

- 1 The increase in energy prices have increased competition between sugar and sugarcane-based biofuel such as ethanol, as farmers divert resources away from sugar crop to ethanol production. Together with sustained economic expansion, these have led to a spike in sugar prices. In some countries such as India, where sugar is a prevalent component in people's everyday diet, governments are considering sugar reduction strategies and price controls to ease the spike in sugar prices.

Source: Adapted from OECD-FAO Agricultural Outlook 2021-2030

- (a) With the aid of diagrams, explain how the increase in energy prices and economic expansion are **each** likely to impact consumer expenditure on sugar, in a country such as India. [10]
- (b) Discuss the policies a government could implement to ease the spike in sugar prices in the domestic market. [15]

Part (a)

Command Word	'Explain' – Give reasons, establish causal links.
Content / Concept Words	'consumer expenditure CE ' – $P \times Q$. 'Demand & Supply factors' – factors affecting market DD and market SS / elasticity
Context	India

Qns Requirement	<p>R1: Increase in energy prices – Candidates are expected to explain the impact on CE because of a rise in energy prices. A good tool of analysis is dd/ss analysis with a diagram illustrating a leftward shift of the supply curve with an inelastic demand curve.</p> <p>R2: Economic expansion – Candidates are expected to explain the impact on CE because of an economic expansion. A good tool of analysis is dd/ss analysis with a diagram illustrating a rightward shift of the demand curve.</p> <p style="text-align: right;"> L3 Band [8 - 10] L2 Band [5 - 7] L1 Band [1 - 4] </p>
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Suggested Answers

Requirement 1: Explain how an increase in energy prices affect consumers' expenditure on sugar

Rise in energy prices would mean that it is **more profitable** to produce sugarcane crops for biofuel such as ethanol rather than producing sugar for consumption. Hence, farmers divert resources away from the production of sugarcane crops for sugar consumption to the production of sugarcane crops for ethanol production since sugar and ethanol are **competitive in supply**. This will reduce the supply of sugar for consumption, creating a shortage in the market.

The **shortage** will create an **upward pressure** on P. As P increase, quantity demanded will decrease while quantity supplied will increase, until quantity demanded equals quantity supplied at a new equilibrium where prices are higher and market quantity is lower.

Since sugar is a prevalent component in people's everyday diet, it is deemed as a necessity. This suggest that **demand for sugar is price inelastic / $PED < 1$** . As prices increase, this will lead to a less than proportionate decrease in qty demanded. Prices are likely to increase much more to clear the shortage in the market. The increase in CE from the increase in P is therefore greater than the decrease in CE from the decrease in market quantity, resulting in an **increase in consumers' expenditure**.

Requirement 2: Explain how economic expansion affect consumers' expenditure

Economic expansion implies an **increase in RNY**, i.e. household income levels increased. As households' purchasing power increases, this will lead to an increase in demand for normal goods such as food and beverages that uses sugar in the production process. The increase in demand for such food and beverages will increase the demand for sugar, shifting the demand for sugar to the right.

This creates a **shortage** in the market and an **upward pressure** on P. Market quantity will also increase. As a result, consumers' expenditure will rise as well. **[Optional]**: since sugar is a necessity, demand for sugar is likely to be income inelastic ($YED < 1$). This could imply that the demand for sugar will rise less than proportionately. The increase in CE from economic expansion may therefore be less significant.

Knowledge, Understanding, Application, Analysis		
L3	<p>Analysis & Application For an analytical answer that addresses the question thoroughly with clear explanation well supported by tools of analysis, Answer is well-focused on question, with the good use of relevant economic concepts, theories or principles.</p> <p>Knowledge & Understanding For an answer that demonstrates an accurate knowledge and understanding of economic concepts, theories related to question. Note: To enter L3, answer should be applied to the context of the sugar market and information given in the preamble.</p>	8-10
L2	<p>Analysis & Application For an under-developed answer that attempts to address the question Answers may be descriptive, lack an analytical approach (e.g. not supported with tools of analysis, incomplete use of graph) or is incompletely explained with gaps in analysis, e.g. missing links. [Or For a one-sided analytical answer that address only one of the two question requirement. For an answer that is supported with some application to the context of the question. There is limited ability to organise ideas or discriminate between relevant and irrelevant materials. Answer has some relevance to the question context but is generic (e.g. pre-learnt answer that is not focused on addressing the question specifically) or addresses only selected parts of the question.</p> <p>Knowledge & Understanding</p>	5-7

	For an answer that demonstrates largely accurate knowledge and understanding of economic concepts, theories related to question (i.e. no major conceptual errors)	
L1	<p>Knowledge & Understanding</p> <p>For an answer that shows limited knowledge and understanding of relevant economic concepts and theories (e.g. basic description or definitions). Few valid points made which are scant and inadequately explained. Answers are mostly irrelevant and inaccurate. Answer demonstrates that the meaning of question is not properly grasped or may contain basic errors of theory.</p> <p>Marks within L1:</p> <p>Note:</p> <p>K=1 - For basic and unexplained knowledge, e.g. an unexplained statement or definition of a concept that showed some correct knowledge but no understanding</p> <p>K=2 - For some additional explanation that shows an understanding of the concept that is not applied to the context of question or may show limited knowledge and understanding</p>	1-4

Annotation	Level	Marks out of 10
A + A	L3	10
A + C	L3	8-9
A + K	L2	7
A + O	L2	6
C + C	L2	6
C + K	L2	5
C + O	L1	4
K + K	L1	2-4
K + O	L1	1-2

Markers' Comments:

Content:

Demand-supply analysis

- Majority of students were able to use dd/ss analysis to answer the question. They were able to recognise that the factors have led to the fall in supply and increase in demand for sugar. These students were also able to explain the impact on market P and Qty by using the price adjustment process, i.e. recognise that there is a shortage created in the market as a result from the fall in supply and increase in demand. [These answers are at least a L2 answer.]
- Majority of students who were able to correctly apply dd/ss analysis were also able to recognise the need to use elasticity to explain the impact on CE, especially from the rise in energy prices. Most were able to explain that demand for sugar is price inelastic as sugar is a prevalent component of individual's diet. However, not all were able to explain in detail how the value of PED will affect CE. i.e. Some just stated that since $PED < 1$, CE increases without any illustration on diagram or explanation. Some even stated that CE decreases showing the lack of understanding of the application of PED as a concept.
- Good answers were able to explain that when price increased from the fall in supply of sugar, quantity demanded will fall less than proportionately, therefore CE falls. A better answer would actually require students to compare then changes in CE from the rise in P vs fall in qty.
- Minority of students did not use dd/ss analysis. Some applied AD/AS analysis instead to explain how economic expansion implies the rise in AD, resulting in demand pull inflation, hence rising price of g/s including sugar. Though this is not wrong, this method does not explain the rise in price in particularly the sugar market as the rise in GPL means that prices of all g/s increase.

Diagrams

- When diagrams were used, diagrams were drawn accurately. Only a minority had incomplete labelling.
- A handful of students, however, drew diagrams without reference to the diagram.

Part (b)

Command Word	'Discuss (the policies)' – Balanced approach to <u>assess appropriateness</u> of policies + <u>evaluative comments</u> & <u>summative conclusion</u> of the extent of appropriateness.
Content / Concept Words	'Policies designed to ease the spike in sugar prices– (1) Price ceiling (2) Policies to reduce demand for sugar i.e. healthier living / use of alternative sweetener (3) Export ban (4) Subsidising sugar production
Context	Supported by pre-amble.

Qn Requirement	<p>The answer will, to a large extent, depend on candidates' understanding of the policies a government can deploy to manage spike in sugar prices, and their limitations which should be recognised by candidates in the evaluative judgements.</p> <p>Policies, so long as is logical and sound with appropriate analysis should be accepted.</p> <p>R1: Price control to ease the spike in sugar prices R2: One other policy to ease the spike in sugar prices by reducing demand.</p> <p>To enter L3, application to the context should be clearly made and should include a discussion of more than one policy.</p> <p style="text-align: right;">L3 Band [8 - 10] L2 Band [5 - 7] L1 Band [1 - 4]</p> <p>Evaluation Marks: Well argued evaluative judgements about appropriateness of policies designed to ease spike in sugar prices with a summative conclusion about extent to which they are appropriate.</p> <p style="text-align: right;">E3 Band [5] E2 Band [3 - 4] E1 Band [1 - 2]</p>
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Suggested Answer

Explain how price ceiling could be used to ease the spike in sugar prices.

Price ceiling could be implemented by setting a price below the equilibrium price to prevent sugar prices from rising. This would ensure that sugar prices are kept affordable.

However, such a policy would result in a shortage of sugar and may lead to sugar being sold in black markets and significantly higher prices, rendering this policy ineffective. Not only that, a price ceiling may lead to producers of sugar earning lesser TR. If firms earn subnormal profits, they may choose to leave the industry, reducing supply of sugar, worsening the price situation in the sugar market.

Explain how another policy may be implemented to reduce the demand for sugar to ease the spike in sugar prices.

Governments could consider implementing sugar reduction strategies, i.e. promoting healthier lifestyle or healthier eating, to alter consumers' taste and preferences towards the consumption of sugar / sugar rich food. This may effectively reduce the demand for sugar / reduce the derived demand for sugar, shifting the demand curve to the left, reducing the price of sugar in the domestic market.

This policy though will effectively reduce the price of sugar, it may only take effect in the long run. Altering consumers' taste and preferences would require persuasion and time. This may be a long drawn process as consumers would have to change their lifestyle habits etc. They may not be receptive to the initiatives by the government. Not only that, the government would need to incentivize consumers to lead a healthier lifestyle, i.e. subsidies or cash rebates when consuming healthier products (with lesser sugar used). This may further drain the government's already tight budget and incur opportunity costs.

Other possible policies:

1. Export ban: Government, especially exporting countries, may implement an export ban. This will increase domestic supply of sugar, reducing the price of sugar. However, this may lead to a fall in $(x-m)$, reducing AD.
2. Subsidizing sugar producing firms to increase production / increase the number of firms in the market → to increase domestic supply → reduce price of sugar. However, this may drain the government's already tight budget and this policy is not sustainable as long as biofuel prices are rising faster.

Evaluation:

Given the policies mention, export ban/price ceiling/subsidies, though effective, are at best ST policies. Not only do they drain the government's budget, it may create negative unintended consequences on the economy or market. Hence, government should look into more LT solutions such as reducing the demand for sugar, which is also more sustainable in the LR. In addition, sugar is deemed as a demerit good, where the consumption leads to negative externalities. Reducing the demand / consumption of sugar not only will help to bring down the prices of sugar, it would also reduce the negative externalities associated with it, improving market outcomes.

Knowledge, Understanding, Application, Analysis		
L3	Analysis & Application For an analytical answer that addresses the question thoroughly with clear explanation well supported by tools of analysis , Answer is well-focused on question , with the good use of relevant economic concepts, theories or principles. Knowledge & Understanding	8-10

	<p>For an answer that demonstrates an accurate knowledge and understanding of economic concepts, theories related to question.</p> <p>Note: To enter L3, answer should be applied to the context of the sugar market and information given in the preamble.</p>	
L2	<p>Analysis & Application For an under-developed answer that attempts to address the question. Answers may be descriptive, lack an analytical approach (e.g. not supported with tools of analysis, incomplete use of graph) or is incompletely explained with gaps in analysis, e.g. missing links. [Or For a one-sided analytical answer that address only one of the two question requirement. For an answer that is supported with some application to the context of the question. There is limited ability to organise ideas or discriminate between relevant and irrelevant materials. Answer has some relevance to the question context but is generic (e.g. pre-learnt answer that is not focused on addressing the question specifically) or addresses only selected parts of the question. Knowledge & Understanding For an answer that demonstrates largely accurate knowledge and understanding of economic concepts, theories related to question (i.e. no major conceptual errors)</p>	5-7
L1	<p>Knowledge & Understanding For an answer that shows limited knowledge and understanding of relevant economic concepts and theories (e.g. basic description or definitions). Few valid points made which are scant and inadequately explained. Answers are mostly irrelevant and inaccurate. Answer demonstrates that the meaning of question is not properly grasped or may contain basic errors of theory. Marks within L1: Note: K=1 - For basic and unexplained knowledge, e.g. an unexplained statement or definition of a concept that showed some correct knowledge but no understanding K=2 - For some additional explanation that shows an understanding of the concept that is not applied to the context of question or show limited knowledge and understanding</p>	1-4

Level	Evaluation	Mark
E3	Well-explained evaluative judgements about 2 requirements PLUS a summative conclusion	5
E2	Well-explained evaluative judgements about 2 requirements	3- 4
	A well-explained evaluative judgement about 1 requirement + an evaluative statement for the second requirement PLUS a summative conclusion	
	A well-explained evaluative judgement about 1 requirement + an evaluative statement for the second requirement	
E1	A well-explained evaluative judgement about 1 requirement OR evaluative statements for 2 requirements	1-2
	An evaluative statement for 1 requirement	

E0	No attempt at Evaluation	0
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<i>Annotation</i>	<i>Level</i>	<i>Marks out of 10</i>
A + A	L3	10
A+C+K	L3	9
A + C	L3	8
A + K	L2	7
A + 0	L2	6
C+C+K	L2	7
C + C	L2	6
C + K	L2	5
C + 0	L1	4
K + K	L1	2-4
K + 0	L1	1-2

- 2 From the perspective of individual firms, competition in the markets requires that they adopt appropriate strategies by carefully attending to cost and market conditions. Firms can either embark on aggressive cost-cutting measures or engage in product differentiation to ensure they remain profitable.
- (a) Explain how the features of monopolistic competition and oligopoly affect a firm's pricing decisions in these market structures. [10]
- (b) Discuss whether cost-cutting measures or product differentiation is the more appropriate strategy for a firm to adopt, to ensure it remains profitable. [15]

Question Requirement:

First requirement: Explain analytically how the features of monopolistic competition affect the pricing decisions of the firms in this market.

Second requirement: Explain analytically how the features of oligopoly affect the pricing decisions of the firms in this market.

To enter L3, an explanation with reference both the features and pricing decisions of firms in the two markets is expected.

Suggested Answer for Part (a)

{Note to students:

Relating to the **Structure-Conduct-Performance Model**, the question is looking at how the **Conduct** (Pricing Decisions) of the two market structures is determined by the **Structure** (Characteristics) of the two market structures.}

Monopolistic competition and oligopoly market structures differ in a number of key features like the number of sellers and barriers to entry which result in contrasting behaviour between the two market structures in terms of their price and output strategies.

The first key difference is the degree of barriers to entry. Barriers to entry are obstacles that protect a firm from potential competitors. Some examples include the high initial start-up capital or licenses granted by the government. A monopolistically competitive market has very weak barriers to entry while an oligopoly has strong barriers to entry. As a result, the monopolistic competition market has a large number of firms, each controlling an insignificant amount of market share while an oligopolistic market is dominated by a few large firms, each enjoying a significant amount of market share.

Since the monopolistic competitive firm has a small share of the market, its actions are unlikely to affect its rivals to any great extent. This means that when each firm makes its decisions it does not worry how its rivals will react. In contrast, because there are only a few large firms dominating the market under the oligopoly, each firm's behaviour will affect their rivals significantly. As a result, in monopolistic competitive firms act independently whereas oligopolistic firms act interdependently. This means that pricing decisions are determined differently in the two market structures.

We assume that all firms aim to profit maximise and produce at the output level where its marginal cost (additional cost incurred for producing one more unit of output) equals its marginal revenue (additional revenue earned for selling one more unit of output). The short run equilibrium of the monopolistic competitive firm and oligopolistic firm will be shown in Figure 1(a) and 1(b) respectively, where $MR = MC_1$ in both diagrams. The monopolistic competitive firm will produce output Q_A and price its product P_A while the oligopolistic firm will produce Q_1 and price it at P_1 .

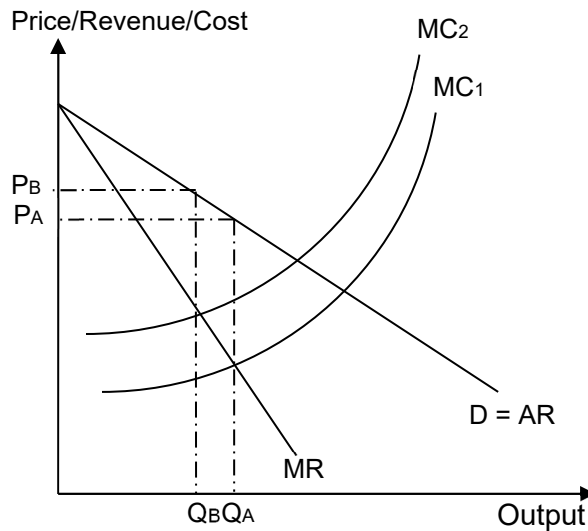


Figure 1(a)
Short run equilibrium of a
monopolistic competitive firm

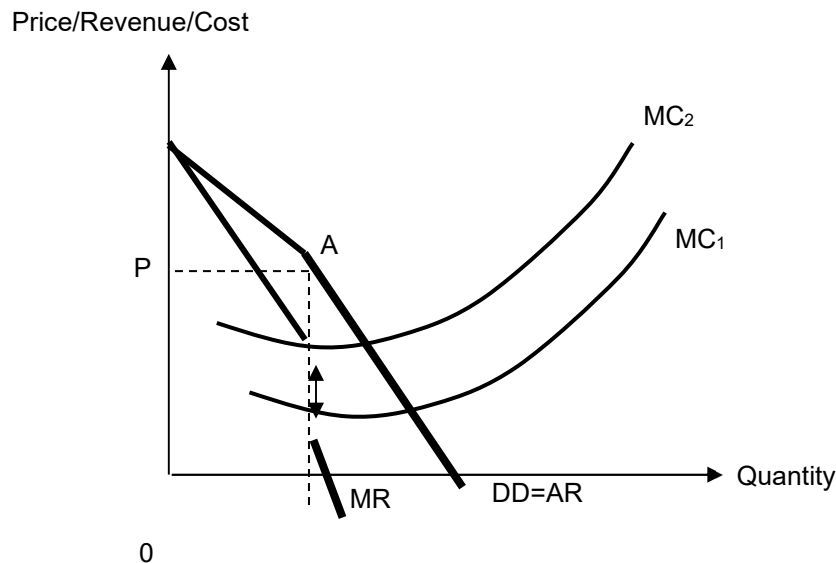


Figure 1(b): Kinked demand curve

As shown in Figure 1(b), an oligopoly firm faces a kinked demand curve. This is due to the mutual interdependence of the firms within the industry. When an oligopolistic firm cuts its price, its rival will follow suit to prevent losing customers to it. If it raises price, however, its rivals will not follow suit since, by keeping their prices the same, they will gain its customers. Hence, oligopolists would prefer not to change price unless costs change substantially. As long as cost changes within the gap as seen from MC_1 to MC_2 , the oligopolist will prefer to keep its output at Q_1 and price at P_1 . In contrast, the monopolistic competitive firm will make its pricing decision independently. When its cost increases from MC_1 to MC_2 , its corresponding equilibrium level of output and price will adjust accordingly to Q_B and P_B .

High barriers to entry influences the number of firms and market power of each competitive oligopolist shapes the mutual interdependence characteristics of firms within the industry. Thus, a competitive profit-driven oligopolistic firm seeks to maintain its price in response to cost changes as opposed to a profit-maximising monopolistic competitive firm which will raise its price and reduce output produced.

In addition, collusive behaviour which is not present in monopolistic competition, is possible in oligopoly. Oligopolistic firms can tacitly (by an unspoken agreement) collude by watching each others' prices to avoid price wars or competitive advertising. This leads to various types of price leadership behaviours: In dominant price leadership model, firms choose the same price as that set by a dominant firm (leader) which is usually the largest in the industry. In barometric price leadership model, the price leader is one whose prices reflect market conditions in the most satisfactory way. This may be a smaller firm.

Due to the different extent to which they are able to prevent the entry of new competitors, firms in different market structures also earn different levels of profits in the long run. However, the level of long run profit would be affected by the degree of barriers to entry.

With weak barriers to entry in a monopolistic competitive market, firms can enter easily to compete away the supernormal profit. As a result of new firms entering, the market share of the existing firm will be reduced, represented by a fall in their demand and thus average revenue curve. This will continue until all the supernormal profits have been competed away, with the firm earning normal profits in the long run. In contrast, relatively strong barriers to entry exist in an oligopoly market. An existing firm which earns supernormal profits in the short run may continue to earn high supernormal profits into the long run.

Due to the differences in the long-run equilibrium position and therefore profit levels, this in turn leads to different output decision of an oligopolistic and monopolistically competitive firm. With the higher amount of supernormal profits earned, the oligopolistic firm has the availability of funds to spearhead research and development to create higher degree of product differentiation. When a firm differentiates their products with technology and innovation such as Shell V-Power, it will also lower cross elasticity and the quantity demanded for Shell V-Power may not fall more than proportionate when Exxon Mobile lowers its prices for its normal range of petrol. There will then be no need for Shell to follow the price reduction or the non-price strategies of its rivals. In fact, due to its relatively price inelastic demand, it would be able to set price higher than its rivals. Therefore the product differentiation in turn shapes the pricing decisions. In contrast, due to the lower profit margins and the lack of supernormal profits in the long run, monopolistic competitive firms have less funds available to engage in such high degree of product differentiation. As a result, they may not be able to raise prices significantly higher than its close competitors.

In conclusion, the market structure in which a firm operates will shape the price and output determination especially in the face of changing economic conditions.

Marker's comment:

Students were able to explain the features of oligopoly and monopolistic competitive firms. Some students were not able to link these features to their pricing decisions and some only focus on explain their output decisions. A minority of students misunderstood monopolistic competitive firms as monopolist (a single firm). Some students were able to give good real-world examples to link features to the firm's pricing decision with good use of diagrams.

Level of Response Mark Scheme (LORMS)

<u>Question Requirement</u>		
<u>Question Requirement:</u> First requirement: Candidate should explain analytically how the features of monopolistic competition affect the pricing decisions of firms in this market. Second requirement: Candidates should explain analytically how the features of oligopoly affect the pricing decisions of the firms in this market.		
Knowledge, Understanding, Application, Analysis		
L3	Analysis & Application For an analytical answer that addresses the question thoroughly with clear explanation well supported by tools of analysis , such as revenue and cost analysis and diagram. The features of both markets and their implications on the pricing decisions in the respective firms are clearly explained. There is good ability to organise ideas or discriminate between relevant and irrelevant factors. Answer is well-focused on question , e.g. the characteristics and pricing decisions of the firms in the two markets, with the good use of relevant economic concepts, theories or principles. Knowledge & Understanding For an answer that demonstrates an accurate knowledge and understanding of economic concepts, theories related to question, e.g. revenue and cost analysis and diagram Marks within L3:	8-10

	<p>Note: To enter L3, an explanation with reference both the features and pricing decisions of firms in the two markets is expected.</p> <table border="1"> <tr> <th>Annotation</th><th>Description</th><th>Mark</th></tr> <tr> <td>A + C</td><td>1 analytical and 1 cursory explanation for 2 question requirements</td><td>8</td></tr> <tr> <td>A + C + K</td><td>1 analytical and 1 cursory explanation for 2 question requirements and an explanation of additional factor that is relevant</td><td>9</td></tr> <tr> <td>A + A</td><td>Analytical explanations for 2 question requirements</td><td>10</td></tr> </table>	Annotation	Description	Mark	A + C	1 analytical and 1 cursory explanation for 2 question requirements	8	A + C + K	1 analytical and 1 cursory explanation for 2 question requirements and an explanation of additional factor that is relevant	9	A + A	Analytical explanations for 2 question requirements	10	
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L2	<p>Analysis & Application For an under-developed answer that attempts to address the question and explain both the features and conduct of the two markets. Answers may be descriptive, lack an analytical approach (e.g. not supported with tools of analysis, incomplete use of diagram) or is incompletely explained with gaps in analysis, e.g. missing links in how firm's pricing decisions are related to their features.</p> <p>[Or For a one-sided analytical answer that address only one of the two question requirements, i.e. explanation for either features and pricing decisions of firms in monopolistic competition or oligopoly]</p> <p>For an answer that is supported with some application to the context of the question. There is limited ability to organise ideas or discriminate between relevant and irrelevant materials. Answer has some relevance to the question context but is generic (e.g. pre-learnt answer that is not focused on addressing the question specifically) or addresses only selected parts of the question (e.g. explanation of features without implications on pricing decisions)</p> <p>Knowledge & Understanding For an answer that demonstrates largely accurate knowledge and understanding of economic concepts, theories related to question, e.g. demand and supply analysis (i.e. no major conceptual errors)</p> <p>Marks within L2:</p> <table border="1"> <tr> <th>Annotation</th><th>Description</th><th>Mark</th></tr> <tr> <td>K + C</td><td>1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements</td><td>5</td></tr> </table>	Annotation	Description	Mark	K + C	1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements	5	5-7						
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K + C	1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements	5												

		K + C + K	1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements and an explanation of additional factor that is relevant	6																										
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L1	<p>Knowledge & Understanding</p> <p>For an answer that shows limited knowledge and understanding of relevant economic concepts and theories (e.g. basic description or definitions). Few valid points made which are scant and inadequately explained. Answers are mostly irrelevant and inaccurate. Answer demonstrates that the meaning of question is not properly grasped or may contain basic errors of theory.</p> <p>Marks within L1:</p> <p>Note:</p> <p>K=1 - For basic and unexplained knowledge, e.g. an unexplained statement or definition of a concept that showed some correct knowledge but no understanding</p> <p>K=2 - For some additional explanation that shows an understanding of the concept that is not applied to the context of question but show limited knowledge and understanding</p> <table><tr><th>Annotation</th><th>Description</th><th>Mark</th></tr><tr><td>0</td><td>Nothing of relevance in the answer</td><td>0</td></tr><tr><td>K + 0</td><td>Knowledge of one question requirement</td><td>1</td></tr><tr><td>K + 0</td><td>Knowledge and understanding of 1 question requirement</td><td>2</td></tr><tr><td>K + K</td><td>Knowledge of 2 question requirements</td><td>2</td></tr><tr><td>K + K</td><td>Knowledge and understanding of 1 question requirement and knowledge of the second requirement</td><td>3</td></tr><tr><td>K + K</td><td>Knowledge and understanding of 2 question requirements</td><td>4</td></tr><tr><td>C + 0</td><td>One cursory explanation for 1 question requirement</td><td>4</td></tr></table>					Annotation	Description	Mark	0	Nothing of relevance in the answer	0	K + 0	Knowledge of one question requirement	1	K + 0	Knowledge and understanding of 1 question requirement	2	K + K	Knowledge of 2 question requirements	2	K + K	Knowledge and understanding of 1 question requirement and knowledge of the second requirement	3	K + K	Knowledge and understanding of 2 question requirements	4	C + 0	One cursory explanation for 1 question requirement	4	0-4
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Question Requirement

First requirement: Candidates should explain how cost-cutting strategies work analytically to enable the firm to lower its costs to increase its profits. Answer should explain the impact of the strategies on the firm's cost curves and profit and possible limitations to the firm's ability to increase its profits from these strategies.

Second requirement: Candidates should explain how product differentiation works analytically to enable the firm to increase its market share and/or make its demand more inelastic to increase its revenue. Answer should explain the impact of the strategies on the firm's revenue curves and profit and possible limitations to the firm's ability to increase its profits from these strategies.

To enter L3 candidates should discuss cost-cutting strategies and product differentiation.

Suggested Answer for Part (b)

Explain how cost-cutting measures will help the firm to increase its profits

A firm can embark on cost-cutting measures to increase its profits through various means.

It can improve on its method of production and find the most cost-efficient way to produce its products. One way to improve its efficiency is through automation to reduce its reliance on labour. With greater efficiency, the firm's productivity and its output per worker will increase and its unit cost of production would then be lower. Or a firm can also source for alternative sources of raw materials, such as by importing from foreign countries that are cheaper. As these countries might have a comparative advantage in producing these raw materials and are able to produce them at a lower opportunity cost, a firm would thus be able to import them at lower unit cost instead of purchasing them from domestic sources.

With reference to the diagram below, cost-cutting measures results in a decrease in cost of production, hence both AC and MC decreases. This is shown by a downward shift of the AC and MC curves from AC_0 to AC_1 and MC_0 to MC_1 in Figure 2. As a result, the profit maximising level of output and price changes from P_0 to P_1 and Q_0 to Q_1 respectively. The level of profits change from subnormal profits of C_0abP_0 to supernormal profits of P_1efC_1 .

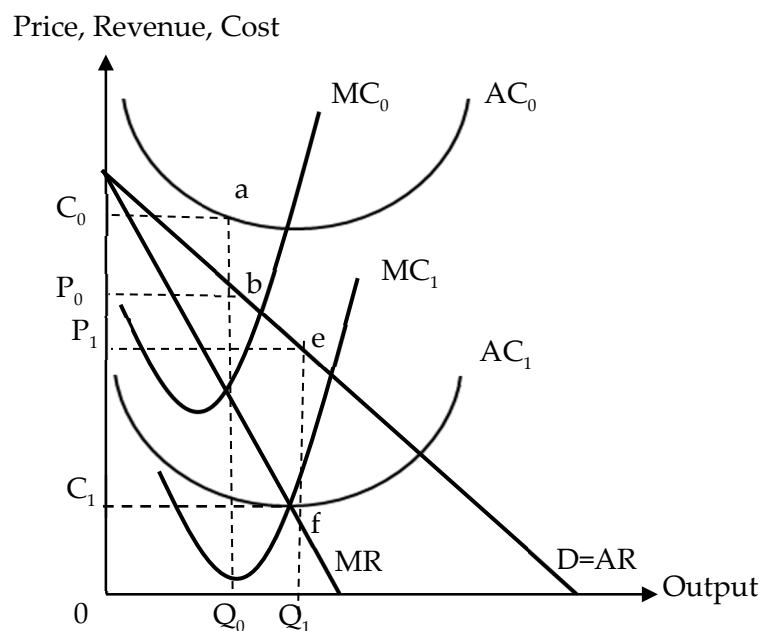


Figure 2: Effect of cost-cutting measures on profits

Explain possible limitations of cost-cutting measures

With automation, the firm might need to incur a higher cost in the short run to acquire the technology and equipment and also to train its workers to adapt to the new method. It must also be faced with the possibility of lower productivity as it seeks to integrate the new technology into its current system. If the initial costs are high, it would reduce the profits that the firm gains subsequently.

Sourcing for raw materials from foreign sources might also expose the firm to greater instability to their profits as they might be subjected to higher input prices arising from supply shocks that can occur from time to time unless it has diversified its sources of imported raw materials from various countries.

Explain how product differentiation will help the firm to increase its profits

Product differentiation is a non-price strategy where an electric car maker seeks to differentiate its product from its rivals'. By differentiating its product, the firm can potentially enjoy greater market share and market power by catering more to the needs of consumers. The aim of product differentiation is to further highlight the differences between the products of a firm and its rivals. For example, firms can carry out advertisements by engaging social media influencers on Instagram to conduct promotional campaigns. This will help to create brand loyalty and to appeal to consumers when they see their favourite celebrities endorsing a certain product. Additionally, a firm can engage product innovation through research and development to improve and differentiate the features of its product.

Diagrammatically, this is represented by an outward shift of the demand curve from D_0 to D_1 as seen in the figure below. Assuming cost remain constant, the profit maximising level of output where $MC = MR$ will increase from Q_0 to Q_1 and the profit maximising price will increase from P_0 to P_1 . This results in a change in profits level from a subnormal profits of C_0abP_0 to supernormal profits of P_1efC_1 .

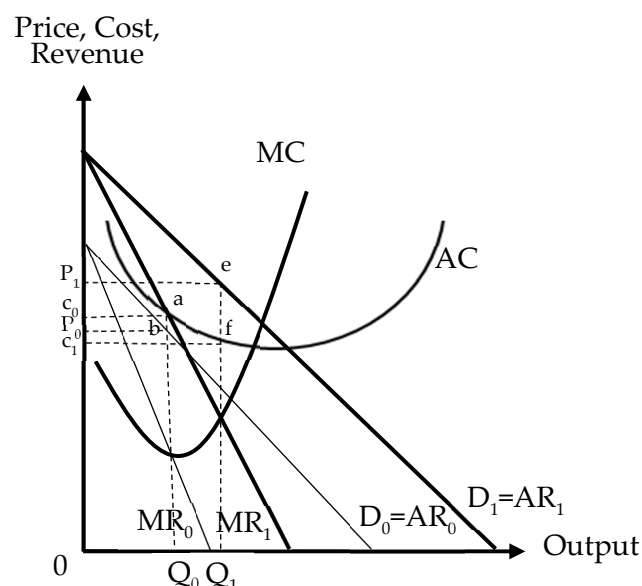


Figure 3: Effect of product differentiation on profits

Explain possible limitations of product differentiation

As with any research and development programme, there are extremely high cost and a low certainty of outcome.

However, attempts at product differentiation may end up costing more as firms need to run advertisement or promotional campaigns. Furthermore, rival firms may also attempt to imitate or retaliate with their own promotions or campaigns. This may reduce the effectiveness of the campaign, resulting in minimal increases in demand.

Conclusion

A firm has to pay attention to both its cost and revenue to ensure that it remains profitable. Which is a more appropriate strategy will depend firstly on the economic conditions that a firm is facing. If it is facing rising costs or falling profits, cost-cutting measures can be undertaken to increase its profits in the short term. Product differentiation, on the other hand, if it is successful, tends to provide a firm with a competitive edge over its rivals and a boost to its revenue and profits over the longer term. It might also depend on the type of market structure that a firm is in. In monopolistic competition where the profit margin of the firm is thin as it earns normal profit in the long run, it is crucial for the firm to pay attention to its costs. In addition, it also has limited funds to engage in large scale product differentiation. On the other hand, oligopoly will have greater ability and incentive to engage in large scale product differentiation to try to compete and stand out from its rivals.

Marker's comment:

Students understood product differentiation better than cost cutting measures, as some students misunderstood cost cutting measures as pricing strategies. Cost cutting measures refer to methods that firms can use to reduce cost of production and how it helped firms to remain profitable. Product differentiation was much better explained for majority of students with good use of relevant examples and explained in detail how product differentiation caused AR & MR to increase with reference to appropriately drawn diagram to show the change in profit levels. However, some students did not consider the limitations of such measures. Evaluation statement was attempted for most students but could be improved on the explanations.

Question Requirement

First requirement: Candidates should explain how cost-cutting strategies work analytically to enable the firm to lower its costs to increase its profits. Answer should explain the impact of the strategies on the firm's cost curves and profit and possible limitations to the firm's ability to increase its profits from these strategies.

Second requirement: Candidates should explain how product differentiation works analytically to enable the firm to increase its market share and/or make its demand more inelastic to increase its revenue. Answer should explain the impact of the strategies on the firm's revenue curves and profit and possible limitations to the firm's ability to increase its profits from these strategies.

To enter L3 candidates should discuss cost-cutting strategies and product differentiation.

Evaluation marks:

Well-argued evaluative judgements about each of the two strategic approaches with a summative conclusion about whether cost-cutting or product differentiation is the more appropriate strategy.

Knowledge, Understanding, Application, Analysis

L3	Analysis & Application For an analytical answer that addresses the question thoroughly with clear explanation well supported by tools of analysis , such as revenue and cost analysis and diagram. There is good ability to organise ideas or discriminate between relevant and irrelevant factors. Answer is well-focused on question with the good use of relevant economic concepts, theories or principles, e.g. impact of strategies on profits. Knowledge & Understanding For an answer that demonstrates an accurate knowledge and understanding of economic concepts, theories related to question, e.g. analysis and diagram Marks within L3: To enter L3 candidates should discuss cost-cutting strategies and product differentiation	8-10			
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L2	<p>Analysis & Application For an under-developed answer that attempts to address the question and explain cost-cutting measures and product differentiation. Answers may be descriptive, lack an analytical approach (e.g. not supported with tools of analysis, incomplete use of graph) or is incompletely explained with gaps in analysis, e.g. missing links in the impact of the strategies on profits.</p> <p>[Or For a one-sided analytical answer that address only one of the two question requirements, i.e. explanation for either cost-cutting measures or product differentiation</p> <p>For an answer that is supported with some application to the context of the question. There is limited ability to organise ideas or discriminate between relevant and irrelevant materials. Answer has some relevance to the question context but is generic (e.g. pre-learnt answer that is not focused on addressing the question specifically) or addresses only selected parts of the question (e.g. limited reference to the impact on profits).</p> <p>Knowledge & Understanding For an answer that demonstrates largely accurate knowledge and understanding of economic concepts, theories related to question, e.g. revenue and cost analysis and diagram (i.e. no major conceptual errors)</p> <p>within L2:</p> <table><tr><td>Annotation</td><td>Description</td><td>Mark</td></tr><tr><td>K + C</td><td>1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements</td><td>5</td></tr><tr><td>K + C + K</td><td>1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements and an explanation of additional factor that is relevant</td><td>6</td></tr><tr><td>A + 0</td><td>1 analytical explanation for 1 question requirement</td><td>6</td></tr><tr><td>C + C</td><td>Cursory explanations for 2 question requirements</td><td>6</td></tr></table>	Annotation	Description	Mark	K + C	1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements	5	K + C + K	1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements and an explanation of additional factor that is relevant	6	A + 0	1 analytical explanation for 1 question requirement	6	C + C	Cursory explanations for 2 question requirements	6	5-7
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Evaluation detailed marking guide

Note:

A **well-explained evaluative judgement** should be supported by arguments presented in the answer and is linked to the context of the question.

An evaluative statement is a judgement that is not supported by arguments presented in the answer or not linked to the context of the question, e.g. pre-learnt evaluative statement.

Level		Mark
E3	Well-explained evaluative judgements about 2 requirements PLUS a summative conclusion	5
E2	Well-explained evaluative judgements about 2 requirements	4
E2	A well-explained evaluative judgement about 1 requirement + an evaluative statement for the second requirement PLUS a summative conclusion	4
E2	A well-explained evaluative judgement about 1 requirement + an evaluative statement for the second requirement	3
E1	A well-explained evaluative judgement about 1 requirement OR evaluative statements for 2 requirements	2
E1	An evaluative statement for 1 requirement	1
E0	No attempt at Evaluation	0

3 Power generation is currently the largest source of carbon emissions, but the sector is leading the transition to net zero emissions through the rapid deployment of renewables such as solar. As renewable energy targets grow across the world, clean energy giants are facing a shortage of workers with the skills needed to support their ambitious growth plans.

- (a) Explain how carbon emissions and factor immobility might lead to allocative inefficiency in the market for power generation. [10]
- (b) Discuss the policy measures that governments can adopt to address these sources of market failure in the market for power generation. [15]

Question Requirement:

First requirement: Power generation using fossil fuels leads to market failure. Presence of negative externalities in the production of power in the form of carbon emissions released into the atmosphere that causes global warming with the relevant impacts on 3rd parties results in a divergence between MSC and MPC. Consequently, the market equilibrium level of production of power is greater than the quantity which maximises societal welfare which results in allocative inefficiency in the form of over-production and deadweight loss to society. Students should be using the cost benefit model.

Second requirement: Factor immobility leads to market failure. For markets to allocate resources efficiently, given changes in market demand and supply conditions, firms need to be able to mobilise the necessary resources quickly and utilise them in the most cost-efficient method to produce the most output at the current level of technology. One possible approach will be to explain how as more energy companies change methods in the production of energy, there is a skills mismatch between producers and workers thereby resulting in occupational immobility. As a result of immobility in FOP, there could be underutilization of resources (structural unemployment) which results in allocative inefficiency and market failure.

To enter L3 candidates should touch on both causes of market failure.

Suggested Answer for Part (a)

Requirement 1

P: Carbon emissions could lead to allocative inefficiency in the market for power generation due to the presence of negative externalities in the production of power.

EE:

In the process of producing power, firms usually use fossil fuels. The marginal private benefit (MPB) to the firm that produces power could include the ease of using fossil fuels while the marginal private costs (MPC) could include the labour costs. In a free market, without government intervention, the producer maximises his/her own welfare at Q_{Q_P} amount where $MPB=MPC$. Therefore, the private optimum output for the power producer is at Q_{Q_P} .

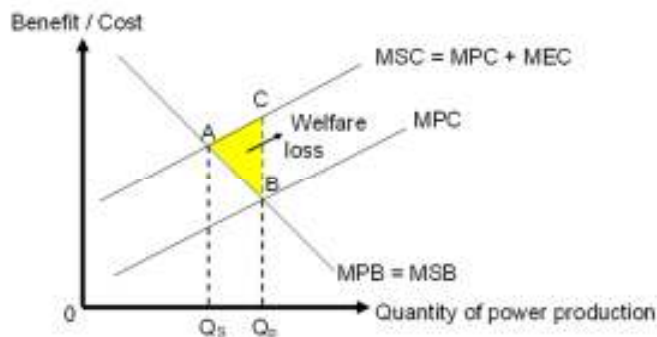
Assuming that there are no positive externalities, MPB equals to marginal social benefit (MSB). In the process of producing power, the usage of fossil fuels however generates negative externalities in production in the form of carbon emissions. Carbon emissions result in global warming and this will result in third parties such as the farmers in the area who are not directly involved in the production or consumption of electricity to suffer from external costs such as lower yields on crops as global warming harms the crop harvests, for which they receive no compensation from the firm.

With the presence of MEC, there is a divergence between the marginal social cost (MSC) and MPC, where MSC is higher than MPC. This is illustrated in Figure 1 where the MSC lies above the MPC, with the vertical distance between MPC and MSC representing the MEC.

At $0Q_P$, $MSC > MSB$. This means that at output $0Q_P$, it costs the society more to produce an additional unit of power than what the society can benefit from. Society desires less power to be produced using fossil fuels. There is an over-allocation of resources to the production of power using fossil fuels.

Hence, when left to the market forces, there is an over-production of power by $Q_S Q_P$ amount since the private optimal output is at $0Q_P$, where $MPC = MPB$, is more than the socially optimal output, $0Q_S$ where $MSC = MSB$. By summing the excess of MSC over MSB for the units $Q_S Q_P$, we arrive at a monetary measure of welfare loss (also known as deadweight loss) of area ABC to the society.

L: As a result, the over-production of power, that uses fossil fuels will lead to market failure and may require government's intervention.



Requirement 2

P: Another source of market failure within the power market is factor immobility.

EE:

For markets to allocate resources efficiently, given changes in market demand and supply conditions, firms need to be able to mobilise the necessary resources quickly and utilise them in the most cost-efficient method to produce the most output at the current level of technology. If resources are not perfectly mobile, firms would not be able to produce the goods and services at the socially optimal level, leading to allocative inefficiency.

For instance, if labour is not perfectly mobile, either occupationally or geographically, then firms would not be able to hire adequate labour to ensure an optimal labour-capital combination that allows for the production of goods and services at the socially optimal level. As the energy production transits towards green energy, the energy firms find greater difficulty in finding workers who are skilled in the engineering needs for maintenance of green energy infrastructure for instance. In other words, structural changes within the economy where there is a change in production methods for energy, means that the skill required by producers have changed to one which requires more competency in managing infrastructure and machinery related to green energy. However, workers might not be trained in this. Consequently, there is a mismatch of skills between those demanded by energy firms and those possessed by labour leading to occupational immobility. As a result of constraint in finding adequate workers, energy firms may make production decisions that do not lead to the most efficient outcomes such as employing inefficient labour-capital combination.

L:

Consequently, there be an under-utilisation of resources to produce energy, including labour, and hence allocative efficiency is not achieved.

Markers comments

Majority of the students managed to explain the source of market failure for negative externalities of production better than the market failure due to factor immobility. Common mistakes include:

- 1) Inadequate rigour for the explanation of the deadweight loss resulting since $MSC > MSB$ across $Q_p Q_s$
- 2) Inaccurate identification of source of market failure for carbon emissions to be imperfect information
- 3) Considering the cost and benefits of consumption of power from the perspective of consumers rather than producer.

- 4) For explanation of market failure due to factor immobility, students tend to be able to explain how occupational immobility was present but omit the link to how firms were therefore unable to raise production levels to social optimal levels.
- 5) Students also tried to apply the PPC curve to explain how factor immobility led to market failure in the market for power generation. Whilst a PPC is useful to explain why an economy does not achieve allocative efficiency, it is not appropriate to use it to analyse the market failure for a single market within the economy.

Level of Response Mark Scheme (LORMS)

Question Requirement

Question Requirement:

First requirement: Power generation using fossil fuels leads to market failure. Presence of negative externalities in the production of power in the form of carbon emissions released into the atmosphere that causes global warming with the relevant impacts on 3rd parties results in a divergence between MSC and MPC. Consequently, the market equilibrium level of production of power is greater than the quantity which maximises societal welfare which results in allocative inefficiency in the form of over-production and deadweight loss to society. Students should be using the cost benefit model.

Second requirement: Factor immobility leads to market failure. For markets to allocate resources efficiently, given changes in market demand and supply conditions, firms need to be able to mobilise the necessary resources quickly and utilise them in the most cost-efficient method to produce the most output at the current level of technology. One possible approach will be to explain how as more energy companies change methods in the production of energy, there is a skills mismatch between producers and workers thereby resulting in occupational immobility. As a result of immobility in FOP, there could be underutilization of resources (structural unemployment) which results in allocative inefficiency and market failure.

Knowledge, Understanding, Application, Analysis

L3	<p>Analysis & Application</p> <p>For an analytical answer that addresses the question thoroughly with clear explanation well supported by tools of analysis, such as cost and benefit analysis and diagram.</p> <p>There is good ability to organise ideas or discriminate between relevant and irrelevant factors. Answer is well-focused on question, e.g. -ve externalities in the production of electricity and occupational immobility, with the good use of relevant economic concepts, theories or principles.</p> <p>Knowledge & Understanding For an answer that demonstrates an accurate knowledge and understanding of economic concepts, theories related to question, e.g. cost and benefit analysis and diagram</p> <p>Marks within L3: Note: To enter L3, both causes of market failure needs to be addressed.</p> <table border="1"> <thead> <tr> <th>Annotation</th><th>Description</th><th>Mark</th></tr> </thead> <tbody> <tr> <td>A + C</td><td>1 analytical and 1 cursory explanation for 2 question requirements</td><td>8</td></tr> <tr> <td>A + C + K</td><td>1 analytical and 1 cursory explanation for 2 question requirements and an explanation of additional factor that is relevant</td><td>9</td></tr> <tr> <td>A + A</td><td>Analytical explanations for 2 question requirements</td><td>10</td></tr> </tbody> </table>	Annotation	Description	Mark	A + C	1 analytical and 1 cursory explanation for 2 question requirements	8	A + C + K	1 analytical and 1 cursory explanation for 2 question requirements and an explanation of additional factor that is relevant	9	A + A	Analytical explanations for 2 question requirements	10	8-10
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Commented [LHL1]: Can start w 10m (A + A)?

	<p>Knowledge & Understanding For an answer that demonstrates largely accurate knowledge and understanding of economic concepts, theories related to question, e.g. demand and supply analysis (i.e. no major conceptual errors)</p> <p>Marks within L2:</p> <table> <tr> <th>Annotation</th><th>Description</th><th>Mark</th></tr> <tr> <td>K + C</td><td>1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements</td><td>5</td></tr> <tr> <td>K + C + K</td><td>1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements and an explanation of additional factor that is relevant</td><td>6</td></tr> <tr> <td>A + 0</td><td>1 analytical explanation for 1 question requirement</td><td>6</td></tr> <tr> <td>C + C</td><td>Cursory explanations for 2 question requirements</td><td>6</td></tr> <tr> <td>C + C + K</td><td>Cursory explanations for 2 question requirements and an explanation of additional factor that is relevant</td><td>7</td></tr> <tr> <td>A + K</td><td>1 analytical explanation for 1 question requirement and an explanation of additional factor that is relevant</td><td>7</td></tr> </table>	Annotation	Description	Mark	K + C	1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements	5	K + C + K	1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements and an explanation of additional factor that is relevant	6	A + 0	1 analytical explanation for 1 question requirement	6	C + C	Cursory explanations for 2 question requirements	6	C + C + K	Cursory explanations for 2 question requirements and an explanation of additional factor that is relevant	7	A + K	1 analytical explanation for 1 question requirement and an explanation of additional factor that is relevant	7	
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Commented [LHL2]: Similarly, start with 7m

	K + 0	Knowledge of one question requirement	1	
	K + 0	Knowledge and understanding of 1 question requirement	2	
	K + K	Knowledge of 2 question requirements	2	
	K + K	Knowledge and understanding of 1 question requirement and knowledge of the second requirement	3	
	K + K	Knowledge and understanding of 2 question requirements	4	
	C + 0	One cursory explanation for 1 question requirement	4	

Question Requirement

First requirement: Explain, with the use of examples, the relevant policy measures which could be used to address market failure due to presence of negative externalities. For instance, students could consider tradable permits, carbon taxes and renewable energy policies which could correct market failure due to presence of negative externalities. There should be appropriate application to the cost benefit model. Students should also consider the limitations of these policies.

Second requirement: Explain, with the use of examples, the relevant policy measures which could be used to address market failure due to the presence of factor immobility. For instance, there could be consideration of retraining policies which could be used to address occupational immobility as a result of skills mismatch. Students should also consider the relevant limitations of these policies.

Evaluation marks: Well-argued evaluative judgements which could be on appropriateness (eg. In terms of effectiveness, feasibility or unintended consequences) of policies explained.

Suggested Answer for Part (b)

Requirement 1

Explain with the use of examples, policies which could be used to correct market failure due to presence of negative externalities in production.

P:

Governments may impose legislations / rules and regulations to influence power generation firms' behaviour. For instance, legislations may regulation the production quantity, raise the MPC of production such that overproduction is corrected or lower MEC so that the gap between private optimal level of production and social optimal level of production is lowered.

EE:

In the case of Singapore for instance, the Singapore Green Plan 2030 is a whole-of-nation movement to advance Singapore's national agenda on sustainable development. To achieve the ambitious targets in sustainable development, there is rapid deployment of renewables such as solar photovoltaic system at **Tengeh** Reservoir which is the size of 45 football fields. Consequently, there is a development of renewable energy sources which will help to reduce reliance on fossil fuels as a source of energy. This means that energy generation in Singapore could release less carbon emissions. With lower negative externalities in production, the smaller MEC will reduce the divergence between MPC and MSC. If Singapore is able to completely eliminate the usage of fossil fuels in the generation of energy, this will enable the new MPC to be equivalent to the MSC and close the gap between Q_p ($MPC=MPB$) and Q_s ($MSB=MSC$).

L:

This means that producers of energy will now produce at the socially optimal level Q_s , eliminate deadweight loss, achieving allocative efficiency and correcting market failure.

Limitations:

Whilst there is already efforts underway to deploy renewable sources of energy in Singapore, there are constraints in terms of the land available for solar panels to be deployed adequately to address the energy needs of Singapore. In terms of other sources of energy, there is also the consideration that it will take a long period of time before adequate research is made for deployment of alternative renewables such as hydrogen technology.

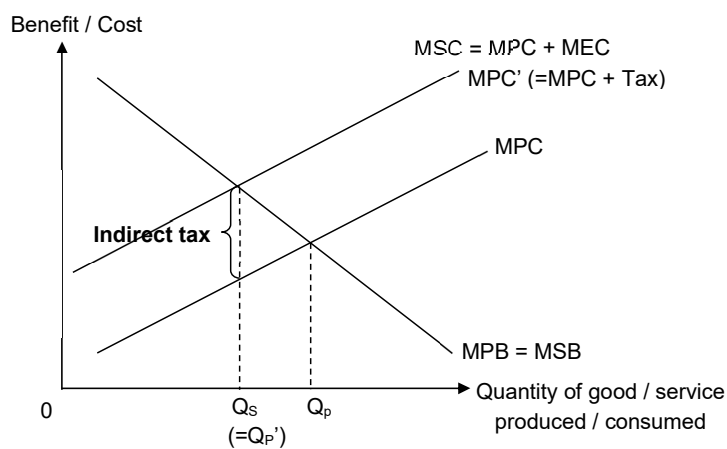
Students could also consider the implementation of other policies such as tradable permits, carbon tax to correct for the market failure due to carbon emissions and negative externalities in production.

Use of Carbon Tax

P: Carbon tax could be used to correct for market failure in the market for power generation.

EE:

- In Singapore, the carbon tax is levied on facilities that directly emit at least 25,000 tCO₂e of greenhouse gas (GHG) emissions annually. It currently covers six GHGs, namely carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), and sulphur hexafluoride (SF₆). Hence, producers within the market for power generation will be imposed the carbon tax since it emits carbon emissions in the production of energy.
- With reference to the figure, by imposing a per-unit tax (carbon tax) that is equal to MEC at Q_s ,
- The tax has the same effect as increasing the marginal private cost of production of energy
- Thus, the tax shifts the energy producer's MPC vertically upwards by the full amount of MEC to coincide with MSC. This is illustrated by $MPC + \text{tax}$.
- The new private optimal output level where MPC' equates to MPB is now at Q_p' , which coincides with Q_s .



- L: This means that producers energy will now decrease production to the socially optimal level Q_s . Thus, allocative efficiency is attained.

Limitation:

However, under conditions of imperfect information in the real world, it may not be easy to estimate the value of MEC accurately. Under-valuation of MEC leads to a reduction in output that is not sufficient to bring output to the socially optimal level. An over-valuation of MEC leads to output falling below socially optimal level. In both cases, society's welfare is reduced but not maximised.

Commented [LHL3]: Can we provide other possible limitations here, because the question is quite open (no specific criteria).

Requirement 2

Explain with the use of examples, policies which could be used to correct market failure due to presence of negative externalities in production.

P:

In the case of energy production in Singapore, occupational immobility seems to be a reason for factor immobility that causes market failure. Hence there could be policies such as education and vocational training provided to Singaporeans to improve occupational immobility.

EE:

Governments have worked on a two-pronged approach, by setting up infrastructure to facilitate training, as well as to provide subsidies to firms to encourage them to send employees for training, and individuals to encourage them to seek training

For instance, the Singapore government invests in vocational training for employees through the SkillsFuture Credit which is given to Singaporeans 25 years old and above, for them to spend on education and training courses provided by Institutes of Higher Learning and accredited education and training providers. The aim of SkillsFuture Credit is to encourage individuals to take ownership of their skills development and lifelong learning. The initial sum disbursed will be S\$500, with more top-ups later, and the grants will not expire.

Singapore could take advantage of the SkillsFuture Credit to take on courses that equips them with the skills required in the transition towards Green Energy and learn to manage infrastructure and machineries related to production of clean and green energy. By developing the skills required by the employers, the skills mismatch between the employers and the employees will be reduced and occupational mobility will be improved. Consequently, producers of energy will be able to hire the required levels of labour in their transition towards green energy production quickly, utilize the most cost-efficient method to produce clean energy and achieve the social optimal level of production of clean energy.

L:

Through reduction of occupational immobility, there is less factor immobility, and firms will be able to reduce wastage of resource and produce clean energy at the socially optimal levels, achieving allocative efficiency and eliminating deadweight loss thereby reducing market failure.

Limitations:

(-) Dependent on the receptiveness of the labour towards the training schemes. Factors like age and attitudes of labour would tend to hamper the effectiveness of measures. Matured workers are often reluctant to undergo training for they may find it meaningless as with their current knowledge they believe they can still get their jobs done. Even if labour undergoes training, due to the lack of positive attitude they may not be able to transfer their learning to their work.

(-) Since it takes time for the labour to be retrained and transfer their learning, these policies are only appropriate in the long run.

Judgement

Whilst policies such as the solar panels is limited by the constraint of land capacity, there are alternative sources of green energy can be developed through research and development in the long run, such as the usage of hydrogen fuel which could be more effective to cover Singapore's energy needs. Furthermore, the integration of solar panels targets the root cause of market failure which is the elimination of carbon emissions. In consideration also of the context of the world where there is greater demand for energy to power the 4th Industrial Revolution, policies which direct the transition towards clean sources of energy is more appropriate.

In terms of retraining of workers to reduce occupational immobility, the policy takes a long period of time. However, if the retraining is directed towards the training of workers who were already in the energy industry prior, the time taken for retraining could be reduced since they were already familiar with the energy industry. This enables retraining to be effective and resolve occupational immobility in a relatively shorter period of time.

Markers comments

Majority of the students were able to identify and discuss appropriate policies that target both sources of market failure. Common mistakes include:

- 1) Not ensuring that both sources of market failure was addressed.
- 2) Rigour was also missing. For instance, in the application of regulations to correct market failure due to negative externalities in production, the cost benefit model was not applied with relevant examples.

In terms of judgement, students are not clearly answering according to the new syllabus requirements where there needs to be clear evaluative comments for each requirement.

Question Requirement

First requirement: Explain, with the use of examples, the relevant policy measures which could be used to address market failure due to presence of negative externalities. For instance, students could consider tradable permits, carbon taxes and renewable energy policies which could correct market failure due to presence of negative externalities. There should be appropriate application to the cost benefit model. Students should also consider the limitations of these policies.

Second requirement: Explain, with the use of examples, the relevant policy measures which could be used to address market failure due to the presence of factor immobility. For instance, there could be consideration of retraining policies which could be used to address occupational immobility as a result of skills mismatch. Students should also consider the relevant limitations of these policies.

Evaluation marks: Well-argued evaluative judgements which could be on appropriateness (eg. In terms of effectiveness, feasibility or unintended consequences) of policies explained.

Knowledge, Understanding, Application, Analysis

L3	Analysis & Application	8-10
	<p>For an analytical answer that addresses the question thoroughly with clear explanation well supported by tools of analysis, such as cost benefit analysis and diagram.</p> <p>There is good ability to organise ideas or discriminate between relevant and irrelevant factors. Answer is well-focused on question with the good use of relevant economic concepts, theories or principles, e.g. impact of strategies on allocative efficiency, market failure and deadweight loss.</p> <p>Knowledge & Understanding For an answer that demonstrates an accurate knowledge and understanding of economic concepts, theories related to question, e.g. analysis and diagram</p> <p>Marks within L3: To enter L3 candidates should discuss strategies that correct both sources of market failure</p>	

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A + C + K	1 analytical and 1 cursory explanation for 2 question requirements and an explanation of additional factor that is relevant	9												
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L2	<p>Analysis & Application For an under-developed answer that attempts to address the question and explain how policies corrects the sources of market failure, negative externalities in production and factor immobility. Answers may be descriptive, lack an analytical approach (e.g. not supported with tools of analysis, incomplete use of graph) or is incompletely explained with gaps in analysis, e.g. missing links in the impact of the policies on allocative efficiency and market failure.</p> <p>[Or For a one-sided analytical answer that address only one of the two question requirements, i.e. explanation of policies that correct either market failure due to negative externalities in production of power or factor immobility.</p> <p>For an answer that is supported with some application to the context of the question. There is limited ability to organise ideas or discriminate between relevant and irrelevant materials. Answer has some relevance to the question context but is generic (e.g. pre-learnt answer that is not focused on addressing the question specifically) or addresses only selected parts of the question (e.g. limited reference to the impact on allocative efficiency and market failure.).</p> <p>Knowledge & Understanding For an answer that demonstrates largely accurate knowledge and understanding of economic concepts, theories related to question, e.g. cost and benefit analysis and diagram (i.e. no major conceptual errors)</p> <p>within L2:</p> <table> <tr> <th>Annotation</th><th>Description</th><th>Mark</th></tr> <tr> <td>K + C</td><td>1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements</td><td>5</td></tr> <tr> <td>K + C + K</td><td>1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements and an explanation of additional factor that is relevant</td><td>6</td></tr> </table>	Annotation	Description	Mark	K + C	1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements	5	K + C + K	1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements and an explanation of additional factor that is relevant	6	5-7			
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		A + 0	1 analytical explanation for 1 question requirement	6	
		C + C	Cursory explanations for 2 question requirements	6	
		C + C + K	Cursory explanations for 2 question requirements and an explanation of additional factor that is relevant	7	
		A + K	1 analytical explanation for 1 question requirement and an explanation of additional factor that is relevant	7	
L1	Knowledge & Understanding For an answer that shows limited knowledge and understanding of relevant economic concepts and theories (e.g. basic description or definitions). Few valid points made which are scant and inadequately explained. Answers are mostly irrelevant and inaccurate . Answer demonstrates that the meaning of question is not properly grasped or may contain basic errors of theory. within L1: K=1 - For basic and unexplained knowledge, e.g. an unexplained statement or definition of a concept that showed some correct knowledge but no understanding For some additional explanation that shows an understanding of the concept that is not applied to the context of question but show limited knowledge and understanding				0-4
		Annotation	Description	Mark	
		0	Nothing of relevance in the answer	0	
		K + 0	Knowledge of one question requirement	1	
		K + 0	Knowledge and understanding of 1 question requirement	2	
		K + K	Knowledge of 2 question requirements	2	
		K + K	Knowledge and understanding of 1 question requirement and knowledge of the second requirement	3	
		K + K	Knowledge and understanding of 2 question requirements	4	
		C + 0	One cursory explanation for 1 question requirement	4	

Evaluation detailed marking guide

Note:

A **well-explained evaluative judgement** should be supported by arguments presented in the answer and is linked to the context of the question.

An evaluative statement is a judgement that is not supported by arguments presented in the answer or not linked to the context of the question, e.g. pre-learnt evaluative statement.

Level		Mark
E3	Well-explained evaluative judgements about 2 requirements PLUS a summative conclusion	5
E2	Well-explained evaluative judgements about 2 requirements	4
E2	A well-explained evaluative judgement about 1 requirement + an evaluative statement for the second requirement PLUS a summative conclusion	4
E2	A well-explained evaluative judgement about 1 requirement + an evaluative statement for the second requirement	3
E1	A well-explained evaluative judgement about 1 requirement OR evaluative statements for 2 requirements	2
E1	An evaluative statement for 1 requirement	1
E0	No attempt at Evaluation	0

Fiscal policy is a critically important tool for promoting inclusive growth. But as budget surpluses dry up, raising tax revenue and productivity will be key to fiscal sustainability to foster more inclusive growth.

Adapted from: The Straits Times, accessed 25th July 2023

- (a) Explain what is meant by economic growth which is both inclusive and sustainable. [10]
- (b) Discuss whether raising tax revenue or raising productivity is the more appropriate measure to achieve inclusive growth while maintaining fiscal sustainability. [15]

(a) Explain what is meant by economic growth which is both inclusive and sustainable. (10)

Question Analysis	
Command	Explain what
Content	Inclusive growth and sustainable growth
Context	No context
Synopsis: Students are to explain both inclusive growth and sustainable growth. First Requirement: Explain what is meant by inclusive growth. Second Requirement: Explain what is meant by sustainable growth.	

Introduction: Define/Clarify key terms

Inclusive growth refers to the economy growing at a strong and stable rate without resulting in worsening of income inequality and creates opportunities for all. For an economy to experience inclusive economic growth it must experience sustained economic growth first. In other words, it must achieve both actual and potential growth over a period of time. This would result in an increase in real GDP over a period of time.

While sustainable growth refers to the economy growing at a strong and stable rate without resulting in significant environmental degradation and resource depletion.

Explain what is meant by inclusive growth.

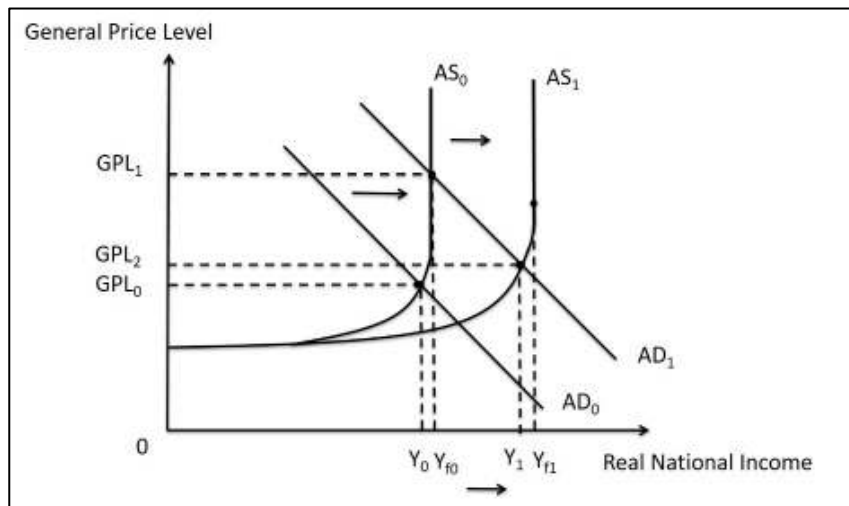
Economies can attain inclusive growth when income is redistributed through taxes and subsidies. When income generated from economic growth is redistributed from the higher-income groups to the lower-income groups, all income groups will experience growth in income. In addition,

economies can improve education and training opportunities. By doing so, it ensures that the quality of workforce increases, increasing occupational mobility, thus allowing lower skilled workers to earn higher wages or not lose their existing jobs.

When the economy attains inclusive growth, the Gini coefficient will be smaller. Gini coefficient represents the income distribution of a nation's residents and is the most used measure of income inequality. The Gini coefficient ranges from zero to one, where zero represents perfect equality and one represents perfect inequality. Generally, if the national income is more equally distributed and not concentrated among a small (high-income) group, the access to goods and services would be more equal throughout the economy. Most citizens are likely to experience higher satisfaction as they have more equal abilities to enjoy the goods and services available in the economy. However, in order to achieve the above, sustained economic growth is crucial.

For an economy to experience sustained economic growth, it must achieve both actual and potential growth over a period of time. This would result in an increase in real GDP over a period of time. Or put more simply, both AD and AS must continuously increase over an extended period of time for sustained economic growth to be possible. Without an expansion in the productive capacity, the increase in actual output will eventually be not possible once spare capacity is exhausted.

The increase in AD shifts the AD curve (AD_0 to AD_1) to intersect with the vertical portion of AS (long run aggregate supply LRAS) where it illustrates the maximum level of output that an economy can produce because there is no longer spare capacity. Therefore, any further increase in AD without an increase in LRAS only leads to higher general price levels (GPL_0 to GPL_1), and not greater output. This implies that growth in actual output is constrained by the growth in potential output.



With the subsequent increase in LRAS however, the AS curve shifts rightwards (AS_0 to AS_1) resulting in an increase in the productive capacity illustrated by the increase in the full employment

output level (Y_{t0} to Y_{t1}). Notice that not only has the real national income increased, general price level has significantly fallen (GPL_1 to GPL_2) as well.

Sustained economic growth (reflected by an increase in real GDP and real national income per capita) can help achieve inclusive growth because economic growth entails the creation of jobs for workers who previously had no income or dependent on irregular jobs in the informal sector of the economy – such as washing cars during periods of high demand. This availability of regular jobs in the formal sector of the economy enables them to earn higher wages and thereby reducing the income inequality between the high and low income.

With economic growth, the government has higher tax revenues which it can use to fund education and training programmes; as well basic healthcare and immunisation programmes in cases where infectious diseases such as malaria. The education increases their employability, and the healthcare enhances their ability to enter the workforce, enhancing social mobility and moving out of poverty.

Explain what is meant by sustainable growth.

Sustainable growth comes about if economies adopt greener methods of production to boost economic growth, reduce harmful gas emissions from various modes of transportation or methods of production, manage waste better (i.e., chemical waste which pollutes the water, land waste etc.), preserve biodiversity and ecosystems through conservation (i.e., conservation of fish stock and forestations) and moderate the use of renewable and non-renewable resources.

For instance, Singapore has adopted the Singapore Green Plan 2030 which is a whole of nation movement to advance Singapore's national agenda on sustainable development. It charts ambitious and concrete targets over the next 10 years, strengthening Singapore's commitments under the UN's 2030 Sustainable Development Agenda and Paris Agreement, and positioning us to achieve our long-term net zero emissions aspirations as soon as viable. In addition, Singapore has increased the adoption of solar power and other sustainability practices in Singapore-based companies.

Singapore has also a high rate of recycling, where our precious resources can be used many times over. We have already achieved that with NEWater. By turning incinerated waste into NEWSand for construction, Singapore has aim to reduce the waste sent to our landfill by 30%.

The Index of Sustainable Economic Welfare which is a composite indicator can be used to indicate if an economy has inclusive and sustainable economic growth, ISEW starts with consumption, as measured in GDP, and then adjusts for factors that GDP ignores. These include inequality, household production and defensive expenditures to offset the adverse environmental effects of economic growth, commuting costs, environmental costs, as well as resource depletion and damage.

Conclusion

Only when an economy achieve growth that allows equal opportunities for all and the growth comes about through greener methods of production, the economic growth is inclusive and sustainable.

LORMS

L3	<p>For an analytical answer that demonstrates an accurate knowledge and understanding of economic concepts, theories related to question and addresses the question thoroughly with clear explanation well supported by tools of analysis, by explaining both inclusive and sustainable growth.</p> <p>There is good ability to organise ideas or discriminate between relevant and irrelevant factors. Answer is well-focused on question with the good use of relevant economic concepts, theories or principles, e.g. explaining the need to achieve sustained growth to achieve inclusive growth.</p> <p>Marks within L3: Note: To enter L3, candidates should explain both inclusive and sustained that economic growth.</p> <p>To access top of L3, an explanation of the inclusive growth linked to sustained economic growth is expected.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Annotation</th><th style="text-align: center;">Description</th><th style="text-align: center;">Mark</th></tr> </thead> <tbody> <tr> <td style="text-align: center;">A + C</td><td>1 analytical and 1 cursory explanation for 2 question requirements</td><td style="text-align: center;">8</td></tr> <tr> <td style="text-align: center;">A + C + K</td><td>1 analytical and 1 cursory explanation for 2 question requirements and an explanation of additional factor that is relevant</td><td style="text-align: center;">9</td></tr> <tr> <td style="text-align: center;">A + A</td><td>Analytical explanations for 2 question requirements</td><td style="text-align: center;">10</td></tr> </tbody> </table>	Annotation	Description	Mark	A + C	1 analytical and 1 cursory explanation for 2 question requirements	8	A + C + K	1 analytical and 1 cursory explanation for 2 question requirements and an explanation of additional factor that is relevant	9	A + A	Analytical explanations for 2 question requirements	10	8-10
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L2	<p>Analysis & Application</p> <p>For an under-developed answer that attempts to address the question by explaining both inclusive and sustainable economic growth and/or answers that demonstrate largely accurate knowledge and understanding of economic concepts, theories related to question, Answers may be descriptive, lack an analytical approach (e.g. not supported with tools of analysis, incomplete use of graph) or is incompletely explained with gaps in analysis, e.g. never explain sustained economic growth to achieve inclusive growth.</p> <p>[Or For a one-sided analytical answer that address only one of the two question requirements, i.e. explanation for either inclusive or sustainable economic growth]</p>	5-7												

	<p>For an answer that is supported with some application to the context of the question. There is limited ability to organise ideas or discriminate between relevant and irrelevant materials. Answer has some relevance to the question context but is generic.</p> <p>Marks within L2:</p> <table> <tr> <th>Annotation</th><th>Description</th><th>Mark</th></tr> <tr> <td>K + C</td><td>1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements</td><td>5</td></tr> <tr> <td>K + C + K</td><td>1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements and an explanation of additional factor that is relevant</td><td>6</td></tr> <tr> <td>A + 0</td><td>1 analytical explanation for 1 question requirement</td><td>6</td></tr> <tr> <td>C + C</td><td>Cursory explanations for 2 question requirements</td><td>6</td></tr> <tr> <td>C + C + K</td><td>Cursory explanations for 2 question requirements and an explanation of additional factor that is relevant</td><td>7</td></tr> <tr> <td>A + K</td><td>1 analytical explanation for 1 question requirement and an explanation of additional factor that is relevant</td><td>7</td></tr> </table>	Annotation	Description	Mark	K + C	1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements	5	K + C + K	1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements and an explanation of additional factor that is relevant	6	A + 0	1 analytical explanation for 1 question requirement	6	C + C	Cursory explanations for 2 question requirements	6	C + C + K	Cursory explanations for 2 question requirements and an explanation of additional factor that is relevant	7	A + K	1 analytical explanation for 1 question requirement and an explanation of additional factor that is relevant	7	
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Markers' Comments:

Most students only explained inclusive growth and sustainable growth without explaining the need sustained growth and the need for sustained growth as a baseline to achieve both inclusive and sustainable growth. Though the command words of the questions were, "what is meant by", students explained how to achieve inclusive and sustainable growth. Very few scripts explained the indicators that can indicate if an economy is experiencing inclusive and/or sustainable growth. Even when the students mentioned, it was just Gini coefficient.

b) Discuss whether raising tax revenue or raising productivity is the more appropriate measure to achieve inclusive growth while maintaining fiscal sustainability.

Question Analysis	
Command	Discuss
Content	Inclusive growth, raising tax revenue, Raising productivity, Fiscal sustainability
Context	No context
<p>Synopsis:</p> <p>First Requirement: Explain how raising tax revenue can achieve inclusive growth while maintaining fiscal sustainability.</p> <p>Second Requirement: Explain how raising productivity is more appropriate to achieve inclusive growth while maintaining fiscal sustainability.</p> <p>Evaluative Judgement: Take a stand on whether raising tax revenue or raising productivity is more appropriate to achieve inclusive growth while maintaining fiscal sustainability. Substantiate the stand with reasons.</p>	

Introduction: Define/Clarify Key terms

Explain what fiscal sustainability is and why is it important.

Fiscal sustainability is the ability of a government to maintain its financial health over the long term, ensuring it can meet its spending commitments without accumulating unsustainable levels

of debt. It is important as the governments strive to strike a balance between providing essential services and investments while avoiding budget deficits that could lead to a debt crisis.

Inclusive growth refers to the economy growing at a strong and stable rate without resulting in worsening of income inequality and creates opportunities for all.

First Requirement: Explain how raising tax revenue can bring about inclusive growth while maintaining fiscal sustainability.

Increasing tax revenue is an essential aspect of fiscal sustainability because it directly impacts the government's income. When tax revenue rises, the government can finance its expenditures more effectively without relying on excessive borrowing. Here are some ways this can be achieved:

Explain how to raise tax revenue:

Governments can implement tax policy changes to enhance revenue generation. This could involve increasing tax rates, broadening the tax base and minimizing tax evasion. An equitable tax system ensures that the burden of taxation is distributed fairly among the population. When the tax system is perceived as fair, tax compliance improves, reducing tax evasion and increasing overall revenue. Higher economic growth tends to generate higher tax revenues. As businesses expand and individuals earn more income, the government collects more taxes on corporate profits, personal income, and consumption. Policies that promote economic growth, such as investment in infrastructure and business-friendly regulations, can, therefore, bolster tax revenue.

Explain how raising tax revenue can bring about inclusive growth.

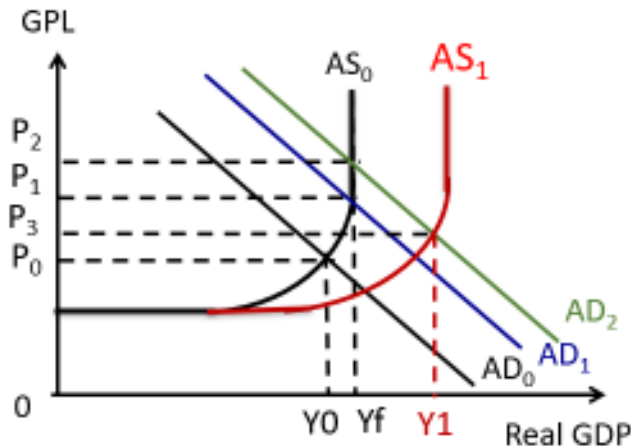
Inclusive growth refers to growth that is sustained over a period, is broad-based across economic sectors, and creates productive employment opportunities. It is often focused on preventing rising income inequality.

To achieve inclusive growth, there must be sustained economic growth through the increase in actual and potential growth.

Maintaining fiscal sustainability allows governments to establish and sustain social safety net programs. Government can implement progressive taxation policies, wherein higher-income individuals and corporations pay proportionally more in taxes. These revenues can be used to fund social programs and public services that benefit the less privileged, reducing income inequality and promoting inclusive growth.

These safety nets reduce the income inequality between the low and high income, provide the low income with access to essential services. By reducing poverty and inequality, social safety nets contribute to inclusive growth and ensure that economic progress reaches all segments of society. This enables all income groups will experience growth in income.

In addition, the government can use the tax revenue to build infrastructures like hospitals and schools constitute which government expenditure that increase AD and contribute towards actual growth.



With reference to the figure above, the initial real GDP is at Y_0 . An increase in AD from AD_0 to AD_1 will raise national income by a multiple via the multiplier process. Real output increases from Y_0 to Y_f . This represents actual growth. As the economy is nearing full employment, if AD continues to increase from AD_1 to AD_2 , it will result in an increase in GPL from P_1 to P_2 with no change in real GDP, leading to inflation. Since there is an increase in productive capacity with an increase in LRAS, real GDP can increase further from Y_f to Y_1 without inflation setting in. Hence, sustained economic growth is achieved.

These infrastructure developments also mean increase in quantity and quality of capital, increasing the productive capacity, thus increasing the LRAS of Singapore. These efforts will result sustained economic growth as increase in productive capacity allow Singapore to grow without increase in prices.

The infrastructure developments will expand educational capacity and quality, especially for higher education, enabling more of Singapore's population to be educated and subsequently the quality of the future workforce can improve and qualify for better paying jobs, bringing about a future growth that could be more inclusive.

Infrastructure developments on healthcare capacity, e.g., more public hospitals can improve access of healthcare to those in the lower income group, ensuring that more can benefit from subsidized medical treatments.

Actual growth caused by improvement in infrastructure can generate increase in household income. With progressive tax structure, this means larger tax revenue collected by the government to implement measures to improve income distribution.

Second Requirement: Explain how raising productivity can bring about inclusive growth while maintain fiscal sustainability.

Productivity is the measure of how efficiently resources are utilized to produce goods and services. It plays a crucial role in fiscal sustainability because higher productivity allows the economy to produce more output with the same or fewer resources. Increased productivity leads to economic growth, which, as mentioned earlier, contributes to higher tax revenues.

Explain how to raise productivity?

Government can raise productivity by making investment in human capital by investing in education, training, and skill development programs that help improve the productivity of the labor force. The tax revenue collected can also be used to fund skills training for the lower-skilled workers to ensuring that they have the skills to keep up with structural changes taking place in the Singapore economy. By doing so, it ensures that the quality of workforce increases, increasing occupational mobility, thus allowing lower skilled workers to earn higher wages or not lose their existing jobs thereby achieving inclusive growth. A well-educated and skilled workforce is more productive and can contribute more effectively to economic growth. In addition, these investments empower individuals with better education and healthcare access, enabling them to participate more actively in the workforce and contribute to inclusive economic as it equips people with the necessary tools and opportunities to escape poverty and achieve economic prosperity.

In addition, the government can raise productivity invest in physical capital like infrastructure development, such as transportation networks, communication systems, and technology, thereby boosting productivity by making it easier for businesses to operate efficiently. These projects can improve connectivity (roads, expressways), transportation, and access to essential services (healthcare, education), promoting economic activities in various regions and creating job opportunities for people from diverse backgrounds. It improves geographical mobility and thereby brings about inclusive growth. In addition, this infrastructure development can attract FDI which in turn creates jobs opportunities. The job opportunities allow more people to be employed thereby reducing the income gap between the employed and unemployed, hence bringing about inclusive growth.

Furthermore, the government can also invest in innovation and research by encouraging innovation and research and development activities that can lead to technological advancements thereby fostering productivity growth in various sectors of the economy.

Evaluative Conclusion:

Fiscal sustainability ensures that the government does not overspend or accumulate unsustainable levels of debt to achieve short-term economic growth. Such imprudent fiscal policies could lead to financial crises and hinder the government's ability to support inclusive growth initiatives in the long run. Hence the government must seek a balance between her short- and long-term goals. Though governments can achieve inclusive growth without fiscal sustainability, but the options are limited and are also of limited effectiveness. For instance, the government can impose minimum wage laws, but it will lead in higher unemployment. Raising tax revenue is a short-term measure to bring about inclusive growth and might not be targeted at the root cause for the income inequality. If government raise income taxes for all income groups, it may hurt the low income and worsen the income inequality. In addition, most often, it is the mismatch skills between the worker and the economy that is main reason for the rising income inequality and hence raising productivity to achieve inclusive growth is more appropriate. By improving productivity by spending on training and education, the government will achieve inclusive growth by improving occupational mobility. While by improving productivity by building transport network will improve geographical mobility and bring about inclusive growth. As government spends to improve the productivity in the economy, it will attract FDIs thereby helping to maintain fiscal sustainability. Hence raising productivity would be the more appropriate measure to achieve inclusive growth while maintaining fiscal sustainability.

LORMS														
L3	<p>For an analytical answer that demonstrates an accurate knowledge and understanding of economic concepts, theories related to question and addresses the question thoroughly with clear explanation well supported by tools of analysis, by explaining both raising tax revenue and raising productivity in achieving inclusive while maintaining fiscal sustainability.</p> <p>There is good ability to organise ideas or discriminate between relevant and irrelevant factors. Answer is well-focused on question with the good use of relevant economic concepts, theories or principles, e.g. explaining the need to achieve sustained growth to achieve inclusive growth.</p> <p>Marks within L3: Note: To enter L3, candidates should explain the importance of maintaining fiscal sustainability while achieving inclusive growth by either raising tax revenue or raising productivity,</p> <p>To access top of L3, an explanation of the inclusive growth linked fiscal sustainability is expected.</p> <table border="1"> <thead> <tr> <th>Annotation</th><th>Description</th><th>Mark</th></tr> </thead> <tbody> <tr> <td>A + C</td><td>1 analytical and 1 cursory explanation for 2 question requirements</td><td>8</td></tr> <tr> <td>A + C + K</td><td>1 analytical and 1 cursory explanation for 2 question requirements and an explanation of additional factor that is relevant</td><td>9</td></tr> <tr> <td>A + A</td><td>Analytical explanations for 2 question requirements</td><td>10</td></tr> </tbody> </table>	Annotation	Description	Mark	A + C	1 analytical and 1 cursory explanation for 2 question requirements	8	A + C + K	1 analytical and 1 cursory explanation for 2 question requirements and an explanation of additional factor that is relevant	9	A + A	Analytical explanations for 2 question requirements	10	8-10
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A + A	Analytical explanations for 2 question requirements	10												
L2	<p>Analysis & Application</p> <p>For an under-developed answer that attempts to address the question by explaining both inclusive and sustainable economic growth and/or answers that demonstrate largely accurate knowledge and understanding of economic concepts, theories related to question, Answers may be descriptive, lack an analytical approach (e.g. not supported with tools of analysis, incomplete use of graph) or is incompletely explained with gaps in analysis, e.g. never explain how raising tax revenue and raising productivity leads to inclusive growth.</p> <p>[Or For a one-sided analytical answer that address only one of the two question requirements, i.e. explanation for either raising tax revenue or raising productivity in achieving inclusive growth]</p>	5-7												

	<p>For an answer that is supported with some application to the context of the question. There is limited ability to organise ideas or discriminate between relevant and irrelevant materials. Answer has some relevance to the question context but is generic.</p> <p>Marks within L2:</p> <table> <tr> <th>Annotation</th><th>Description</th><th>Mark</th></tr> <tr> <td>K + C</td><td>1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements</td><td>5</td></tr> <tr> <td>K + C + K</td><td>1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements and an explanation of additional factor that is relevant</td><td>6</td></tr> <tr> <td>A + 0</td><td>1 analytical explanation for 1 question requirement</td><td>6</td></tr> <tr> <td>C + C</td><td>Cursory explanations for 2 question requirements</td><td>6</td></tr> <tr> <td>C + C + K</td><td>Cursory explanations for 2 question requirements and an explanation of additional factor that is relevant</td><td>7</td></tr> <tr> <td>A + K</td><td>1 analytical explanation for 1 question requirement and an explanation of additional factor that is relevant</td><td>7</td></tr> </table>	Annotation	Description	Mark	K + C	1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements	5	K + C + K	1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements and an explanation of additional factor that is relevant	6	A + 0	1 analytical explanation for 1 question requirement	6	C + C	Cursory explanations for 2 question requirements	6	C + C + K	Cursory explanations for 2 question requirements and an explanation of additional factor that is relevant	7	A + K	1 analytical explanation for 1 question requirement and an explanation of additional factor that is relevant	7	
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L1	<p>Knowledge & Understanding</p> <p>For an answer that shows limited knowledge and understanding of relevant economic concepts and theories (e.g. basic description or definitions). Few valid points made which are scant and inadequately explained. Answers are mostly irrelevant and inaccurate. Answer demonstrates that the meaning of question is not properly grasped or may contain basic errors of theory.</p> <p>Marks within L1:</p> <p>Note:</p> <p>K=1 - For basic and unexplained knowledge, e.g. an unexplained statement or definition of a concept that showed some correct knowledge but no understanding</p> <p>K=2 - For some additional explanation that shows an understanding of the concept that is not applied to the context of question but show limited knowledge and understanding</p> <table> <tr> <th>Annotation</th><th>Description</th><th>Mark</th></tr> <tr> <td>0</td><td>Nothing of relevance in the answer</td><td>0</td></tr> <tr> <td>K + 0</td><td>Knowledge of one question requirement</td><td>1</td></tr> </table>	Annotation	Description	Mark	0	Nothing of relevance in the answer	0	K + 0	Knowledge of one question requirement	1	0-4												
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	K + 0	Knowledge and understanding of 1 question requirement	2	
	K + K	Knowledge of 2 question requirements	2	
	K + K	Knowledge and understanding of 1 question requirement and knowledge of the second requirement	3	
	K + K	Knowledge and understanding of 2 question requirements	4	
	C + 0	One cursory explanation for 1 question requirement	4	

Level		Mark
E3	Well-explained evaluative judgements about 2 requirements PLUS a summative conclusion	5
E2	Well-explained evaluative judgements about 2 requirements	4
E2	A well-explained evaluative judgement about 1 requirement + an evaluative statement for the second requirement PLUS a summative conclusion	4
E2	A well-explained evaluative judgement about 1 requirement + an evaluative statement for the second requirement	3
E1	A well-explained evaluative judgement about 1 requirement OR evaluative statements for 2 requirements	2
E1	An evaluative statement for 1 requirement	1
E0	No attempt at Evaluation	0

Markers' Comments:

Some students confused fiscal sustainability for sustainable growth. Others started explaining a contractionary fiscal policy as the question stated raising tax revenue and concluded that raising tax revenue does not bring about inclusive growth. None saw how sustained growth itself can help with raising tax revenue which then can be redistributed for inclusive growth. Hence, most of the scripts were not able to explain the need for sustained economic growth to have inclusive growth. The answers weakly linked back to how raising tax revenue and raising productivity brought about inclusive growth. Some of the answers also failed to explain how fiscal sustainability was maintained through the measures, even when they did, they were able to link raising tax revenue back to fiscal sustainability and were not able to explain how raising productivity can maintain fiscal sustainability. Also, instead of linking fiscal sustainability to budget balance they linked it to balance of payment.

- 5 The Monetary Authority of Singapore (MAS) expects Singapore's economy to grow at faster than usual pace. But falling unemployment, rising wages and the emergence of supply chain bottlenecks worldwide, which have forced up the prices of a range of commodities and manufacturing inputs could underpin a steady rise in inflation into 2022.

Source: Adapted from The Straits Times, 28 October 2021

- (a) Explain **one** demand factor and **one** supply factor that could lead to a steady rise in inflation in Singapore. [10]

Question Analysis:

Command Word	'Explain' – Give reasons, establish causal links.
Content / Concept Words	'Rise in inflation' – Sustained and inordinate rise in general price levels. 'Demand & Supply factors' – Factors relating to AD & AS
Context	Singapore; Supported by pre-amble.

Qn Requirement	<p>R1: <u>Demand factor</u> leading to rise in inflation – Candidates are expected to explain demand-pull inflation caused by factor(s) affecting aggregate demand (AD) such as rise in consumer spending or export revenue. A good tool of analysis is an AD/AS diagram with a persistent rise in general price level (GPL) caused by the rightward shift of the AD curve along the vertical part of AS (or LRAS).</p> <p>R2: <u>Supply factor</u> leading to a rise in inflation – Candidates are expected to explain cost-push inflation caused by factor(s) affecting aggregate supply (AS) such as higher crude oil and commodity prices. A good tool of analysis is an AD/AS diagram with a persistent rise in general price level (GPL) caused by the upwards shift of the short-run AS curve along the AD curve.</p> <p>To enter L3 candidates should explain how a rise in inflation could be caused by both a demand and a supply factor.</p> <p style="text-align: right;">L3 Band [8 - 10] L2 Band [5 - 7] L1 Band [1 - 4]</p>
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Suggested answers:

Introduction: Define/Clarify key terms; describe broad approach/scope

- Inflation is defined as the **sustained and inordinate** increase in general price level which is determined by the interaction between the aggregate demand (AD) and aggregate supply (AS) of the economy.
- The persistent rise in inflation could be contributed by underlying factors affecting AD and AS, such as a rise in export revenue or consumer expenditure due to higher consumer confidence in the economy as well as rising global commodity & manufacturing input prices.

Body:

Explain how a rise in determinants of AD (e.g X, I) could result in inflationary pressures.

[P] One demand factor that could lead to a steady rise in inflation is the rise in export revenue (X) / Investment expenditure(I) / consumption expenditure (C) which are components of AD.

[EI] With COVID-19 pandemic restrictions lifted and global economy recovering from the pandemic, trade-related services could have increased, leading to a rise in export revenue (X). In addition, with Singapore's economy growing faster than usual pace, there could be an improvement in **consumer confidence of the economy's prospect** (i.e. post COVID-19 economic recovery), resulting in consumers being more willing to spend on domestic goods and services such as entertainment and outdoor dining.

Note: The expenditure must be autonomous independent of income (i.e. NOT DUE TO A RISE IN INCOME). Expenditure due to a rise in income is an induced expenditure which comes in the middle of the multiplier process.

[EA] The rise in (X) & (C) lead to a rise in AD resulting in firms facing an unplanned fall in inventory. To meet the greater demand for consumer goods and services, firms step up their production when there is spare capacity in the economy. This is shown in figure 1, where AD_0 increases to AD_1 along AS_0 while general prices rise from P_0 to P_1 . This leads to a rise in the demand for factors of production (FOPs) such as labour and factor payments (e.g. wages).

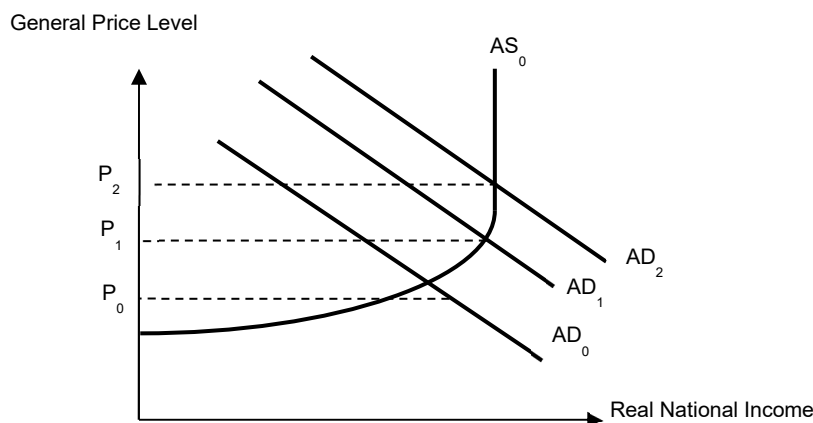


Figure 1 – Rise in AD leading to Demand Pull Inflation

[EA] In turn, this induces households to consume more goods and services, resulting in subsequent income-expenditure cycles. As resources are depleted, firms need to compete for limited factors of production and resources which drives up factor prices (e.g. wages). Firms charge a higher price in order to maintain their profit margin, increasing general prices. With the falling unemployment rate, it is likely that Singapore economy was approaching full employment. As such, the rise in consumer spending resulted in a situation of excess demand beyond what the economy can provide, since AD rises faster than AS.

[L] As a result, demand-pull inflation occurs as AD further increases from AD_1 to AD_2 along the upward slopping portion of AS_0 , where general price level increases from P_0 to P_1 and eventually P_2 .

Explain how **rise in global commodity & manufacturing input prices** could result in inflationary pressures.

[P] One supply factor that can lead to a steady rise in inflation is the rise in global commodity and manufacturing input prices.

[EI] Singapore being a small economy with limited resources is very dependent on imports of commodities and manufacturing inputs such as crude petroleum, steel and food. Crude unrefined petroleum for example is an important factor of production to produce electricity for machineries to run. Similarly, manufacturing input such as steel and timbre are used to produce intermediate goods and services for production of final goods and services.

[EA] Supply chain bottlenecks from congested sea-ports and delay shipments could have led to rising prices of these materials which will result in a **higher unit cost of production for firms economy wide**, leading to lower profitability. Firms respond by cutting down production of goods and services ***(Note: Firms can also respond by raising prices and thereby passing the cost to consumers)*** causing short-run aggregate supply (SRAS) to fall, shifting the SRAS curve from $SRAS_0$ to $SRAS_1$ as shown in Figure 2, leading to cost-push inflation, further exerting inflationary pressures.

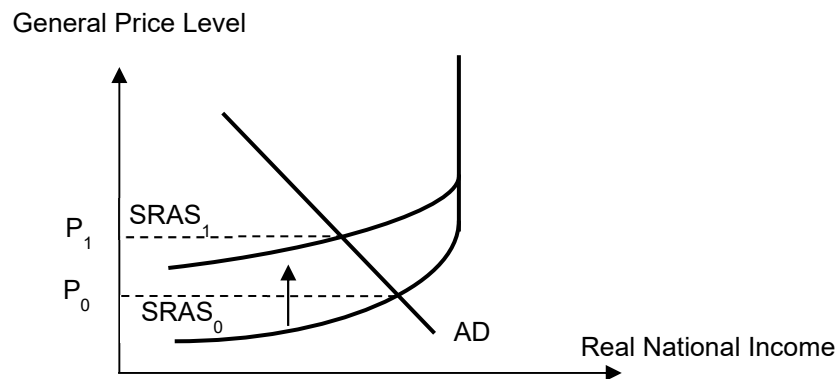


Figure 2 – A Fall in SRAS leading to cost push inflation

Alternative Answer:

The recent years, Singapore government has been tightening labour and immigration policy to reduce firms' reliance on cheap foreign labour. This has led to a fall in the net inflow of foreign labour, reducing the size of the labour force.

A fall in supply of labour increases wages, and in turn result in a rise in unit cost of production as labour cost increases. This leads to a fall in SRAS, shifting the SRAS curve upwards from $SRAS_0$ to $SRAS_1$. As labour costs increases, firms cut production while passing on the additional costs to consumers in the form of higher prices, economy wide. This results in a sustained rise in general price levels over time.

Conclusion:

- In conclusion, the rise in inflationary pressure in the economy could be due to the combine effect of both the fall in SRAS and rise in AD.
- Unless there are means to increase the economy's productive capacity, government may need to implement appropriate short-run policies to reduce inflationary pressures to mitigate the negative impacts of inflation on the economy.

Markers' Comments:

Essay Q5 was the most popular question with close to three-quarters of the candidates attempting it. There were large variations in the quality of responses to this question. Candidates tended to do better in (b) than in (a).

The most common misconception is regarding rising income resulting in consumption expenditure (C) to increase and in turn aggregate demand (AD) to rise and AD curve to shift right. This is incorrect. An explanation like this suggest income-induced consumption

- (b) Discuss the extent to which policies designed to manage rising inflation in Singapore is effective. [15]

Question Analysis:

Command Word	'Discuss (the extent)' – Balanced approach to <u>assess effectiveness</u> of policies + <u>evaluative comments</u> & <u>summative conclusion</u> of the extent of their effectiveness.
Content / Concept Words	'Policies designed to manage inflation – (1) Exchange-rate policy (gradual & modest appreciation) (2) Supply-sides policies (direct costs management, skills training) (3) Fiscal Policy (Delaying infrastructure projects hence Gov Exp)
Context	Singapore; Supported by pre-amble.

Qn Requirement	<p>The answer will, to a large extent, depend on candidates' understanding of the policies Singapore government deploy to manage inflation, and their limitations which should be recognised by candidates in the evaluative judgements.</p> <p>R1: One policy to manage inflation in Singapore – Candidates should recognise that the primary policy measure used to manage inflation in Singapore is monetary policy centred on exchange rate (i.e. Exchange-rate policy). Central bank curb rising inflation by adopting an appreciation stance of SG's exchange rate, which reduces imported cost-push inflation and inflationary pressures from export-led demand growth.</p> <p>R2: One other policy to manage inflation in Singapore which might include policies to curb domestic inflationary pressures via expenditure reducing measures or longer term measures such as supply-side policies to directly manage cost and improve productivity.</p> <p>To enter L3, application to Singapore economy should be clearly made and should include a discussion of more than one policy to manage rising inflation.</p> <p style="text-align: right;">L3 Band [8 - 10] L2 Band [5 - 7]</p>
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	<p style="text-align: right;">L1 Band [1 - 4]</p> <p>Evaluation Marks: Well argued evaluative judgements about effectiveness of policies designed to managed inflation in Singapore with a summative conclusion about extent to which they are effective.</p> <p style="text-align: right;">E3 Band [5] E2 Band [3 - 4] E1 Band [1 - 2]</p>
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Suggested Answers:

Introduction:

- Rising inflation may lead to negative economic consequences such low economic growth, fall in FDI and unemployment.
- To effectively tackle rising inflation, the Singapore (SG) government adopts policies to address the root cause of inflationary pressure which could come from rising import costs and rising labour costs from tight domestic labour market condition.
- Some of these policies include monetary policy centred on exchange rate as well as supply-side policies to directly manage cost and reduce inflationary pressure.

Body: Explain 'how' and 'why' exchange rate can be effective in managing rising inflation.

Policy 1: Exchange Rate Policy

[P] One of the policies designed to manage rising inflation in SG is monetary policy centred on exchange rate. SG's central bank, the monetary authority of Singapore (MAS) can tighten monetary policy centred on exchange rate to alleviate inflationary pressures from rising commodity and manufacturing input prices.

[EI] Given the **small and open nature of Singapore's economy which is highly reliant on imports** of commodity and raw materials for production of other goods for exports, the use of exchange rate policy to reduce rising inflationary pressure from these sources is effective.

[EA] By **strengthening and revaluing the Singapore dollar (SGD)** or allowing the Singapore dollar to appreciate gradually within the limits of the undisclosed policy bands, the price of imports will become relatively cheaper in terms of domestic currency and this helps to negate the higher prices of commodities and basic necessities.

[E.g.] One recent instance was in in October 2022, when MAS tightened its monetary policy for the fifth consecutive time within 12 months by shifting the mid-point of the exchange rate policy band upwards which tantamount to a strengthening of the SGD to cope with rising import costs and manage domestic cost pressures.

[EA] This helps to reduce the fall in SRAS where the SRAS curve shifts from $SRAS_0$ to $SRAS_2$ instead of $SRAS_1$, as shown in Figure 1 leading general price levels **to rise less than it would have**, thus **easing** imported cost push inflation due to rising commodity and manufacturing prices.

General Price Level

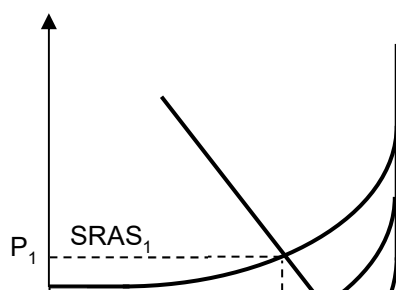


Figure 1 – Effects of Revaluation of SGD on SRAS

Assess the effectiveness of Exchange rate policy:

[P] SG's exchange rate-centered monetary policy has historically been effective in managing inflation especially imported cost-push inflation which Singapore is more susceptible to.

[P, EA] In addition, a stronger Singapore dollar makes prices of exports relatively more expensive in terms of foreign currency, which reduces the quantity of exports demanded by foreign consumers. This would result in a fall in export revenue (X) which in turn reduces aggregate demand (AD).

[EA] A fall in AD causes firms to face an unplanned rise in inventory. Firms respond by cutting output and reducing prices to clear excess inventories. In turn, firms reduce their demand for FOPs including labour, releasing the FOPs back into the economy.

With **reduced competition for FOPs**, there is a fall in factor prices and the cost savings experienced by firms are passed on to consumers in the form of lower general price level economy wide. This hence help to reduce demand-pull inflation as well, reducing the overall inflation rate.

[Preliminary EV]: Given that SG's trade to GDP ratio $\frac{(X+M)}{GDP}$ is in excess of 300%, exchange rate policy is hence highly effective in managing inflation coming from rise in exports revenue and rising import prices.

[P, EI] In addition, the good amount of foreign reserves accumulated through many years of fiscal prudence and returns on investments implies that the **extent of intervention** in the foreign exchange market to revalue the SGD (by selling foreign currency in exchange for SGD) **can be large if necessary, increasing the effectiveness of the policy measure.**

However, given the adverse effect on export revenue which is one of the key drivers of SG's economic growth, the extent to which **exchange rate can be revalued is limited**. A huge revaluation of the SGD can quickly result in a demand shock to the Singapore economy, reducing economic growth. Moreover, such intervention will deplete foreign reserves accumulated over many years, and hence **cannot be a long term measure.**

[Preliminary EV]: Hence, MAS has always adopted a gradual and modest appreciation stance, striking a balance between managing import cost pressures while giving room for export prices to stay competitive.

Exchange rate policy is also subjected to response time lag. For instance, when MAS tightens monetary policy, the Singapore dollar strengthens. This will lower import costs for businesses in Singapore dollar terms. **However, they may not make immediate changes to the prices they charge to consumers.** This could be because other business costs, such as electricity, warehouse and transportation services, being fixed under an existing contract. Businesses might

only be able to adjust their prices after their contracts expire and they can re-negotiate new contracts with revised prices. **This also implies that general prices are likely to remain in the short-run, even after exchange rate adjustments.**

More importantly, **exchange rate policy cannot address inflation from domestic sources of both demand-pull and cost-push inflation.** Hence if the root cause of demand-pull inflation is due to increases in domestic factors of AD such as C and I or if the root cause of cost-push inflation is due to increases in price of domestic factors of production such as increases in wages of labour, **the exchange rate policy will not be able to target these root causes and will hence be less effective.** This gives room for other policy measures that are also designed to manage inflationary pressures.

Body: Explain 'how' and 'why' policies to reduce consumption can be effective in managing rising inflation.

Policy 2: Expenditure dampening measures (Contractionary)

[P] Demand-management policies are also important to reduce expenditure and control inflation rates.

[EI] Singapore government does not use contractionary fiscal policy in the traditional manner due to the constraints imposed by the nature of the economy. Instead, the Singapore government could **postpone or halt** public infrastructure developments such as public transport system (e.g. Thomson-East Coast Line) development or road widening, which will slowdown the rise in government expenditure (G), thus reducing the rise in AD.

[EI] Additionally, when faced with household spending on investment property (e.g investment (I) on second residential property), the government could impose property market cooling measures such as increasing the stamp duty to dampen consumers demand for such goods (**Note:** Such measures are considered Micro policies implemented in specific sectors/markets, and not Macro policies implemented economy wide.)

[EI] In the short-run, the fall in I and G will cause AD to rise less, or fall resulting in a fall in general price level (P) as illustrated in figure 2 where AD curve shift to the left from AD_0 to AD_1 , leading to a fall in general price level from P_0 to P_1 as shown in Figure 2 thus easing the strong inflationary pressure.

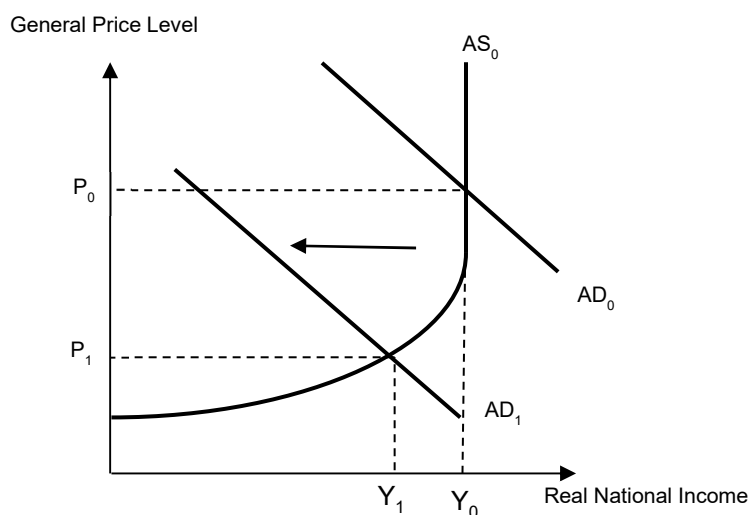


Figure 2 – Fall in AD from contractionary fiscal policy

Body: Assess the effectiveness of expenditure dampening measures

[P] However, Singapore has a relatively small proportion of C and G out of total GDP.

[EA] Even if contractionary fiscal policy is effective in curbing the increase in C and G the extent of impact on the AD shift is likely to be limited. Hence demand-pull inflation **will not ease** significantly.

[P] In addition, Singapore has a small multiplier size due to high leakages in the form of compulsory savings and high import expenditure. With a large marginal propensity to save (MPS) and import (MPM), the reverse multiplier effect is also limited, reducing the extent to which aggregate expenditure falls.

[EI] Furthermore, the contractionary fiscal policy is unable to **tackle cost-push inflation directly**. What would be more effective could be the use of supply-side policy like training and skill upgrading which can influence Aggregate supply (AS) and hence help in curbing Singapore's rising inflation rate.

Body: Explain 'how' and 'why' SS-side policy can be effective in managing rising inflation.

Policy 3: SS-side Policy

[P] Government can consider implementing supply side policies to deal with the rising domestic cost pressure due to tightening labour market and rising labour costs by maintaining harmonious tripartite relationship, supporting firms in innovating and improve the efficiency through the Productivity Solution Grants (PSG), and supporting the upskilling and training of workers.

[P] Short run supply side policy, such as the use of income policy, could be the one of the most effective policies in reducing the strong inflationary pressure in Singapore.

[E.g.] The National Wage Council (NWC) is a tripartite body that strives to maintain harmonious relationship among three parties, mainly the employers, employees as well as government in order to avoid strong trade unions lobbying for improvement in worker's benefits beyond productivity level. The NWC regulates annual wage increments, based on current year's economic growth rate, expected future growth rate, the state of world economy and the rate of inflation so that wage increase **is matched by rise in productivity**.

[EI] The harmonious tripartite relationship among the employers, employees as well as the government stabilises the average wage per worker in Singapore. This prevents a rise in unit cost of production, preventing the short run aggregate supply from falling.

[P] In addition, Supply-side measure such as upskilling & retraining can help to control cost-push inflation in Singapore.

[Ex] As Singapore experiences a continuous tightening of its labour market, it is crucial to ensure workers are more proficient and competent in their jobs, so as to achieve greater labour productivity and in turn lower unit labour cost of production.

[E.g.] This can be done through skills training and upgrading of Singapore labours. For example, Singapore government gives out monetary credits to eligible Singaporeans via the SkillsFuture package to help cover the cost of training courses and allowing workers to better afford training course. New SkillsFuture Enterprise credit scheme will also help firms defray up to 90% of out-of-pocket costs of business transformation, job redesign and training. These not only encourages Singapore workers to take up training courses to improve and learn new skills, but also enable firms to better support their workers in doing so. The result is an increase in the quality of labour

and increases labour productivity such that the same quantity of workers can produce a greater amount of output, thereby reducing unit cost of production.

[EI] In addition, the improvement in quality of labour will result in an increase in productive capacity. This will result in an increase in AS and shift the AS curve shifting outwards from AS_0 to AS_1 as seen in Figure 3, lowering GPL from P_0 to P_1 , **thereby reducing inflationary pressures.**

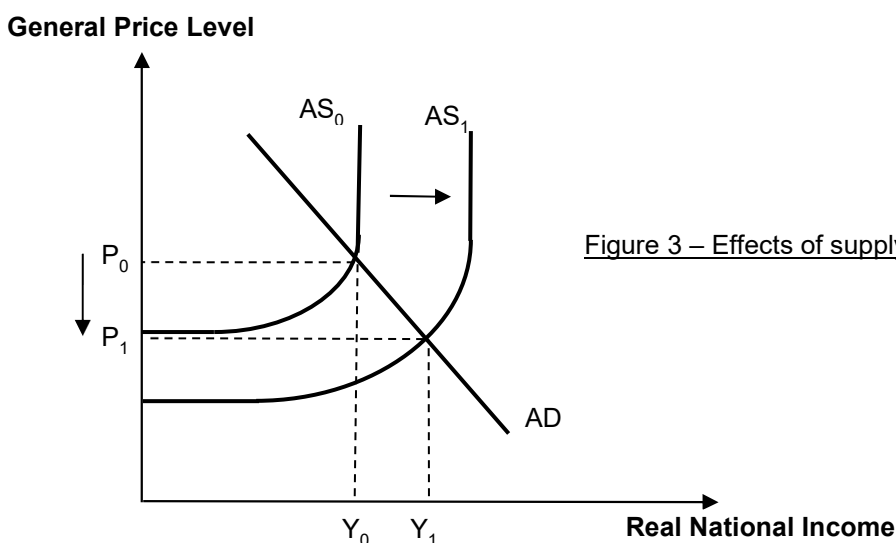


Figure 3 – Effects of supply side policy

Body: Assess the effectiveness of SS-side Policy

[P] However, there is usually great resistance in acquiring new skills.

[EI] Especially among older workers with low education who might either be reluctant to train (attitude problem) or are unable to be trained (ability problem).

Training them will also take some time if their low education attainment makes it difficult for them to pick up new skills.

[EA] When workers are reluctant to train, this will mean that the quality of labour might not increase significantly, hence rendering the supply side policy less effective in reducing the cost of production and increasing the productive capacity. Hence, AS might not increase and inflationary pressure might not decrease.

[EA] Furthermore, supply side policies also experience time lag which will make it less effective in the short run. It takes time for labour to be retrained and to become more productive individuals. **As a result, in the short run, it is unlikely that the quality of labour will increase significantly, thereby limiting the effectiveness of the supply side policy in reducing the cost of production or increasing the productive capacity within the economy.** Consequently, inflationary pressures might not decrease in the short run.

Conclusion:

2023 JC2 Prelim
H2 Economics P2

- The extent to which these policies are effective depends on whether they have been implemented to target the root cause of rising inflation in Singapore, as well as the constraints posed by the nature of Singapore's economy.
- The extent to which exchange rate policy is effective as an instrument in the short term is likely to be large as it targets the main sources of inflation (i.e imported inflation) which Singapore is susceptible to due to Singapore's strong reliance on trade.
- The nature of Singapore's economy having a small domestic market also limits the effectiveness of traditional expenditure reducing measures such as fiscal policy.
- Over the past twenty years or so since the exchange rate framework has been in place, domestic inflation has been relatively low, averaging 1.86% per annum from 2002 to 2022.
- However, in the long run, given the continued tightening of labour market, the supply-side policy such as training and skill-upgrading will be increasingly important in the curbing the cost-push inflation due to such a domestic factor.

6 A country's comparative advantages might change over time and bring about varying macroeconomic implications in its economy.

(a) Explain **two** different reasons why a country's comparative advantage might change over time. [10]

Question Analysis:

Command Word	'Explain' – Give two reasons, establish causal links.
Content / Concept Words	<p>'Two Reasons' – Any two reasons that relates to:</p> <ul style="list-style-type: none"> • Technological developments in certain sectors • Education and improvements in the quality of the workforce • Savings, investment and subsequent accumulation of capital stock • Depletion/Discovery of factor endowment • Change in climatic conditions <p>Changes in opportunity costs</p>
Context	<p>"A country" give any relevant examples.</p> <p>"Change over time" – demonstrate the change from what to what using relevant examples.</p>

Qn Requirement	<p>R1: <u>One factor</u> leading to change in comparative advantage – Candidates are expected to explain with the aid of relevant examples how a change in that factor lead to a country's comparative advantage to change over time using relevant concept such as opportunity cost.</p> <p>R2: <u>Second different factor</u> leading to change in comparative advantage – Candidates are expected to explain with the aid of relevant examples how a change in that factor lead to a country's comparative advantage to change over time using relevant concept such as opportunity cost.</p> <p>To enter L3 candidates should explain how two different factors could cause a country's comparative advantage to change over time using relevant examples and concepts.</p> <p style="text-align: right;">L3 Band [8 - 10] L2 Band [5 - 7]</p>
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Suggested answers:**Introduction:** Define/Clarify key terms; describe broad approach/scope

- The theory of Comparative Advantage (CA) states that trade can benefit all countries if they specialise in (and export) the goods in which they have CA in.
- Economy's CA changes over time due to changes in factor endowments. These changes could come about in the form of technological developments in certain sectors (due to globalisation), improvements in quality of workforce (due to government policies) and discovery of factor endowment which reflects changes in opportunity costs of production.

Body 1: Changes in Factor endowments due to globalisation

- Globalisation is defined as increasing connectedness and integration among countries and it offers countries a path to greater economic development through more intense trade, freer capital flows and increase availability of labour.
- Globalisation brings about movements in factor of production, in particular, labour across countries, as well as transfer of technology which hence leads to changes in factor endowments in a country.
 - For example, globalisation can bring about an influx of relatively cheaper foreign workers to Singapore. With the inflow of foreign workers, wages can be kept low and given that wages are likely to be a large component of the production cost of labour intensive products or services, the opportunity cost of producing labour intensive products or services in Singapore would be lower than her trading partners. This allows Singapore to continue to specialise in the production of labour intensive services, allowing Singapore to gain in CA in the service or labour oriented industry such as tourism.
 - For example, globalisation can bring about an inflow of high-skilled labour (eg PMETs) to Singapore and it will bring about an increase in factor endowment of high skilled labour with higher productivity. Singapore incurs lower opportunity cost relative to its trading partners to produce capital and knowledge-based goods in those sectors. It helped Singapore to gain CA in capital intensive sectors like petrochemical and pharmaceutical industry over time.
- On the other hand, globalisation allows some countries to gain access to new technology instead of relying on outdated technology. Technological advancement will improve efficiency in production of some goods and services. i.e resource-saving inventions can reduce natural resource requirements per unit of real output. This allows the country to produce these goods and services at lower opportunity cost, hence lower unit cost of production, improving the relative productivity in the production. Hence, the countries gain CA in the production of high-tech goods.

- For example, Singapore benefits from globalisation in the form of increase in FDI that is able to bring in new technology (e.g. film and movie animation from LucasFilm). It has trickle-down effect on domestic firms with technology expertise from FDI who set up their operations in SG. Domestic firms gain CA in technology-based and research sectors and SG will gain new CA in technology intensive sectors due to lower cost of productions and lower opportunity cost in the long run
- For example, inflow of technology allow SG to gain technology-know how on intermediate oil refining. When SG imports crude oil and petroleum from oil exporting countries like Middle-Eastern countries, SG has the knowledge to effectively and efficiently proceed with the intermediate oil refining, thus incur lower opportunity cost and gain in CA in the capital-intensive sectors.

Body 2: Changes in Factor endowments due to discovering of new resources/decline in resources

- Factor endowments changes over time due to discovery of new resources or decline in resources.
- For instance, the Greenland Rare Earth Projects, a UK exploration company exploring the rare earth potential of Greenland. Rare earth elements are essential for high-tech technology: i.e. hybrid cars, computers, cell phones, television — anything that uses microchips. Hence the Greenland Rare Earth Projects allow for the production of high-tech products at a lower opportunity cost, gaining CA in the production of these goods.
- Or use another illustration, explain how depletion and exhaustion of natural resources available (reduction in quantity) → increasingly difficult to mine or source for such natural resources → increase in unit COP of producing goods → i.e. need to incur a higher opportunity cost in terms of another good forgone. The opportunity cost may then become higher compared to its competitors, ceteris paribus → erosion and lost its CA over time.

Other reasons acceptable: Changes in Factor endowments due to government policies

- Factor endowments changes over time. For instance, with the emphasis on education by developing countries (e.g. Skillsfuture), this could lead to an abundance of high-skilled labour in these countries, and hence resulting in a gain in CA in the production of high skilled, knowledge intensive goods such as IT products, pharmaceutical products, etc.
- With reference to Figure 1, a change in CA from producing the low skilled labour intensive goods to high skilled intensive goods is illustrated by a lower opportunity costs in producing high skilled labour intensive goods. Hence, PPC shifts from PPC_0 to PPC_1 . (Recall: the slope of the PPC indicates the opportunity cost)

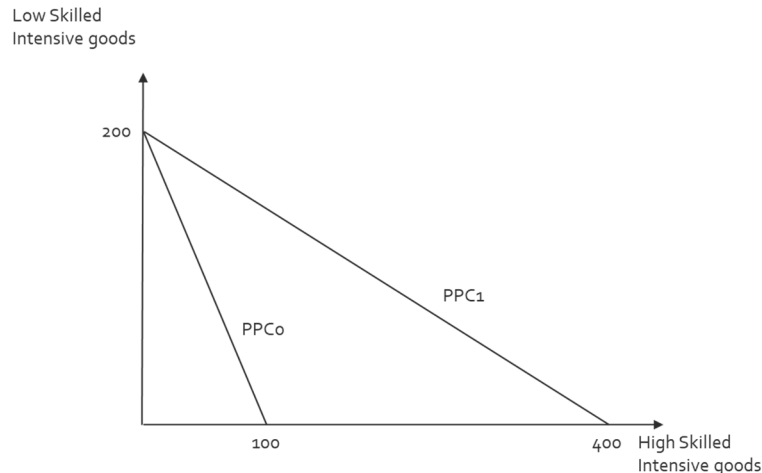


Figure 1: Shift in PPC curve

Conclusion:

In conclusion, an economy's CA changes over time due to changes in factor endowments brought about by globalisation, government policies, discovery of new resources etc. which reflects changes in opportunity costs.

Level of Response Mark Scheme (LORMS)

Question Requirement:

First requirement: Candidate should explain analytically how the **first reason** leads to a change in comparative advantage over time.

Second requirement: Candidate should explain analytically how the **second reason** lead to a change in comparative advantage over time.

Knowledge, Understanding, Application, Analysis

L3	<p>Analysis & Application</p> <p>For an analytical answer that addresses the question thoroughly with clear explanation anchoring on reasons such as Technological developments in certain sectors, education and improvements in the quality of the workforce, savings, investment and subsequent accumulation of capital stock, depletion/Discovery of factor endowment, change in climatic conditions that are well supported by tools of analysis, such as changes in opportunity cost.</p> <p>There is good ability to organise ideas or discriminate between relevant and irrelevant factors. Answer is well-focused on question, e.g. how comparative advantages can change, with the good use of relevant economic concepts, theories or principles.</p>	8-10
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	<p>Knowledge & Understanding For an answer that demonstrates an accurate knowledge and understanding of economic concepts, theories related to question, e.g. opportunity cost.</p> <p>Marks within L3: Note: To enter L3, an explanation with reference both the features and pricing decisions of firms in the two markets is expected.</p> <table border="1"> <thead> <tr> <th>Annotation</th><th>Description</th><th>Mark</th></tr> </thead> <tbody> <tr> <td>A + C</td><td>1 analytical and 1 cursory explanation for 2 question requirements</td><td>8</td></tr> <tr> <td>A + C + K</td><td>1 analytical and 1 cursory explanation for 2 question requirements and an explanation of additional factor that is relevant</td><td>9</td></tr> <tr> <td>A + A</td><td>Analytical explanations for 2 question requirements</td><td>10</td></tr> </tbody> </table>	Annotation	Description	Mark	A + C	1 analytical and 1 cursory explanation for 2 question requirements	8	A + C + K	1 analytical and 1 cursory explanation for 2 question requirements and an explanation of additional factor that is relevant	9	A + A	Analytical explanations for 2 question requirements	10	
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L2	<p>Analysis & Application For an under-developed answer that attempts to address the question and explain reasons that resulted in change in comparative advantage. Answers may be descriptive, lack an analytical approach (e.g. not supported with tools of analysis, incomplete use of diagram) or is incompletely explained with gaps in analysis, e.g. missing links in how the relevant factors resulted in a change in opportunity cost.</p> <p>[Or For a one-sided analytical answer that address only one of the two question requirements, i.e. explanation for only 1 reason that resulted in change in comparative advantage]</p> <p>For an answer that is supported with some application to the context of the question. There is limited ability to organise ideas or discriminate between relevant and irrelevant materials. Answer has some relevance to the question context but is generic (e.g. pre-learnt answer that is not focused on addressing the question specifically) or addresses only selected parts of the question (e.g. some relevant factors without demonstrating how comparative advantage changes)</p> <p>Knowledge & Understanding For an answer that demonstrates largely accurate knowledge and understanding of economic concepts, theories related to question, e.g. opportunity cost (i.e. no major conceptual errors)</p>	5-7												

	Marks within L2: <table><tr><th>Annotation</th><th>Description</th><th>Mark</th></tr><tr><td>K + C</td><td>1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements</td><td>5</td></tr><tr><td>K + C + K</td><td>1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements and an explanation of additional factor that is relevant</td><td>6</td></tr><tr><td>A + 0</td><td>1 analytical explanation for 1 question requirement</td><td>6</td></tr><tr><td>C + C</td><td>Cursory explanations for 2 question requirements</td><td>6</td></tr><tr><td>C + C + K</td><td>Cursory explanations for 2 question requirements and an explanation of additional factor that is relevant</td><td>7</td></tr><tr><td>A + K</td><td>1 analytical explanation for 1 question requirement and an explanation of additional factor that is relevant</td><td>7</td></tr></table>	Annotation	Description	Mark	K + C	1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements	5	K + C + K	1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements and an explanation of additional factor that is relevant	6	A + 0	1 analytical explanation for 1 question requirement	6	C + C	Cursory explanations for 2 question requirements	6	C + C + K	Cursory explanations for 2 question requirements and an explanation of additional factor that is relevant	7	A + K	1 analytical explanation for 1 question requirement and an explanation of additional factor that is relevant	7	
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L1	<p>Knowledge & Understanding</p> <p>For an answer that shows limited knowledge and understanding of relevant economic concepts and theories (e.g. basic description or definitions). Few valid points made which are scant and inadequately explained. Answers are mostly irrelevant and inaccurate. Answer demonstrates that the meaning of question is not properly grasped or may contain basic errors of theory.</p> <p>Marks within L1:</p> <p>Note:</p> <p>K=1 - For basic and unexplained knowledge, e.g. an unexplained statement or definition of a concept that showed some correct knowledge but no understanding</p> <p>K=2 - For some additional explanation that shows an understanding of the concept that is not applied to the context of question but show limited knowledge and understanding</p> <table><tr><th>Annotation</th><th>Description</th><th>Mark</th></tr><tr><td>0</td><td>Nothing of relevance in the answer</td><td>0</td></tr><tr><td>K + 0</td><td>Knowledge of one question requirement</td><td>1</td></tr></table>	Annotation	Description	Mark	0	Nothing of relevance in the answer	0	K + 0	Knowledge of one question requirement	1	0-4												
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	K + K	Knowledge and understanding of 1 question requirement and knowledge of the second requirement	3	
	K + K	Knowledge and understanding of 2 question requirements	4	
	C + 0	One cursory explanation for 1 question requirement	4	

Marker's comments

Except for a handful of candidates, most were able to provide two reasons as required. However, majority of the answers were descriptive, supported with the use of examples but lacking in economic analysis. There was little attempt to explain how the factors can cause the opportunity cost, and therefore the comparative advantage of a country to change over time. The effect on comparative advantage were merely stated in some cases rather than explained. Some common mistakes

- (b) Discuss whether a gain in a country's comparative advantage would always lead to positive impacts on its economy. [15]

Question Analysis:

Command Word	'Discuss (whether)' – Balanced approach to <u>assess effectiveness</u> of policies + <u>evaluative comments</u> & <u>summative conclusion</u> of the whether it will "always" lead to positive impacts on its economy.
Content / Concept Words	<p>'Gain in comparative advantage' brings about positive impacts–</p> <ul style="list-style-type: none"> (1) Balance of Trade: Export revenue increases (2) Employment level increases due to greater production (3) Economic growth (Actual and potential) <p>'Gain in comparative advantage' brings about negative impacts–</p> <ul style="list-style-type: none"> (1) Balance of Trade: Export revenue increases, greater surplus at the expense of other countries, leads to retaliation/protectionism from other countries (2) Employment: Structural unemployment due to rapidly declining of sunset industries (3) Economic growth-non inclusive or unsustainable (4) Price instability due to over heated economy leading to demand pull inflation.
Context	Singapore; Supported by pre-amble.

Qn Requirement	<p>The answer will, to a large extent, depend on candidates' understanding of the how a gain in comparative advantage may bring about positive outcomes to an economy in terms of improvement in macroeconomic goals and bring about negative impacts it will bring upon on its economy should also be recognised by candidates in the discussion. Evaluative judgements on overall the likely outcome whether is it a positive or negative impact and the magnitude of the positive or negative impact should be made based on their discussion.</p> <p>R1: Explain the possible positive impacts gain in CA would bring about to an economy – anchor on economic performance and bring in relevant examples to illustrate with the use of economic concepts such as AD-AS framework.</p> <p>R2: Explain the possible negative impacts gain in CA would bring about to an economy – anchor on economic performance and bring in relevant examples to illustrate with the use of economic concepts such as AD-AS framework.</p> <p>To enter L3, application to an economy should be clearly made and should include a discussion of balanced viewpoint.</p> <p style="text-align: right;">L3 Band [8 - 10]</p>
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	<p>L2 Band [5 - 7] L1 Band [1 - 4]</p> <p>Evaluation Marks: Well argued evaluative judgements about whether an economy always enjoy the positive impacts that result from a gain in CA.</p> <p>E3 Band [5] E2 Band [3 - 4] E1 Band [1 - 2]</p>
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Suggested Answers:

Introduction: Define/Clarify key terms; describe broad approach/scope

Gain in comparative advantage could have both positive and negative impacts on the economy. Impacts can be analysed in respect to the various economic outcomes such as balance of trade, economic growth, employment level and price stability.

Requirement 1: Thesis- Gain in CA could have positive impact on the economy.

With the emphasis on education by developing countries such as Skills Future in Singapore, this could lead to an abundance of high-skilled labour in these countries, and hence resulting in a gain in CA in the production of high skilled, knowledge intensive goods such as IT products, pharmaceutical products, etc. This could translate to improved price competitiveness of Singapore's exports of high skilled, knowledge intensive goods

Given a rise in $(X-M)$, a component of AD, AD rises and shifts right. There will be a multiplied rise in real national income. This translates to higher national output. Firms will need to produce more goods and services to meet the higher demand. In so doing, firms will hire **more workers** (a derived demand), leading to a rise in incomes (since one man's spending is another's income). These workers will then consume more (also save more, get taxed more and spend more on imports, depending on size of MPS, MPT and MPM), leading to a further rise in incomes and hence creation of more jobs. Real national income will rise through multiple rounds until $AD = AS$ again, where there is no tendency for any change to happen. Increase in RNY is greater than the initial increase in net exports. Hence this change in CA could have led to **actual economic growth**. Furthermore, a rise in $(X-M)$ could also lead to **improve balance of trade** → Improve CA → improve export revenue thus BOT position improves.

Magnitude of positive impact depends on the readiness of the workforce and whether the export of this sector contributes significantly to the BOT.

Requirement 2: Anti-thesis- Gain in CA could have negative impacts on its economy.

Through globalisation, countries could have gain access to new technology instead of relying on outdated technology. Technological advancement will improve efficiency in production of some goods and services.

For example, as China economy develops, it has gained technological advancement and develops highly skilled labour, hence increasingly dispossess other advanced countries, including USA of their CA in higher value-added goods and services.

Consequently, countries such as USA that has lost CA in higher value-added goods and services (Sunset industry) will find exports of these goods and services to be less competitive and they might resort to protectionism measures such as tariffs or quotas to be imposed on such goods when their export revenue is greatly reduced with high import expenditure worsening their own BOT. If they are major trading partners, this might result in fall in AD → Impact on **actual economic growth through reverse multiplier effect.**

Technological advancement will improve efficiency in production of some goods and services thus helped the economy to gain CA in production of goods using capital goods such as robots. However, technological change such as automation could result in changes in the pattern of supply. If workers are occupationally immobile and are not equipped with the relevant skills demanded by the employers, there will be skills mismatch, resulting in **structural unemployment.**

Through a gain in comparative advantage due to discovery of new rare earth metals in China, can lead to environmental damage in their own country during the production of such goods. Thus, it can lead to negative externalities during the production process which is ignored by both producers and consumers and furthermore the depletion of such rare earth metals can lead to **unsustainable economic growth** for China.

Magnitude of the negative impact depends on trading partners and the level of inter-relatedness with trading partners and size of BOT deficit.

Conclusion: Arrive at judgement with reasons and valid explanations.

Whether a gain in CA has an overall positive or negative impact on its economy depends on:

- (a) Whether governments introduced policies to reduce the skills mismatch (Skills Future) to mitigate the negative impact.
- (b) The future trends- whether did the country's gain comparative advantage in sectors which have growing relevance in the future.

Level of Response Mark Scheme (LORMS)

Question Requirement

First requirement: Candidates should explain how a gain comparative advantage will lead to positive impact on the economy. Answer should explain the positive impact of the gain in CA on the economy in terms of macroeconomic goals.

Second requirement: Candidates should explain how a gain comparative advantage will lead to positive impact on the economy. Answer should explain the positive impact of the gain in CA on the economy in terms of macroeconomic goals.

To enter L3 candidates should discuss positive and negative impact on the economy.

Evaluation marks:

Well-argued evaluative judgements about whether an economy is more likely to have positive or negative impact with a summative conclusion.

Knowledge, Understanding, Application, Analysis

L3	<p>Analysis & Application</p> <p>For an analytical answer that addresses the question thoroughly with clear explanation well supported by tools of analysis, such as AD and AS and diagram.</p> <p>There is good ability to organise ideas or discriminate between relevant and irrelevant factors. Answer is well-focused on question with the good use of relevant economic concepts, theories or principles, e.g. impact on economy.</p> <p>Knowledge & Understanding</p> <p>For an answer that demonstrates an accurate knowledge and understanding of economic concepts, theories related to question, e.g. analysis and diagram</p> <p>Marks within L3:</p> <p>To enter L3 candidates should discuss both positive and negative impact.</p> <table border="1"> <thead> <tr> <th>Annotation</th><th>Description</th><th>Mark</th></tr> </thead> <tbody> <tr> <td>A + C</td><td>1 analytical and 1 cursory explanation for 2 question requirements</td><td>8</td></tr> <tr> <td>A + C + K</td><td>1 analytical and 1 cursory explanation for 2 question requirements and an explanation of additional factor that is relevant</td><td>9</td></tr> </tbody> </table>	Annotation	Description	Mark	A + C	1 analytical and 1 cursory explanation for 2 question requirements	8	A + C + K	1 analytical and 1 cursory explanation for 2 question requirements and an explanation of additional factor that is relevant	9	8-10
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L2	<p>Analysis & Application For an under-developed answer that attempts to address the question and explain positive and negative impact on economy. Answers may be descriptive, lack an analytical approach (e.g. not supported with tools of analysis, incomplete use of graph) or is incompletely explained with gaps in analysis, e.g. missing links in the impact of the on economy.</p> <p>[Or For a one-sided analytical answer that address only one of the two question requirements, i.e. explanation for either positive or negative impact only.</p> <p>For an answer that is supported with some application to the context of the question. There is limited ability to organise ideas or discriminate between relevant and irrelevant materials. Answer has some relevance to the question context but is generic (e.g. pre-learnt answer that is not focused on addressing the question specifically) or addresses only selected parts of the question (e.g. limited reference to the impact on economy).</p> <p>Knowledge & Understanding For an answer that demonstrates largely accurate knowledge and understanding of economic concepts, theories related to question, e.g. AD-AS analysis and diagram (i.e. no major conceptual errors)</p> <p>s within L2:</p> <table><tr><th>Annotation</th><th>Description</th><th>Mark</th></tr><tr><td>K + C</td><td>1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements</td><td>5</td></tr><tr><td>K + C + K</td><td>1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements and an explanation of additional factor that is relevant</td><td>6</td></tr><tr><td>A + 0</td><td>1 analytical explanation for 1 question requirement</td><td>6</td></tr><tr><td>C + C</td><td>Cursory explanations for 2 question requirements</td><td>6</td></tr></table>	Annotation	Description	Mark	K + C	1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements	5	K + C + K	1 cursory explanation and 1 basic, unexplained statement or definition for 2 question requirements and an explanation of additional factor that is relevant	6	A + 0	1 analytical explanation for 1 question requirement	6	C + C	Cursory explanations for 2 question requirements	6	5-7
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L1	<p>Knowledge & Understanding</p> <p>For an answer that shows limited knowledge and understanding of relevant economic concepts and theories (e.g. basic description or definitions). Few valid points made which are scant and inadequately explained. Answers are mostly irrelevant and inaccurate. Answer demonstrates that the meaning of question is not properly grasped or may contain basic errors of theory.</p> <p>s within L1:</p> <p>K=1 - For basic and unexplained knowledge, e.g. an unexplained statement or definition of a concept that showed some correct knowledge but no understanding For some additional explanation that shows an understanding of the concept that is not applied to the context of question but show limited knowledge and understanding</p> <table><tr><th>Annotation</th><th>Description</th><th>Mark</th></tr><tr><td>0</td><td>Nothing of relevance in the answer</td><td>0</td></tr><tr><td>K + 0</td><td>Knowledge of one question requirement</td><td>1</td></tr><tr><td>K + 0</td><td>Knowledge and understanding of 1 question requirement</td><td>2</td></tr><tr><td>K + K</td><td>Knowledge of 2 question requirements</td><td>2</td></tr><tr><td>K + K</td><td>Knowledge and understanding of 1 question requirement and knowledge of the second requirement</td><td>3</td></tr><tr><td>K + K</td><td>Knowledge and understanding of 2 question requirements</td><td>4</td></tr><tr><td>C + 0</td><td>One cursory explanation for 1 question requirement</td><td>4</td></tr></table>	Annotation	Description	Mark	0	Nothing of relevance in the answer	0	K + 0	Knowledge of one question requirement	1	K + 0	Knowledge and understanding of 1 question requirement	2	K + K	Knowledge of 2 question requirements	2	K + K	Knowledge and understanding of 1 question requirement and knowledge of the second requirement	3	K + K	Knowledge and understanding of 2 question requirements	4	C + 0	One cursory explanation for 1 question requirement	4	0-4
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Evaluation detailed marking guide

Note:

A **well-explained evaluative judgement** should be supported by arguments presented in the answer and is linked to the context of the question.

An evaluative statement is a judgement that is not supported by arguments presented in the answer or not linked to the context of the question, e.g. pre-learnt evaluative statement.

Level		Mark
E3	Well-explained evaluative judgements about 2 requirements PLUS a summative conclusion	5
E2	Well-explained evaluative judgements about 2 requirements	4
E2	A well-explained evaluative judgement about 1 requirement + an evaluative statement for the second requirement PLUS a summative conclusion	4
E2	A well-explained evaluative judgement about 1 requirement + an evaluative statement for the second requirement	3
E1	A well-explained evaluative judgement about 1 requirement OR evaluative statements for 2 requirements	2
E1	An evaluative statement for 1 requirement	1
E0	No attempt at Evaluation	0