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91399



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Mana Tohu Mātauranga o Aotearoa  
New Zealand Qualifications Authority

## Level 3 Economics 2024

### 91399 Demonstrate understanding of the efficiency of market equilibrium

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 2–14 in the correct order and that none of these pages is blank.

Do not write in the margins (// // // //). This area will be cut off when the booklet is marked.

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

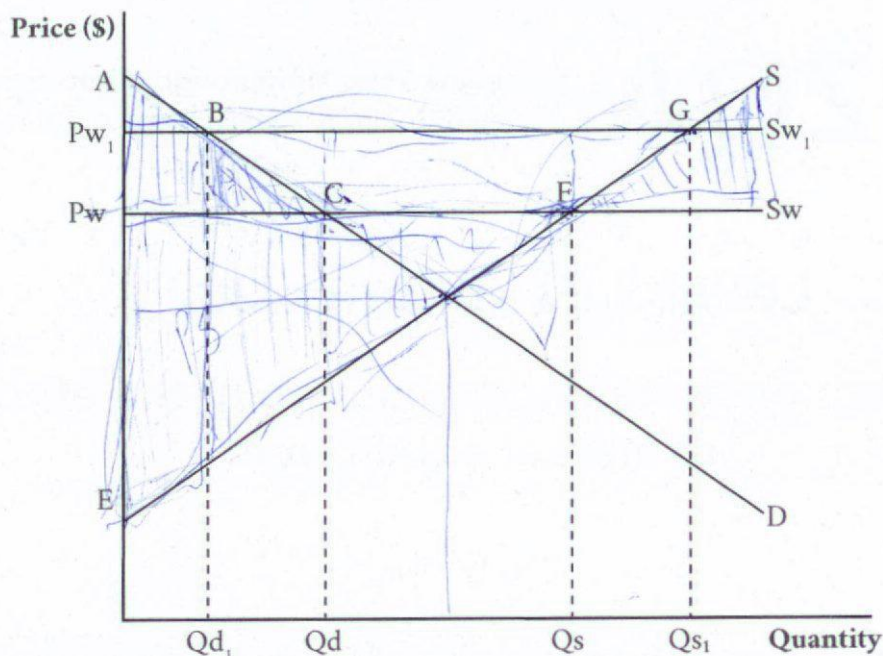
**Achievement**

**TOTAL 11**

### QUESTION ONE: Increase in the world price

Graph One shows the world price increasing for a product that New Zealand exports.

**Graph One: The market for a New Zealand export product  
– impact of an increase in world price**



- (a) (i) Complete Table One by using the labels in Graph One to identify the prices and quantities.

**Table One**

	Before world price increase	After world price increase
Price NZ consumers pay	$P_w$	$P_{w1}$
Price NZ producers receive	$P_w$	$P_{w1}$
Quantity consumed by NZ consumers	$Q_d$	$Q_{d1}$
Quantity sold by NZ producers	$Q_s$	$Q_{s1}$

- (ii) Complete Table Two by using the labels in Graph One to identify the surpluses and deadweight loss.

**Table Two**

	Before world price increase	After world price increase
Consumer surplus	$P_w, C, A$	$P_{w1}, A, B$
Producer surplus	$E, F, P_w$	$E, G, P_{w1}$
Deadweight loss (if any)	none	none



- (iii) Explain why the world price is a horizontal line.

The world price is a horizontal line as it does not change when quantity changes. Perfect competitors are price takers meaning that they cannot change the price to be at market equilibrium where Supply = demand. Instead they are left with a world price above equilibrium which means that supply is greater than demand and there is a surplus.

Refer to Graph One, Table One, and Table Two in your answer to part (b) below.

- (b) Explain in detail the impacts the increase in the world price on a product that New Zealand exports might have on the following:

New Zealand consumers

The increase in the world price will have a negative impact on NZ consumers as consumer surplus decreases as a result of the increase in price. As the world price increases from  $P_w$  to  $P_{w2}$ , Consumer Surplus decreases from  $P_w, C, A$  to  $P_{w2}, A, B$ . This is because the business is a price taker and will increase their prices meaning that the consumers have to pay the higher  $P_{w2}$ . The gap between how much consumers are willing to pay and what they do pay has decreased as the increase in price ( $P_w$  to  $P_{w2}$ ) is more than offset by the decrease in ~~quantity~~ quantity demanded ( $Q_d$  to  $Q_{d2}$ ).



New Zealand producers (exporters)

The increase in the world price from  $P_w$  to  $P_{w2}$  has a positive impact on <sup>NZ</sup> producers as this price increase causes an increase in producer surplus from  $E, F, P_w$  to  $E, G, P_{w2}$ . As the world price increases, the firm is able to sell their goods at ~~a~~ <sup>the</sup> higher price ( $P_{w2}$ ) as they are price takers. At this higher price, the quantity sold decreases from  $Q_0$  to  $Q_1$  as the good is less affordable for consumers. This decrease is more than offset by the increase in price from  $P_w$  to  $P_{w2}$ . The gap between how much producers are willing to sell for and how much they do sell for has increased.

Refer to Graph One and Table Two in your answer to part (c) below.

- (c) Explain the impact of the increase in the world price on the market for a product that New Zealand exports on allocative efficiency.

Before and after the change in world price from  $P_w$  to  $P_{w2}$ , there is no deadweight loss. The increase in producer surplus after the price increase offsets the decrease in consumer surplus ~~mean~~ meaning that there is no deadweight loss and the market is allocatively efficient.

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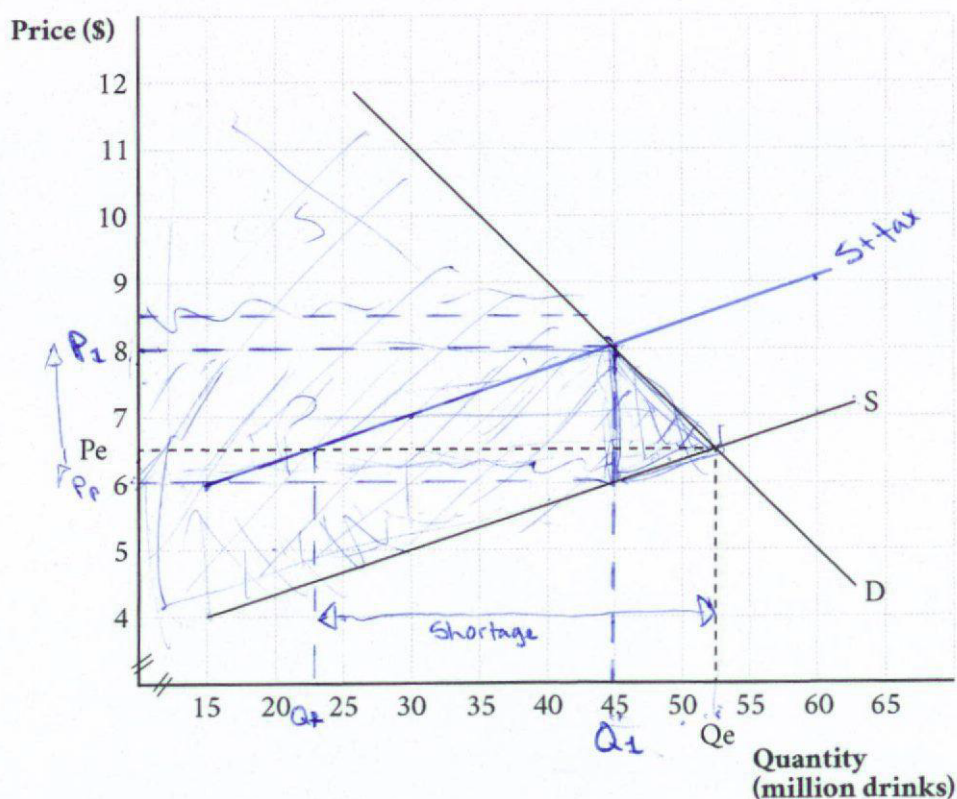
## QUESTION TWO: Indirect tax

Source: Taunton, E. (2023, May 31) Here's why your beer and wine will soon cost more. *Stuff*. <https://www.stuff.co.nz/business/132192469/heres-why-your-beer-and-wine-will-soon-cost-more>

There is more than one reason for increasing the tax on alcohol. One of them is to discourage consumption.

Graph Two shows the market for alcoholic drinks at equilibrium with equilibrium price ( $P_e$ ) and quantity ( $Q_e$ ).

**Graph Two: The market for alcoholic drinks  
– impact of an indirect tax**



- (a) A \$2 per drink indirect tax is imposed on the market for alcoholic drinks.
- (i) Complete Graph Two above by:
- adding and labelling a new curve showing the increase in indirect tax
  - identifying and labelling the new equilibrium price ( $P_1$ ), and quantity ( $Q_1$ )
  - identifying and labelling the resulting shortage or surplus at the original price ( $P_e$ ).



Refer to the relevant figures or labels from Graph Two and the concept of market forces in your answer to (ii) below.

- (ii) Explain how equilibrium would be restored in the market for alcoholic drinks following an increase in indirect tax.

The tax causes a shift in the supply curve from  $S$  to  $S+tax$ . At the original quantity there is a shortage of 30 million drinks as the quantity supplied has decreased from  $Q_e$  to  $Q_1$  and the demand has not changed. There is a decrease in supply as the price producers receive has decreased from  $P_e$  to  $P_1$  meaning that selling alcohol is less profitable and businesses will leave the market as there are no barriers to exit. The price that consumers now pay has increased from  $P_e$  to  $P_2$  meaning that alcohol is now less affordable so quantity demanded decreases from  $Q_e$  to  $Q_2$  where Supply = Demand and the market is at equilibrium.

- (b) Using figures from Graph Two, calculate the values for the following. Circle increase or decrease where appropriate.

- Change in consumer surplus: \$ 73,125,000 million increase or decrease
- Change in producer surplus: \$ 65,625,000 million increase or decrease
- Total tax revenue: \$ 90,000,000 million
- Deadweight loss: \$ 7,500,000 million



Refer to Graph Two and the calculations in part (b) in your answer to (c) below.

- (c) Explain the impact of the indirect tax of \$2 per drink on the following in the market for alcoholic drinks.

#### Consumer surplus

The tax has a negative impact on consumers surplus. The tax causes the price to increase from  $P_e$  to  $P_i$  meaning that consumers now have to pay \$1.50 more per drink. This makes alcohol less affordable causing quantity demanded to decrease from  $Q_e$  to  $Q_i$ . Consumer surplus decreases ~~from~~ by \$73,125,000. The gap between the price consumers are willing to pay and the price they do pay has decreased.

#### Producer surplus

~~Producers~~ The tax on alcohol means that ~~producer~~ surplus increases by \$65,625,000 as the increase in price of \$1.50 ( $P_e$  to  $P_i$ ) more than offsets the decrease in quantity sold of 7.5 mil drinks ( $Q_e$  to  $Q_i$ ). Although this is the case producers are still worse off as they have to pay forward \$2 from every drink sold to the government meaning that the price they receive after the tax is lower than the price before the tax ( $P_e$  to  $P_i$ ).



## Allocative efficiency

With the tax, this market is no longer allocatively efficient. There is a decrease in consumer surplus of \$73,125,000. The increase in producer surplus of \$65,625,000 does not fully offset the decrease in consumer surplus. This means that there is \$7,500,000 that is not made up for by anything meaning that this is the deadweight loss.



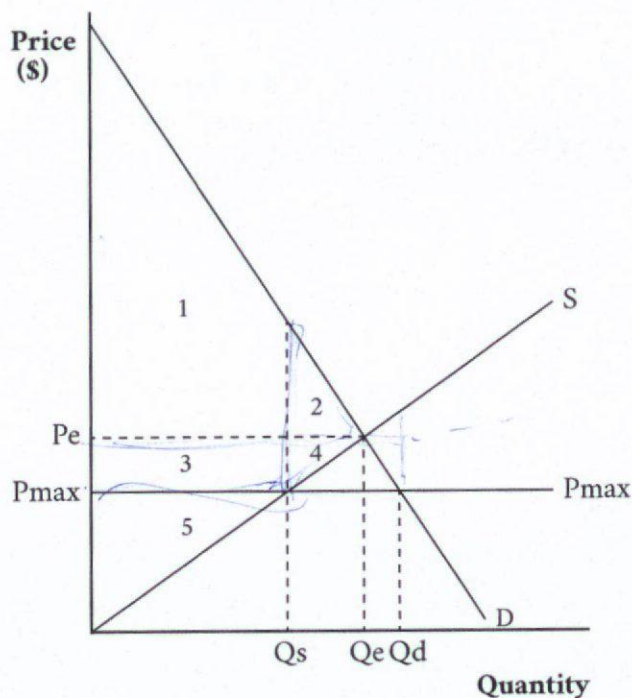
### QUESTION THREE: Maximum price control and elasticity

To help ease the impact of the cost of living crisis, the Government could impose a maximum price on some grocery items.

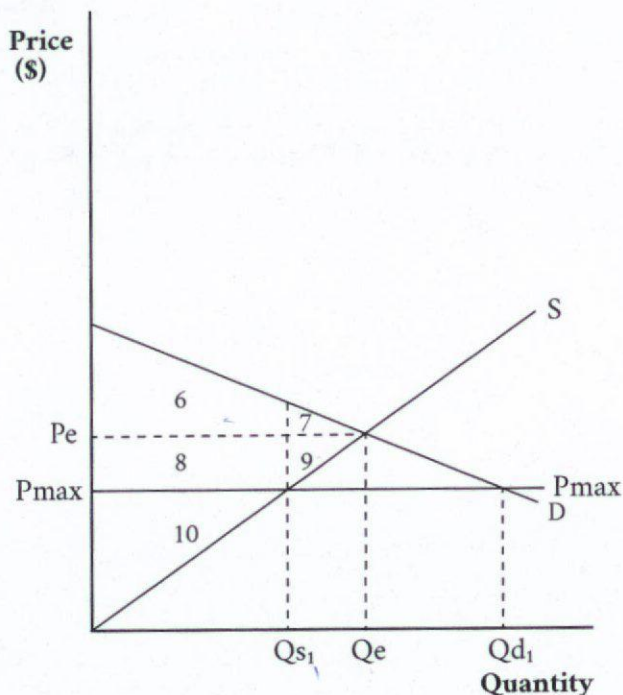
Graph Three shows a maximum price control on an item with an inelastic demand.

Graph Four shows a maximum price control on an item with an elastic demand.

**Graph Three: Inelastic**



**Graph Four: Elastic**



- (a) (i) Complete Table Three by using the numbers in Graph Three and Graph Four to identify the surpluses and deadweight loss.

**Table Three**

	Graph Three (inelastic)	Graph Four (elastic)
Consumer surplus before maximum price control	1,2	6,7
Consumer surplus after maximum price control	1,3	6,8
Producer surplus before maximum price control	3,4,5	8,9,10
Producer surplus after maximum price control	5	10
Deadweight loss (if any)	2,4	7,9



- (ii) Define price elasticity of demand and explain one reason why an item might be elastic.

Price elasticity of demand is how sensitive the demand of a market is to a change in price. For example, luxury items such as movie tickets have high elasticity of demand because they are not a necessity. So an increase in price will cause a more than proportionate decrease in quantity demanded.

- (b) Compare and contrast the impact the maximum price control might have on consumers, producers, and allocative efficiency. Refer to Graph Three and Graph Four in your answer.

For both graphs, Consumer Surplus will increase. On graph 3 <sup>(inelastic demand)</sup> we can see that the change in surplus is not very large (3-2) compared to on graph 4 (elastic demand) where the change in CS is relatively large (8-7). For inelastic demand, consumers are less sensitive to a change in price compared to elastic demand which causes 2 to be larger than 7. Consumer Surplus increases on both graphs as the price consumers pay decreases from  $P_e$  to  $P_{max}$  meaning that the goods are more affordable. The ~~price that~~ <sup>consumer</sup> difference between the price that consumers are willing to pay and the price they do pay has increased.

Similarly, on both graphs there is a decrease in producer. The decrease in consumer surplus is equal for both elastic and inelastic demand. This is because the change in price and

Answer space continues on page 12 ►



decrease in quantity supplied is equal for both graphs. The change in PS for graph 3 is 3.4 and the change in PS for graph 4 is 8.9. At the new maximum price, producers now sell for a lower price. Producers will decrease quantity supplied as producing the goods is now less profitable. The decrease in price <sup>( $P_c$  to  $P_{max}$ )</sup> more than offsets the increase in quantity demanded ( $q_c$  to  $q_{max}$ ) for both graphs.

There is a larger loss to allocative efficiency in graph 3 as 2.4 is greater than 7.9. For both graphs the ~~change~~ increase in consumer surplus (3.2 and 8.7) ~~to~~ does not fully offset the decrease in producer surplus (3.4 and 8.9) meaning that the market is not producing at the allocatively efficient quantity and there is a deadweight loss of 2.4 for graph 3 and 7.9 for graph 4.

**Subject:** Economics

**Standard:** 91399

**Total score:** 11

Q	Grade score	Marker commentary
One	A4	The candidate correctly completed the table, and CS (consumer surplus) and PS (producer surplus). They correctly identified price or quantity changing with graph or table references. They did not identify that QS will increase for producers. The answer for CS is stronger than PS.
Two	A4	The candidate correctly completed the graph and some calculations. The market forces response does not cover the key points. CS is done well; however they have not identified the decrease in price for PS. AE (allocative efficiency) does not correctly identify offset but does discuss the DWL (dead weight loss).
Three	A3	<p>In question (b) the candidate identified changes in CS and PS, but has not discussed price and quantity with graph/table references.</p> <p>In all questions the candidate needed to identify what the change was (increase or decrease) with price, quantity, and definition applied not simply stated. Anchor points should be used for graph references for all these questions.</p>