which now cannot be spent on other areas of (see back)

(b) Use Graph Four and the values provided to complete Table Three.

Graph Four: Imported Goods with Inelastic Demand

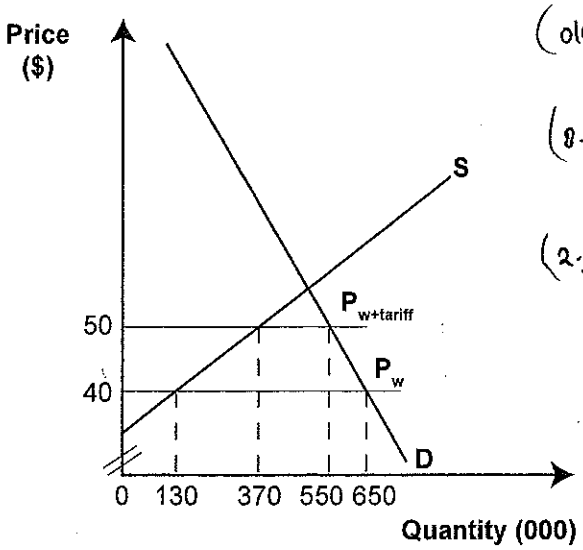

Table Three

	Removal of tariff	Values from Graph Four (Inelastic)	Circle One
(old) (8.3)	Change in consumer surplus	6 million. $2.5 million.	(Increase) Decrease No change
(2.5)	Change in producer surplus	$2.5 million.	Increase (Decrease) No change

(c) Compare and contrast the impact of the removal of tariffs on consumer surplus and producer surplus when goods have different elasticity of demand. In your answer, refer to Table Two and Table Three and both graphs. Fully explain any difference in the impact on consumer and producer surplus.

Consumer surplus increases in both cases when the tariff is removed; however, it increases by more when demand is relatively elastic ($8.35m, on Table Two) than when demand is relatively inelastic ($6 million, see Table Three) This is because although the world price decrease of $10 is the (Pw+tariff - Pw) same on both Graph Three and Graph Four, the quantity demanded increases by relatively less on Graph Four, than it does on Graph Three. That is, where demand is relatively

More answer space is available on the next page.

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inelamic, quantity demanded increases by 100,000 units from 550,000 to 650,000 as shown on Graph four. ~~However~~, This is because demand is relatively elamic, meaning quantity demanded will alter (in this case, increase) by proportionately less, in response to ~~an increase~~ a decrease in world price. In contrast, on Graph Three, where demand is relatively elamic, quantity demanded increases by a proportionately larger amount (300 000 units) as shown on Graph Three, from 670,000 to 1000,000 units. This is because demand is relatively elamic, so the quantity demanded increases by proportionately more in response to the decrease in world price. This is the reason why the increase in consumer surplus will be more where demand is relatively elamic ($8.35m, as on ~~Graph Three~~ Table Two) compared to when demand is relatively inelamic (only $6m increase, as shown on Table Three). Producer surplus however, will ~~increase~~ decrease by the same amount ($2.5m) on both Table Two and Table Three, owing to the fact that the elamicity of supply is about the same in both markets meaning quantity supplied falls by 240000 units in both Graphs, Three and four. As a result, Producer surplus decreases by $2.5m in both Tables Two and Three. This is because in both markets, quantity supplied is equally responsive to a decrease in world price.

F8

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The examination continues on the following page.

QUESTION THREE: IMPACT OF INDIRECT TAX AND QUOTA

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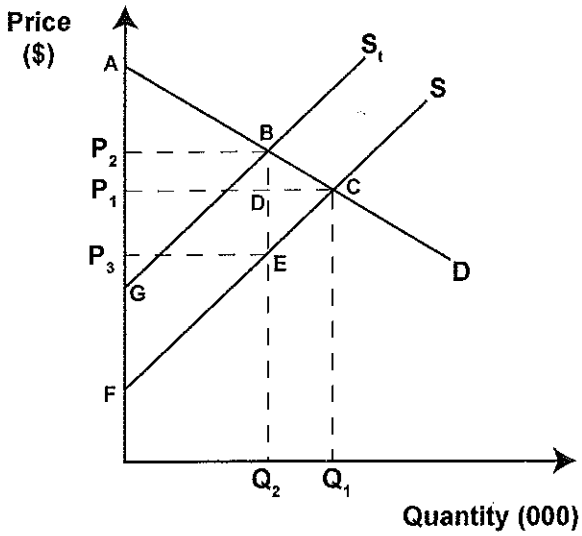
A tax on fizzy drinks could save lives and generate millions in revenue for health programmes in New Zealand. High sugar intakes are linked to obesity, type 2 diabetes, and cardiovascular disease; a strong case can, therefore, be made for efforts to reduce consumption.

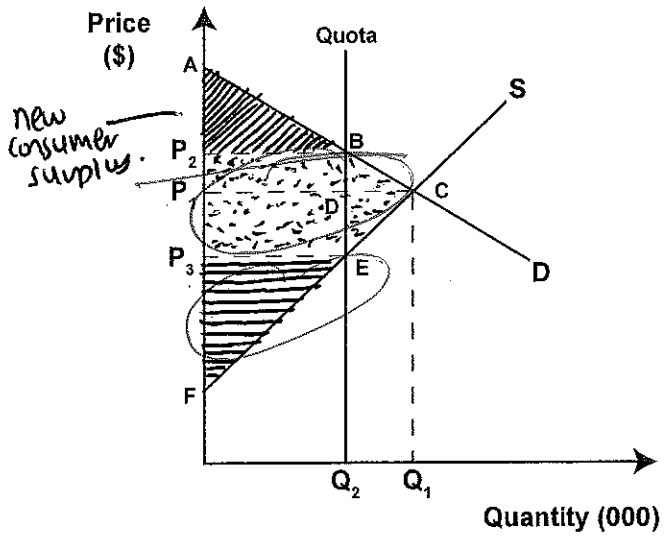
Source (adapted): http://www.otago.ac.nz/wellington/otago066842.pdf

Graphs Five and Six show the effects of two possible government interventions to reduce consumption of sugary foods by the same amount. P, Q, is the equilibrium before government intervention.

Graph Five: Market for sugary foods – indirect tax



Graph Six: Market for sugary foods – quota



(a) (i) The government may use an indirect tax to encourage a reduction in sugar consumption. Use Graph Five above to complete Table Four below by clearly identifying the relevant labels as a result of an indirect tax on sugary foods.

Table Four

	Labels from Graph Five
Change in consumer surplus	P_1, C, B, P_2
Change in producer surplus	P_1, C, E, P_3
Tax revenue for the government	P_3, E, B, P_2
Deadweight loss	B, C, E (created)

(ii) Alternatively, the government could restrict the availability of sugary foods by imposing a quota on producers to limit their supply. On Graph Six above, show the impact of a quota on sugary foods by clearly shading in and labelling the area representing:

- new consumer surplus
- new producer surplus
- deadweight loss.

(b) Refer to both Graphs Five and Six, and Table Four, to compare and contrast the impact of an indirect tax and a quota on the market for sugary foods. In your answer, fully explain:

- the impact on consumers, producers, and the government of an indirect tax on sugary foods
- the impact on allocative efficiency of the indirect tax and the quota
- whether the indirect tax or the quota will be more effective in reducing the consumption of sugary foods.

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An indirect tax on sugary foods will reduce consumer surplus by area 'P_1, C, B, P_2' as on ~~graph~~ Table four. This is because the indirect tax will ~~reduce the price~~ increase the price of sugary foods from P_1 to P_2, and decrease the quantity of sugary foods consumed from Q_1 to Q_2, as shown on Graph five. There are fewer units with which to gain a surplus, so consumer surplus decreases. Producer surplus in this market will also reduce. This is because the ~~price~~ price received by sugary food producers decreases from P_1 to P_3, and the quantity ~~sold~~ sold decreases from Q_1 to Q_2 (000) units, so there are fewer units with which they can gain a surplus, causing producer surplus to decrease by area (P_1, C, E, P_3) as on Table four. The government gains revenue of (P_3, E, B, P_2) from the indirect tax, as on Table four. This can then be spent on health programmes or on medical treatment for the obesity, diabetes, and cardiovascular disease resulting from overconsumption of sugary foods. The indirect tax will reduce allocative efficiency, because ~~of the~~ the tax/revenue gained by the government does not fully offset/cover the loss in consumer surplus and loss in producer surplus in the sugary foods market. Hence, a deadweight loss of B, C, E is created. Similarly, as on Graph five/Table four. the quota will also result in a reduction in allocative efficiency, and the creation of a deadweight loss. This is because the loss in consumer surplus ~~and~~ and loss in producer surplus (from (P_1, C, A) to (P_2, B, A), or to the shaded area on Graph ~~six~~ (see back)

£7

Extra space if required.
Write the question number(s) if applicable.

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QUESTION NUMBER

Q1 bi

Overall, the increase (assumed) in consumer surplus is not sufficient to outweigh/completely offset the decrease in producer surplus, meaning that the difference creates a deadweight loss of (E, B, C) as shown on Graph Two. This also represents a loss of surplus/welfare for the taxi producers that is not gained by a third party. Allocative efficiency hence decreases/some al

Q2a ii

the economy. However, the consumer surplus has increased to include the loss in producer surplus, loss in government tax revenue, and deadweight loss which existed in the market prior to tax removal. The inclusion of this deadweight loss in the new consumer surplus is the gain in allocative efficiency of $2.85 million (as on Table Two), or the net welfare gain to society from the tax removal.

Q3b

→ (loss in producer surplus from P_1, C, F to P_3, E, F (the shaded area) on Gr is not gained by a third party, making it deadweight loss, a loss in welfare not gained by a third party. However, the deadweight loss/loss in allocative efficiency will be greater for the quota than for the indirect tax, because with the indirect tax some of the lost consumer surplus and producer surplus is gained as tax revenue for the government, whereas with the quota none of the consumer or producer surplus lost is gained by a third party (because no revenue is generated for the government). This creates a much larger deadweight loss for the quota, as shown by area (P_2, B, C, E, P_3) on Graph Six being larger than area (B, C, E) on Graph Five. Overall, it is likely that the indirect tax would be more effective in

(see VP)

- reducing the consumption of sugary foods, because although the decrease in quantity of sugary foods consumed ($Q_1 \rightarrow Q_2$) appears to be approximately the same on unaffective and dirty, the indirect tax generates "millions" in revenue for NZ government (whereas the quota will not), meaning that there is much more revenue for the government to implement other policies to reduce sugar consumption — such as subsidising (aspartame) alternatives, etc. Overall, then, the quota would probably be more effective in terms of reducing sugary food consumption in the long-run.

→ such as non-sweetened beverages, or sugar

locative efficiency is lost from this market

aphix).

Comments for Exemplars 91399

Excellence Total Score: 23

Q	Grade Score	Annotation
1	**E8**	The response has been awarded E8 because: - the concept of market forces has been explained with correct use of the terms surplus, quantity supplied and quantity demanded. There are also correct references to Graph One and reference to the new equilibrium - the consumer and producer surplus explanations in (b) (ii) include correct descriptions of changes in price and quantity and correct graph/table references - the loss of allocative efficiency explanation correctly refers to the off-setting idea and includes a correct graph/table reference.
2	**E8**	The response has been awarded E8 because: - the consumer and producer surplus explanations in (a) (ii) include correct descriptions of changes in price and quantity and correct graph/table references - the impact on the Government statement includes a correct table reference and the idea that less is available to spend elsewhere - the gain in allocative efficiency explanation correctly uses the off-setting idea and refers to Table 2. - in (c), the response compares the change in quantity demanded and quantity supplied when explaining why CS increases by more for elastic goods and why the change in PS is the same for both goods.
3	**E7**	The response has been awarded E7 because: - there are at least 4 correct labels and shadings - correct references to changes in price and quantity are used when explaining the changes in consumer and producer surpluses and table/graph references are included - the impact on the Government statement includes a correct table reference and the idea that more is available to spend elsewhere - the off-setting idea is explained well for the indirect tax and includes a correct reference to the deadweight loss - references to both the quota and the indirect tax are included in the explanation of why the tax would be more effective in reducing consumption. To gain an E8 grade would require the correct use of the off-setting idea when explaining the loss of allocative efficiency for the quota (loss of CS is not fully offset by the gain in PS).