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NEW ZEALAND QUALIFICATIONS AUTHORITY
MANA TOHU MĀTAURANGA O AOTEAROA

QUALIFY FOR THE FUTURE WORLD
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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.

Merit

TOTAL 17

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QUESTION ONE: CHANGES IN THE TAXI MARKET

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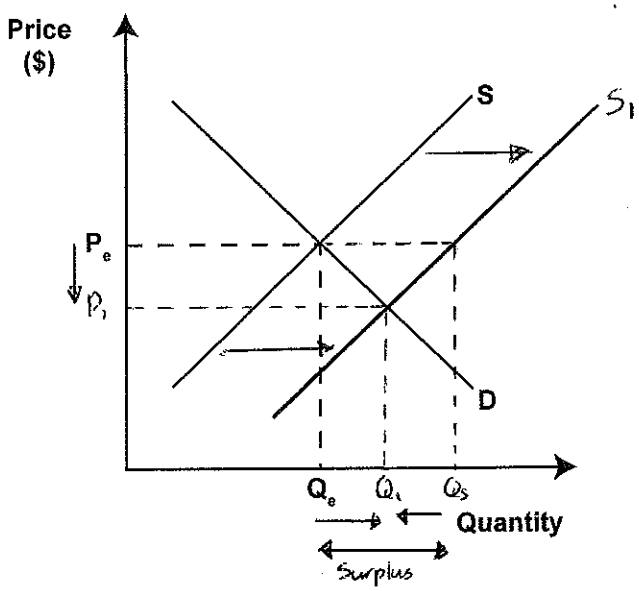
New Zealand has some of the most expensive taxis in the world. Uber is a mobile app allowing consumers with smartphones to submit trip requests to Uber drivers who are using their own cars as taxis. With the arrival of Uber in New Zealand late last year, the future of the taxi industry is set to be changing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

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.

With the arrival of Uber, supply in the taxi market will increase, from S to S_1, as a result of more taxis being available. The result of this is that at the current price Pe, quantity supplied will increase to Qs. Qs is now greater than Qe, resulting in a surplus. With a surplus being formed, there are taxis with no customers to supply rides to. In order to attract customers, taxis will drop the price of their fares. With lower prices, quantity supplied will drop as per the law of supply. Quantity demanded will increase however, as

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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.

(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

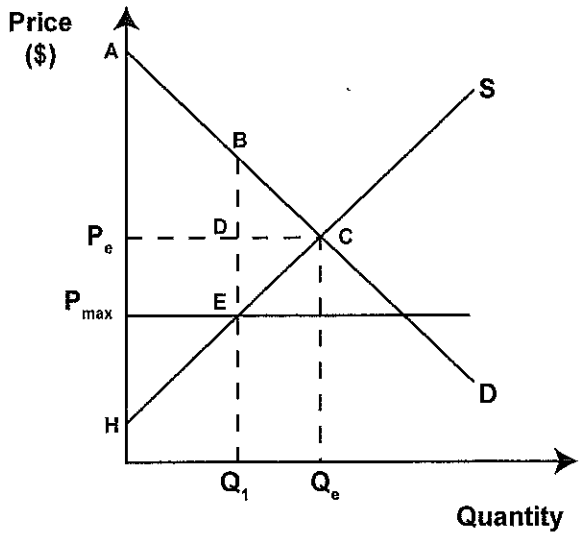

Table One

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

(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.

With the government intervening in the market and setting a maximum price, ~~certain~~ some consumers are better off. This is because now they are getting cheaper taxi fares. The result of this is an increase in consumer surplus. However, this will only positively affect a few consumers, as at the lower price, producers restrict supply. This means fewer taxis on the ~~rate~~ road, so fewer fares. ~~Producers~~ Taxi owners are massively negatively affected, with the price they receive dropping as well as quantity sold, from Pe to Pmax and Qe to Q1 respectively.* The result of this on the market is that it is no longer efficient, with a deadweight loss being present (area BEC).

* This results in a much smaller producer surplus, decreasing by area PePmaxEC.

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M6

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QUESTION TWO: IMPACT OF TARIFF REMOVAL ON IMPORTED GOODS

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

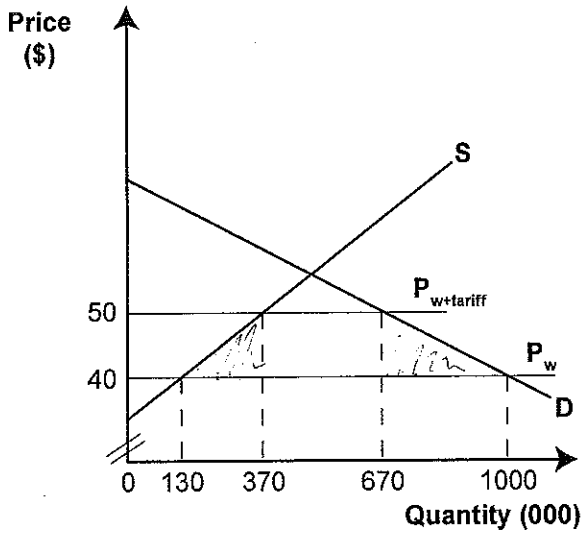

Table Two

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	$3m	Increase (Decrease) No change
Change in allocative efficiency	$2.85m ~~$4.5m~~	(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.

With the tariff being removed on imported goods with elastic demand, the market is overall positively affected. Consumer surplus increases by $8.35m, as consumers are now paying $10 less and buying 330000 more. As they are paying less and consuming more consumer surplus will increase. This price drop will negatively affect domestic producers however, ~~as~~ as with the price drop, they are now less competitive with overseas producers, and the

With producers drops $2.5m. receiving less and supplying less, producer surplus quantity produced drops by 240000. Also, as the tariff is a form of tax revenue for the government, the removal of it costs the government $3m in lost revenue. Overall the effect is positive however, with the increase in consumer surplus being greater than the losses in tax and producer surplus. This means there is a gain

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

Graph Four: Imported Goods with Inelastic Demand

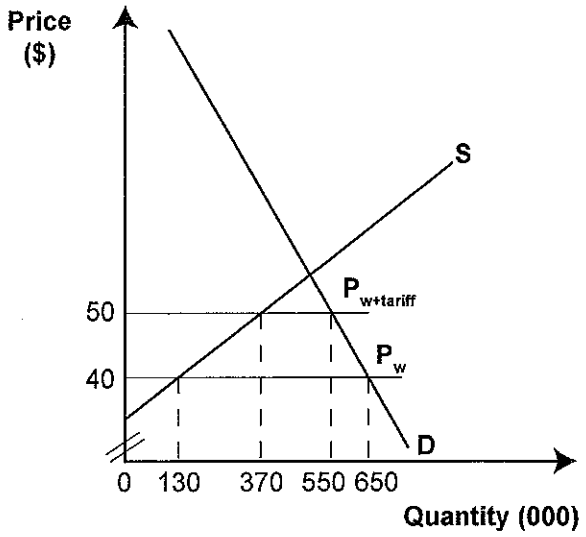

Table Three

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

When the government removes the tariff on an inelastic good, the price drops $10, but quantity only increases 100000. This is much different from the increase of 330000 elastic goods. This is because as the good is inelastic, price changes do not affect quantity as much.

A similarity between the removal

More answer space is available on the next page.

of the tariff on the elastic good and inelastic good is the producer surplus reduces by $2.5m in both situations. As elasticity of the good only affects the shape of the demand curve, not the supply curve, a drop in price of $10 has identical effects on producer surplus for both goods.
Consumer surplus is different however, with the removal of the tariff on the elastic good having a $2.35m larger increase than the inelastic good, at $8.35m and $6m respectively. The reason for this is that consumers are much more reactionary to price changes in elastic goods than inelastic goods, with quantity demanded increasing by 230000 more goods for the elastic good than the inelastic good.
As a result, both goods have identical effects on producers, but the elastic good has a larger positive effect on consumers. However, the end result in both markets is allocative efficiency.

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The examination continues on the following page.

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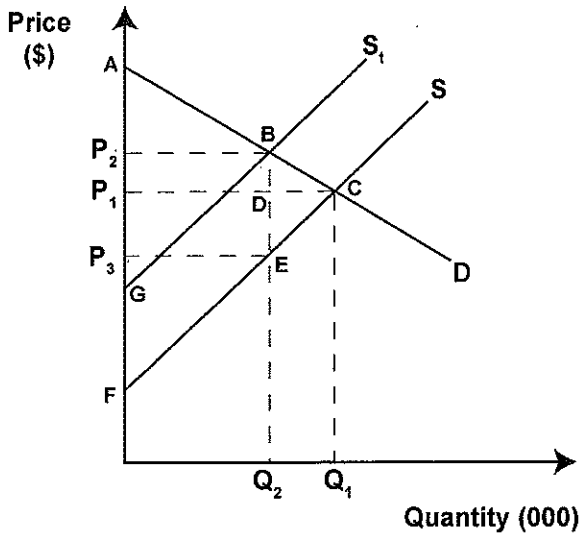
QUESTION THREE: IMPACT OF INDIRECT TAX AND QUOTA

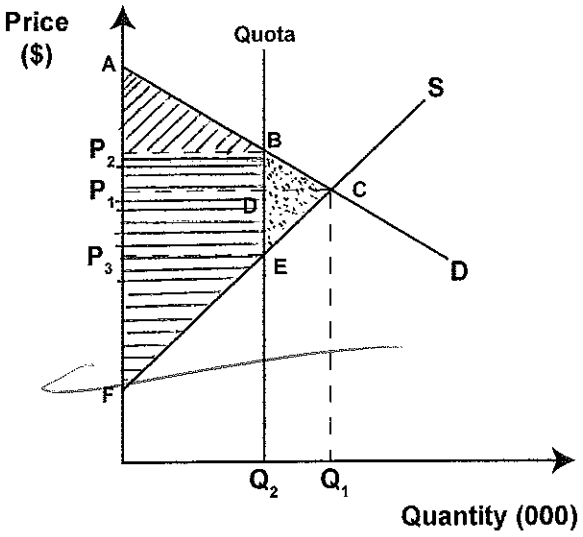
> A tax on fizzy drinks could save lives and generate millions in revenue for health programmes in New Zealand. High sugar intakes are linked to obesity, type 2 diabetes, and cardiovascular disease; a strong case can, therefore, be made for efforts to reduce consumption.
>
> Source (adapted): http://www.otago.ac.nz/wellington/otago066842.pdf

Graphs Five and Six show the effects of two possible government interventions to reduce consumption of sugary foods by the same amount. P_1Q_1 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_2P_1CB
Change in producer surplus	P_1P_3EC
Tax revenue for the government	P_2P_3BE
Deadweight loss	BEC

(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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If the government were to impose a tax on sugary foods, supply would decrease from S to S_t. The result of this is consumers are now made to pay a higher price, P_2. With a higher price being charged, and lower consumption (Q_1 to Q_2), consumer surplus will decrease, negatively affecting consumers. Producers are also negatively affected, with the price they receive dropping to P_3. As they are only supplying Q_2 goods, down from Q_1, producer surplus will also decrease, by area P_1P_3EC. The difference between prices P_2 and P_3 is tax revenue collected by the government, which is a positive for the government. This is because this money can be put to good use on improving New Zealand. Both the indirect tax and quota are not efficient solutions for the sugary food market. This is because it creates a deadweight loss of area BEC, the same for both policies. In order for a market to be allocatively efficient, one of the conditions is no deadweight loss, and as both have deadweight loss present, they are inefficient policies.

M5

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

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QUESTION NUMBER

1 a. ii. as per the law of demand. This process will continue until quantity supplied equals quantity demanded, at P_1 and Q_1. The market is now at equilibrium.

b. ii. As producer surplus and consumer surplus was lost with no third party benefitting, this is deadweight loss. In order for a market to be allocatively efficient, no deadweight loss is to be present, as a result this market is not efficient.

2. a. ii. in allocative efficiency of \$2.85m, meaning the market is more efficient and better off.

3. b. With both policies reducing consumption of sugary foods ~~to~~ down to Q_2, and both ~~being inefficient~~ resulting in the same price to consumers, P_2, they appear to be equally effective. However, a tax is a better policy, as with the indirect tax, the government is collecting a revenue. This revenue can now be spent on education, for example, about reducing sugary food consumption. In the long run, this will cause sugary food consumption to drop

further, a positive for the government and consumers. This is because it results in better health and fewer deaths.

Comments for Exemplars 91399

Merit Total Score: 17

Q	Grade Score	Annotation
1	**M6**	The response has been awarded M6 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 producer surplus explanation in (b) (ii) refers to a lower price received and a lower quantity sold and includes correct graph and table references. To gain an E7 grade or better would require a correct off-setting explanation, which includes a graph or table reference, when explaining the loss of allocative efficiency (Loss of PS is not fully offset by gain in CS).
2	**M6**	The response has been awarded M5 because: - the consumer surplus explanation in (a)(ii) refers to consumers paying less and buying more, plus correct table and graph references - the producer surplus explanation in (a)(ii) refers to producers receiving a lower price and selling a lower quantity - the gain in allocative efficiency explanation correctly uses the off-setting idea (increase in CS greater than loss of PS and tax revenue) and refers to Table 2. - In (c), the response compares the change in quantity demanded when explaining why CS increases by more for elastic goods. There are also correct graph and table references. To gain a E7 grade or better would require the idea that the Government has less to spend elsewhere and reference to quantity supplied when comparing the change in PS in (c).
3	**M5**	The response has been awarded M5 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. To gain an E7 grade or better would require the correct use of the off-setting idea when explaining the loss of allocative efficiency for either the indirect tax or the quota.