Assessment Schedule – 2005

Scholarship Economics (93402)

Each question was marked out of 20. A seven point marking scale (0-6) was used for (a) and (b) of each question and a nine point marking scale (0-8) was used for (c) of each question.

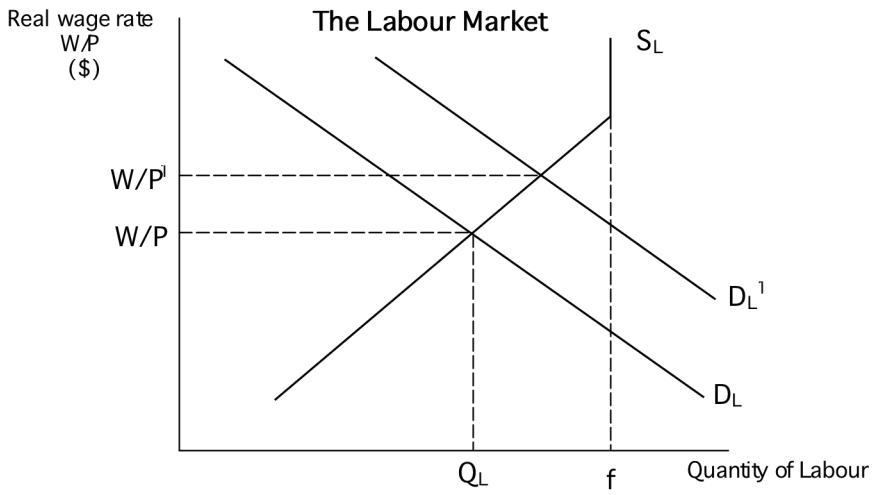
Question One (a) (i)

Labour productivity is a measure of the rate of output, or the efficiency of workers. It can be calculated as the output per worker, per period of time. Examples of labour productivity could include "each pizza worker can produce 27 pizzas per day", or, "each construction worker can produce approximately 1.2 houses per year".

Mark Allocation:	
Definition of labour productivity	= 1 mark
Appropriate example of labour productivity	= 1 mark

Question One (a) (ii)

Graph showing wage determination in labour market:



An increase in labour productivity will increase the demand for labour. This occurs because each worker is able to produce more in each time period, which in turn decreases the cost per unit; employers will therefore employ more workers at each price (shift D_L to the right from D_L to D_L^1). Because of the upward sloping S_L curve, the wage rate will increase from W/P to W/P^1.

Mark Allocation:	
Appropriate graph of the labour market showing increases in D_L and the wage rate	= 2 marks
With one omission	*= 1 mark*
Appropriate explanation of why higher productivity increases D_L and the wage rate	= 2 marks
With one omission or error	*= 1 mark*

Question One (b) (i)

New Zealand firms use more labour relative to capital than firms in Australia, therefore the New Zealand economy is said to be more *capital shallow*. This means that each worker has less capital to work with and they will therefore be less productive. One of the reasons for this capital shallowness was that labour was 60% cheaper in New Zealand in 2002 than in Australia, with after tax incomes $9000 lower on average. A profit-maximising firm will employ resources at least cost, so will employ more labour relative to capital.

Another reason could be that the cost of capital (interest rate) is higher in New Zealand than in Australia, therefore the production function of a profit-maximising firm will see it employing more labour and relatively less capital in New Zealand than it would in Australia.

Also, because of diminishing returns, New Zealand's lower unemployment rate suggests that the labour productivity of the marginal worker would be lower than those in Australia.

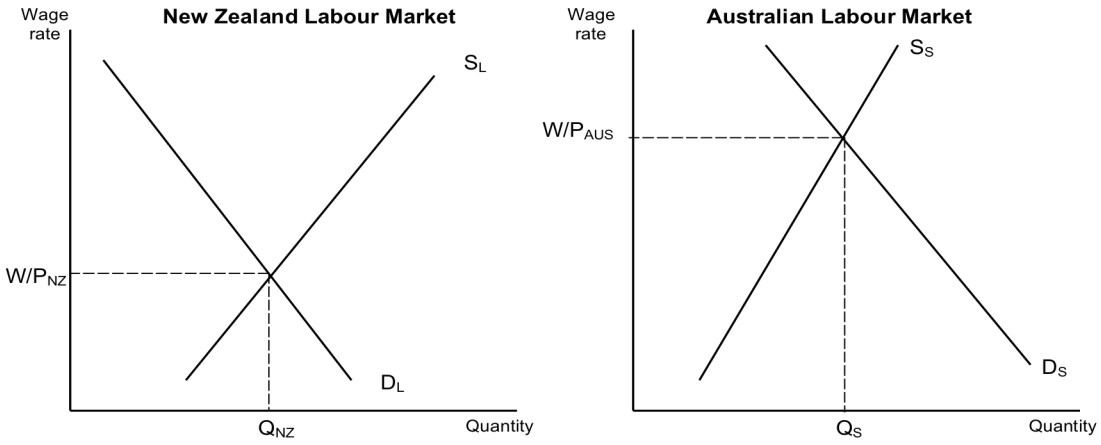
Mark Allocation:

Explains two valid reasons why New Zealand's labour productivity is lower than Australia's = 2 marks

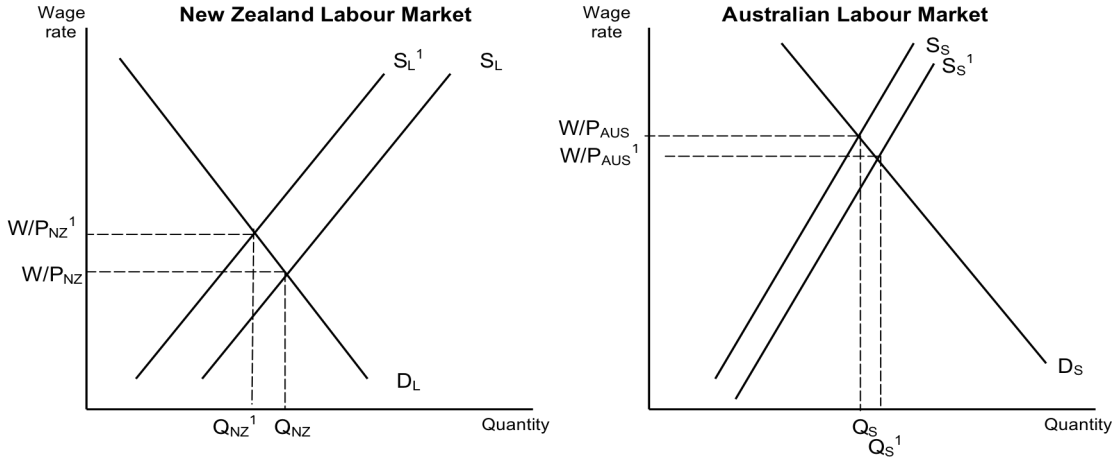
States valid reasons why New Zealand's labour productivity is lower than Australia's = 1 mark

Question One (b) (ii)

The graphs below show labour markets in New Zealand and Australia, indicating the wage differential that exists between the two countries.



Because there are no restrictions on the labour market between New Zealand and Australia, labour is able to move freely between the two countries, and workers will respond to price signals (differences in wage rates).



The net effect of a lower wage rate in New Zealand will be an outward migration of 20 000 workers per annum from New Zealand to Australia, as described in the resource.

Mark Allocation:

Diagram correctly illustrates how wage *differentials* lead to migration of New Zealand worker to Australia with a clear explanation = 2 marks

With one omission or error = 1 mark

Question One (b) (iii)

New Zealand producers could respond to the shortage of skilled labour with a number of measures. By raising wages to improve recruitment and retention, producers would be better able to hire more workers and keep them on the payroll. Producers could lobby government to relax immigration laws, allowing in more skilled workers from overseas, and they could provide more job training to improve the quality of existing workers. Producers could also invest in more labour-saving technologies to address the capital shallowness issue, however the opportunity cost for business of doing this could be the profits that would be distributed to shareholders in the form of dividends, which could lead to a fall in share price. Producers could outsource their production – this is where a firm relocates its production overseas to lower-wage economies, such as China.

Mark Allocation:	
Discusses likely strategies NZ producers could use to respond to the shortage of labour	= 2 marks
States how New Zealand's producers could respond to the shortage of labour	= 1 mark

Question One (c)

Policy options the government could use to close the gap in incomes between the two countries include those that address the quality and quantity of labour and those that address the capital shallowness of the economy.

The government could improve the quality of the labour force by providing more relevant education and training frameworks that would increase the skills required to improve labour productivity. Also the government could change their immigration policy to encourage the migration of more skilled workers from overseas to New Zealand.

In order to reduce the capital shallowness in the New Zealand economy, the government could encourage more investment in productive capital by domestic producers. To do this, the government could adjust the tax structure, such as allowing more favourable depreciation allowances, so that producers are encouraged to spend more on research and development and investment. The government could also make funds available to producers at lower interest rates; this would reduce the cost of borrowing and enable more investment spending. The government could also encourage greater foreign direct investment (where overseas investors are allowed to invest in New Zealand firms), to provide more funds to purchase capital goods. The economic consequence of this is that when profits are eventually repatriated to overseas shareholders, the flow of dividends will increase the current account deficit. These policies will increase the investment spending in New Zealand, enabling increased labour productivity. This would ensure that New Zealand would be investing in 'a more efficient pump' and would enable the country to close the gap in average incomes with Australia.

The government could also address the issue of disposable incomes earned by New Zealand workers. Changing the personal income tax regime by either reducing the marginal tax rates or improving income support payments would improve the disposable incomes of workers in New Zealand relative to those in Australia.

Candidates need to demonstrate judgement in their evaluation of the effectiveness of the policies. For instance, the government should avoid increasing disposable incomes without a corresponding increase in productivity; otherwise the increased costs to producers could reduce New Zealand's competitiveness overseas, which would be counterproductive. The government could also consider letting the free market fix the problem: the shortage of skilled labour would eventually force those New Zealand producers wanting to increase output to invest in labour-saving technologies and/or increase wages to attract more skilled workers, leading to an increase in wage rates and narrowing the gap in incomes. Better candidates will be able to indicate that with a tight labour market and a worldwide shortage in skilled labour, policies that address the capital shallowness of the New Zealand economy are more likely to be successful in closing the income gap and thus reducing the number of workers migrating to Australia.

Mark Allocation:

A basic understanding of the policy options the New Zealand government could use to close the gap in average incomes between the two countries. = up to 2 marks

A discussion of the effects of the policy options the New Zealand government could use to close the gap in average incomes between the two countries. = up to 2 marks

An evaluation of the appropriate policy options the New Zealand government could use to close the gap in average incomes between the two countries. = up to 4 marks

For allocating the 4 marks in the last section of part C in this question:

- 4 marks for a reasoned and clear evaluative statement
- 3 marks for a fair but undeveloped comment
- 2 marks for a limited but acceptable attempt to consider the possible effects
- 1 mark for an answer that may include some basic correct facts, but includes irrelevancies and errors of theory

Question Two (a) (i)

Some firms have converted forestry land to pasture – reflecting subnormal profits in forestry.

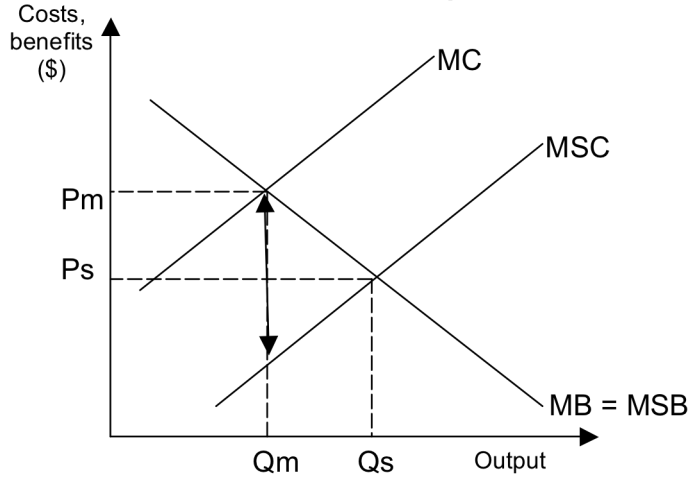
Other evidence from the article that suggests forestry firms are making subnormal profits includes:
Forestry firms have received lower returns, because trees at harvest (logs) are now only fetching two-thirds of the price they were two or three years ago, and because the higher price of land has increased the cost of production. Some foresters may have stayed in the forestry business hoping to receive the carbon credits that are generated from the Kyoto forests acting as carbon sinks, and are upset that the 'sink credits' will now be retained by the government. The foresters argue that they are not compensated for the risks of growing if they don't get the full returns, and prefer to leave the industry. However, even though there are fewer Kyoto forests being planted, there is still an additional 10 000 ha of plantings per year, suggesting there are enough (supernormal) profits to attract new firms into the industry.

Mark Allocation:	
States that some firms have converted forestry land into pasture	= 2 marks
Identifies other evidence from the resource that implies firms are making subnormal profits	= 1 mark

Question Two (a) (ii)

Forests planted after 1990 on land that was not already forested can be classified as Kyoto forests. These plantations result in positive externalities of production because the trees act as carbon sinks, locking up carbon dioxide from the atmosphere and helping to counteract the emissions from other types of production (and consumption). As a result, there is a reduction in costs to other producers.

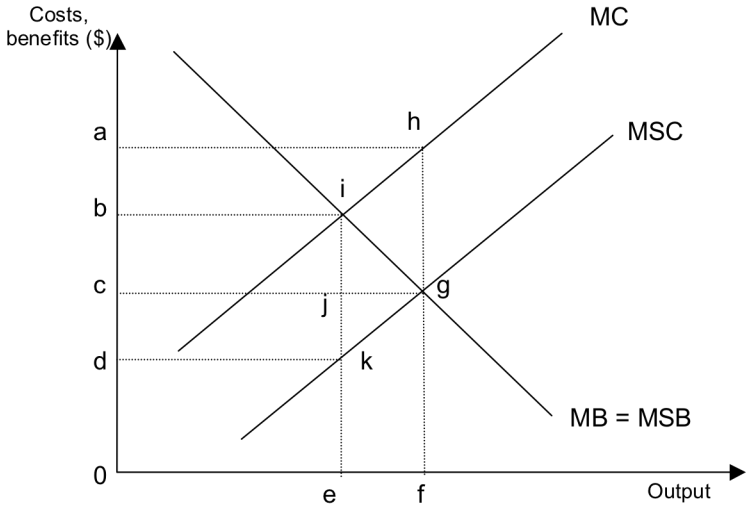
Graph 1: **Kyoto forests: Positive externalities of production**



Market equilibrium is where MC = MB, with market price and output at Pm and Qm respectively, in comparison with the social equilibrium where MSC = MSB. The Kyoto forests are over-priced and under-produced. The arrow in the diagram indicates the extent of these externalities at market equilibrium.

One policy measure that can be used to internalise these positive externalities of production is to reward the growers with a subsidy of **ac** per unit, with the total subsidy payment shown by the area **ahgc**. This subsidy will reduce the costs of production and increase the supply, with the effect of moving MC curve to MSC, increasing the output at a lower price and achieving social equilibrium at point **g**. There is an increase in allocative efficiency by the removal of the DWL (area **igk** or **ihg**), which exists at market equilibrium, resulting from the market failure (because of the externality).

Graph 2:



Mark Allocation:

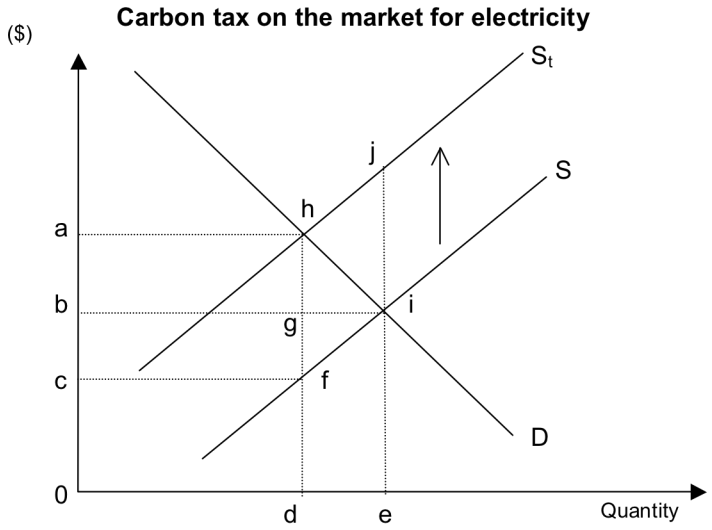
Fully labelled diagram correctly illustrates the positive externalities of Kyoto forestry and shows how a subsidy internalises the externality to achieve social equilibrium. = 2 marks
With one omission or error. *= 1 mark*

Explains how the positive externalities result from Kyoto forestry and describes how a subsidy can internalise the externality to achieve social equilibrium. = 2 marks
With one omission or error. *= 1 mark*

Question Two (b) (i)

Approximately one third of the electricity generated in New Zealand comes from burning fossil fuels such as coal and natural gas, resulting in carbon dioxide emissions. This type of electricity generation has a negative externality of production, ie it imposes costs on others. Therefore it is over-produced and under-priced.

A policy measure to internalise this externality is based on the principle that the polluter should pay. The carbon tax is imposed on each tonne of carbon dioxide. This carbon tax is paid by the producer, adding to the costs of production and has the effect of shifting the supply curve upwards and to the left, as seen in the diagram below.



At the market equilibrium, the DWL *resulting from the externality* is shown by the area **hji**. If a carbon tax is charged at a rate of $**ac** per unit, it will shift the supply curve from S to S_t which internalises the externality. Total revenue collected from tax is shown by the area **ahfc**.

The tax revenue can be used to reduce the effect of carbon emissions, and help achieve social equilibrium where MSC = MSB at point h, where a reallocation of resources has occurred with a reduction in electricity output using fossil fuels and a price rise. There is an incentive to switch to 'clean' methods of production.

Mark Allocation:

Diagram to illustrate the impact of the carbon tax on the market for electricity and an explanation of how the tax internalises the externality to achieve social equilibrium. = 2 marks

With one omission or error *= 1 mark*

Question Two (b) (ii)

Negative impacts may include:
- Loss of $1 billion in foreign exchange earnings Comalco generated from selling aluminium overseas
- Loss of $70m in wages for the local Southland economy, which will reduce consumer spending in the region. This may lead to migration of skilled workers from the region.
- A drop in the earnings of other New Zealand businesses that used to supply Comalco and its workers.
- A loss of tax revenue to the government resulting from a fall in income taxes from wages and salaries, a fall in company tax from Comalco and its suppliers, and a fall in GST as there is less consumption spending.
- A drop in aggregate demand and aggregate supply and, as a consequence, a fall in real output of goods and services.

Potentially positive impacts may include:
- A 15% drop in electricity consumption, delaying the need to build more electricity generation – if this can be redistributed to the rest of New Zealand.
- A fall in greenhouse gas emissions from both the smelter and some of the electricity generation, which would improve New Zealand's position with regard to its Kyoto target.

Mark Allocation:

Explains a range of negative impacts on the New Zealand economy resulting from Comalco shutting down their operations. = 2 marks
With one omission or error *= 1 mark*

Explains a range of positive impacts on the New Zealand economy resulting from Comalco shutting down their operations. = 2 marks
With one omission or error *= 1 mark*

Question Two (c)

Arguments in support of the cap and trade:

- Setting emission targets and allowing the trading of carbon credits should be more efficient. Firms are allocated tradable allowances (credits) to emit a certain amount of carbon a year. Heavy polluters that overshoot their limit will have to buy allowances from light polluters. Thus, efficient producers are rewarded and pollution is limited at an overall cost that is less than if each firm were required to meet an individual target.
- Carbon credits provide producers with property rights (pollution permits) that in theory should operate in a similar manner to the individual transferable quotas used in the quota management system in the New Zealand fishing industry.
- The system is market-based. Buyers and sellers receive and send clear price signals to inform business decisions. These price signals will encourage producers to reduce their carbon emissions and will also encourage producers to allocate resources towards the production of outputs that will earn carbon credits, such as the Kyoto forests and wind-power generation.

Arguments in support of the carbon taxes include:

- The polluter pays principal; the carbon taxes have to be paid by producers with greenhouse gas emissions, adding to the costs of production. This will help shift the MC curve towards MSC, reducing the externalities, as seen earlier in the essay.
- However, these taxes are not selective between the efficiency of producers. They are a regulation rather than a market mechanism; thus, no price signals are provided as incentives toward more efficient allocation. Also, they are inflationary unless compensated by tax cuts elsewhere. They may also encourage producers to leave the country and relocate in countries where no carbon tax is imposed (a process termed carbon leakage).

Overall evaluative comment that cap and trade is going to be more effective at achieving the aim of a reduction of greenhouse gas emissions and likely to be more effective in reducing global warming.

Mark Allocation:

Demonstrates an understanding of the two policy measures used to reduce greenhouse gas emissions.
= up to 2 marks

Completes a discussion of the effectiveness of the two policy measures used to reduce greenhouse gas emissions.
= up to 2 marks

Completes the evaluation by concluding which is the most appropriate of the two policy measures used to reduce greenhouse gas emissions and justifies the conclusion. = up to 4 marks

For allocating the 4 marks in the last section of part C in this question:

4 marks for a reasoned and clear evaluative statement
3 marks for a fair but undeveloped comment
2 marks for a limited but acceptable attempt to consider the possible effects
1 mark for an answer that may include some basic correct facts but includes irrelevancies and errors of theory

Question Three (a) (i)

- The current account balance is made up of the balances (inflows minus outflows) on goods, services, income, and transfers.
- The balance on goods is the export and import of tangible items. New Zealand exports items such as meat, wool, and dairy products. Major imports are oil, machinery, cars, and electronics.
- The balance on services is the export and import of intangible items such as tourism spending, insurance, shipping. For example, if a New Zealand exporter uses a Russian ship to transport goods, this is an outflow on the balance on services.
- The balance on income refers to dividends and interest income flows between New Zealand and other countries. For example, if a foreign company owns a business in New Zealand then dividends sent back to the foreign owners will be an outflow on this account.
- The balance on transfers refers to the flow of foreign aid and other gifts between countries. If a New Zealander gives money to an overseas charity then this is recorded as an outflow on this account.

Mark Allocation:

Identification of the four components of the current account	= 2 marks
With one omission or error	*= 1 mark*
Appropriate examples for each of the four accounts	= 2 marks
With one omission or error	*= 1 mark*

Question Three (a) (ii)

A strong domestic economy can lead to a deterioration in the balance on goods because consumers will increase their demand for imports (often luxury goods) as their incomes increase. Businesses are also likely to increase their demand for imported investment goods, such as machinery to cope with the higher consumer demand.

A strong domestic economy will also increase demand for overseas services, leading to a deterioration in the balance on services. More New Zealanders will travel overseas on holidays, spending their money in other countries. Businesses may also be more likely to need other services such as insurance from overseas firms.

A strong domestic economy will also mean that businesses are generally more profitable. If the businesses are foreign owned, this will result in more profits being repatriated overseas, leading to a deterioration in the balance on income. Businesses are also more likely to borrow money for expansion and this will lead to interest payments sent overseas, also deteriorating the balance on income.

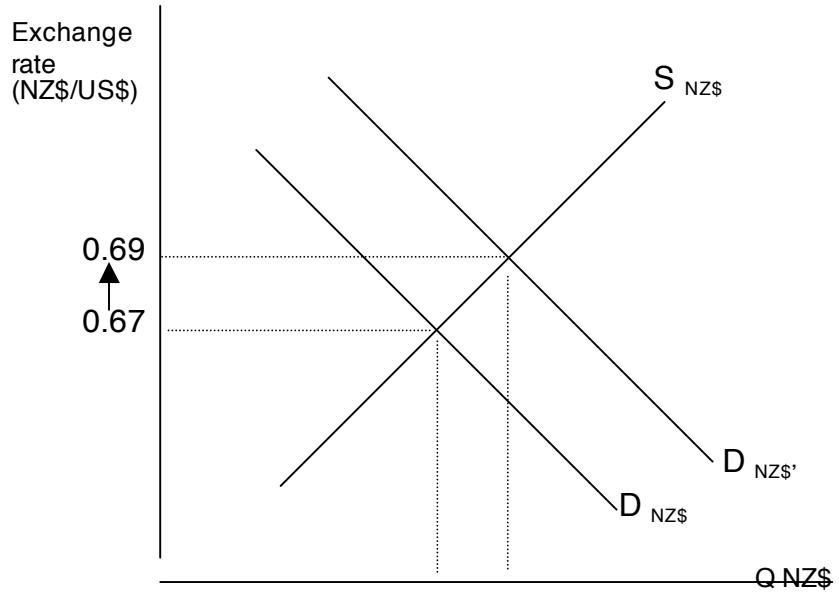
Mark Allocation:

Gives two valid reasons why the deficit may increase due to growth	= 2 marks
Gives one valid reason why the deficit may increase due to growth	= 1 mark

Question Three (b)

If the Reserve Bank is concerned that inflationary pressure will lead to an inflation rate in excess of its 1–3% target, it is likely to increase the Official Cash Rate in order to reduce the level of Aggregate Demand. This will lead to an increase in the retail interest rates that banks offer.

Relatively higher interest rates will attract money from around the world as New Zealand banks and other institutions are now a more attractive place for them to deposit their money. For example, if USA interest rates are 5%, but New Zealand interest rates are 7%, then a person with US$1 million is $20 000 better off depositing the money in New Zealand. In order to do this, they must change their foreign money into NZ$. This leads to an increase in the demand for NZ$ as shown below.



The increase in demand for the NZ$ leads to an appreciation of the exchange rate – in this case from US$0.67 to US$0.69.

The supply of the NZ$ may also decrease, as New Zealanders are less likely to move their money to offshore banks, and foreigners who already have money in New Zealand banks may decide to keep that money in New Zealand for a longer period. The decrease in supply will also cause the NZ$ to appreciate.

Mark Allocation:

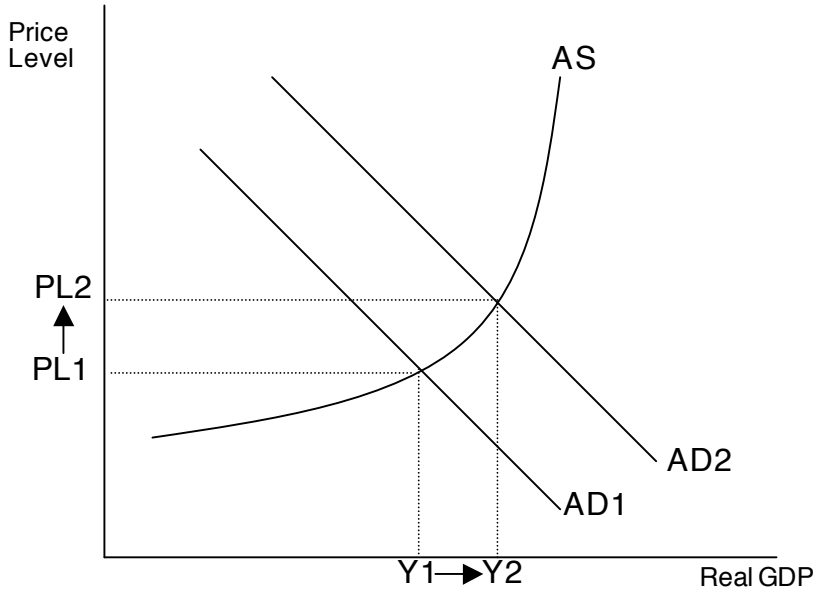
Correctly describes RBNZ's response to inflationary pressure and the flow on to higher retail interest rates. = up to 2 marks

Explains the link between higher interest rates and changes in the demand or the supply of NZ$ = up to 2 marks

Illustrates appreciation of NZ$ using foreign exchange market diagram = up to 2 marks

Question Three (c)

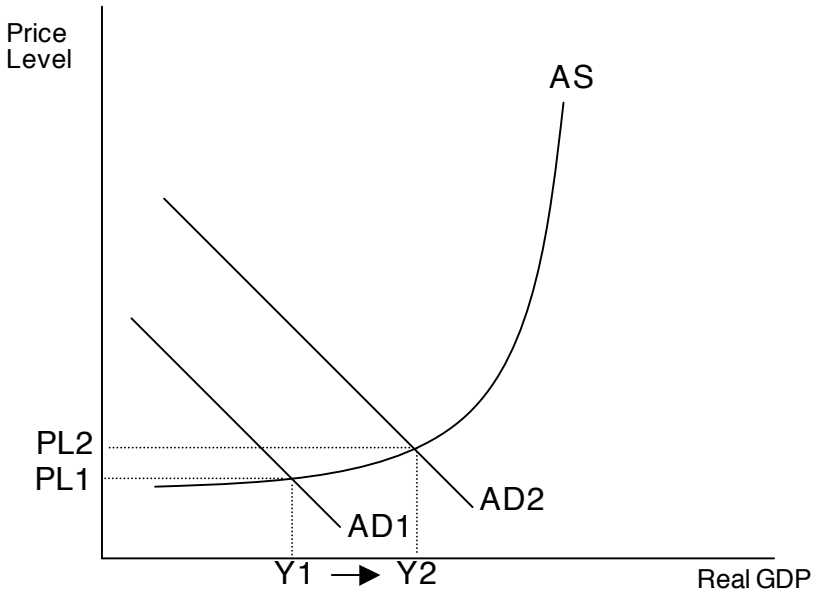
For the New Zealand government, the goal of price stability is defined as a 1–3% increase on average in the CPI over the medium term. Their goal of 3% economic growth refers to a 3% increase in real GDP. These two goals may be difficult to achieve at the same time. The AS / AD diagram below shows how an increase in Aggregate Demand influences these goals.



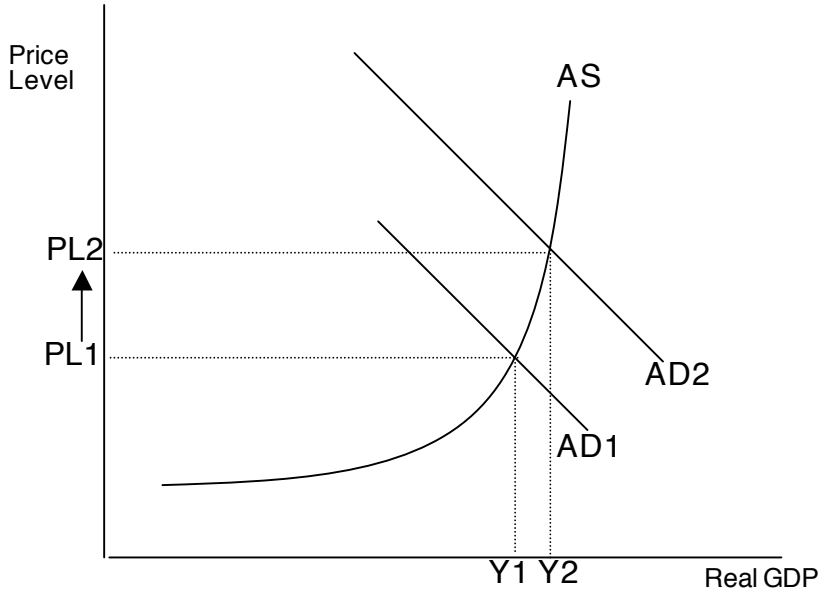
The increase in Aggregate Demand has increased the level of real GDP (Y1 to Y2) but at the same time has increased the price level (PL1 to PL2). If the increase in real GDP shown is greater than 3% and the increase in the price level is between 1–3% then the government will have achieved its goals.

Whether or not this occurs can depend on how close to capacity (full employment) the economy is operating. The slope of the AS curve reflects the economy's capacity; at low levels of capacity the AS curve is relatively flat, as more output can easily be produced without large increases in the price level. As full employment is approached, the AS curve becomes steeper, as much larger increases in the price level are required to encourage further production.

The AS / AD diagram below shows the result of an AD increase when the economy is operating at low capacity.

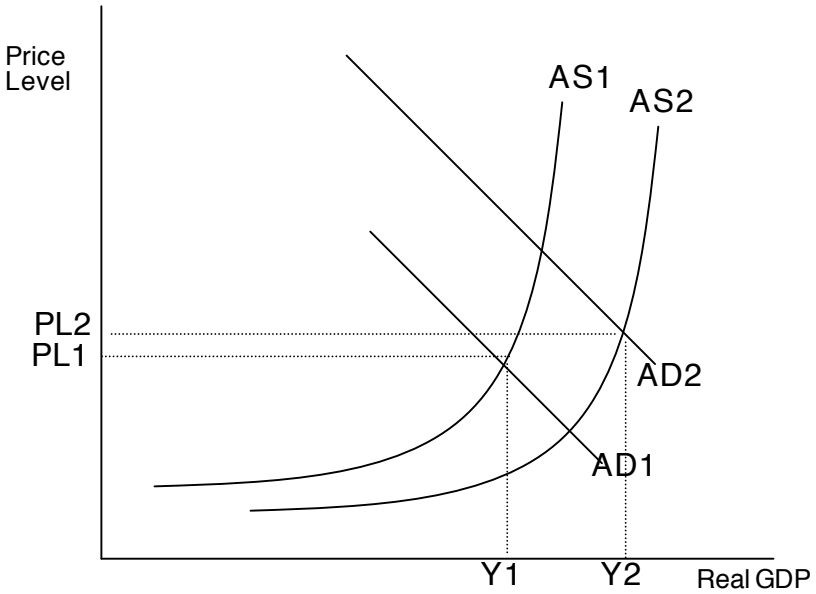


The result is a relatively large increase in real GDP (eg >3%) and a relatively small increase in the price level (eg 1–3%). In this situation there is no conflict between the objectives.
However, if the economy is operating at close to full capacity, the conflict can arise.



If Y1 to Y2 represented a 3% increase in real GDP, then this could only be achieved with a greater than 3% increase in the price level (PL1 to PL2). The Reserve Bank is unlikely to allow this to happen and would increase the OCR, which would decrease AD and growth would fall below 3%. Therefore, if the economy is operating at or near full capacity then it is likely that the two goals will conflict. New Zealand may face this problem at the moment, given that unemployment is low.

However, if there is a corresponding increase in Aggregate Supply then it might be possible to avoid these conflicts. The diagram below shows the economy near full capacity, an AS increase, followed by an AD increase.



The result is a relatively large increase in real GDP and a relatively small increase in the price level, which is what the government wants.

Whether or not the objectives conflict, therefore, depends on the capacity of the economy and the movement of the AS curve. If the economy is operating at low capacity, there are likely to be no conflicts. If the economy is operating at high capacity, there is likely to be a conflict unless there is a shift out of the AS curve. This could occur by itself, eg lower import prices, or the government could attempt policies to shift it out, eg labour market deregulation, spending on research and development, etc.

Note: This essay answer is not exhaustive in terms of the possible approaches to answering this question. For example, one approach might be to look at what occurs when the AS curve shifts inwards and the corresponding effect on the price level and real GDP.

Mark allocation:

A basic understanding of how price stability and economic growth conflict, as illustrated by a simple increase of AD on the AD / AS model. = up to 2 marks

A discussion of the effect of the AD shift in relation to capacity utilisation in the economy, ie terms of the slope of the AS curve, to compare the effect of a shift on the relatively flat and steep parts of the AS curve. = up to 2 marks

An evaluative judgement of how these objectives can be achieved (including a discussion of the role of shifting the AS curve. = up to 4 marks

For allocating the 4 marks in the last section of part C in this question:

- 4 marks for a reasoned and clear evaluative statement
- 3 marks for a fair but undeveloped comment
- 2 marks for a limited but acceptable attempt to consider the possible effects
- 1 mark for an answer that may include some basic correct facts but includes irrelevancies and errors of theory

Judgement Statement

An aggregate mark of 60 from three questions was used in Economics.
In 2005, candidates who achieved 48-60 marks were awarded outstanding scholarship and candidates who achieved 36-47 marks were awarded scholarship.