2024 CATHOLIC JUNIOR COLLEGE
H2 Prelims 9570/02

Question 1

1. Several major firms dominate the electric vehicle market, including Tesla, Build Your Dreams, Nio, and General Motors. Tesla financial success and continuous innovation make it challenging for new entrants to compete effectively.

(a) Explain how economic theory suggests firms would set prices to maximise profits and why electric vehicle firms may charge different prices for the same good in different markets.
[10]

(b) Discuss whether an electric vehicle firm's profit level is always due to the presence of high barriers to entry.
[15]

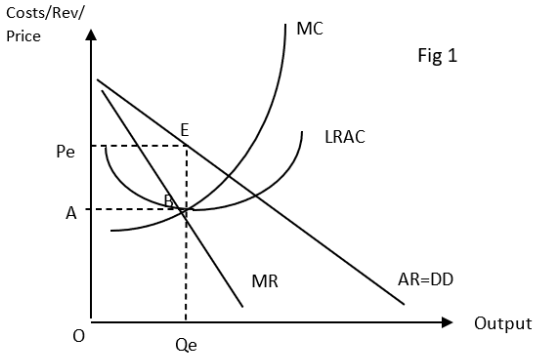
Part a

Question Interpretation

Command	"Explain how…" – to elaborate in detail "Explain why…" – to elaborate on the reasons
Content	Firms determine profit-maximizing output at MC=MR and set its price Reasons for price discrimination ● To raise total profit through capturing higher TR in different markets ● To gain market share in a new market
Context	EV market for R2
Approach	Introduction Body R1: A firm determine prices by setting the price based on its demand curve at profit-maximising output, where MC= MR. R2: EV firms adopt price discrimination in order to increase profits, by increasing revenue. Conclusion

Suggested Answer

Part	Description	Remarks
Introduction	Firms are assumed to profit maximizing where MC=MR using the marginalist approach and this essay will also	Provide an overview statement.

	explain why firms in the electric vehicle market price discriminate.	
Body- R1	Producers of electric vehicles operate in a competitive oligopolistic market structure. Given that they possess a significant portion of the market share, they are price setters and have the ability to set prices where their demand is large and relatively price inelastic. Hence, assuming they are maximizing profits, the firm will set price at profit-maximizing output where MC = MR, using the marginalist principle. To maximize profit, the firm will produce the output at which MR = MC where MC cuts the MR curve from below. This will result in equilibrium price Pe and quantity Qe as shown in the diagram below. Thus this will reap maximum profit PeABE for the firm.  At output levels below Qe, MR exceeds MC and thus the firm should increase output as the extra unit adds more to total revenue than to total cost, contributing to higher profits. At output levels above Qe, MC exceeds MR. Since the last unit adds more to total cost than to total revenue, the firm should reduce output levels to increase profits. Hence, using the marginalist principle, the firm should produce at OQe where MC=MR and MC cuts MR from below to enjoy profit maximisation. At this profit-maximising profit Qe, the firm will set the highest price that consumers are willing and able to pay based on the firm's demand curve, that is Pe in this case. As a result, the firm is also earning supernormal profits of APeEB.	-
Body- R2	Price discrimination occurs when a producer sells the same commodity to different buyers at different prices, for reasons not associated with differences in cost. Firms choose to adopt price discrimination in order to (i) raise total profit through capturing higher revenue given the same output or (ii) to expand markets.	

	To practice price discrimination, firms need to have market power to set price, able to segment the market and to prevent resale of goods from low-priced market to higher-price market. It is common that firms may set different prices at different markets in order to raise their total revenue. For instance, an EV firm may set a higher price for its products in **developed countries**. As consumers in developed countries enjoy higher income, the price of an EV takes up a smaller proportion of income and hence demand is relatively price-inelastic. A higher price is set as any increase in price will bring about a less than proportionate fall in quantity demanded, resulting in an increase in total revenue generated from developed countries. In contrast, EV that are sold in **developing countries** are set at a lower price. This is because the price of an EV takes up a higher proportion of income and hence demand tends to be price-elastic. Any fall in price will bring about a more than proportionate increase in quantity demanded, resulting in an increase in total revenue generated from developing countries. Holding the total cost of production constant, the increase in total revenue will lead to an increase in total profits. **OR** Firms can also practice price discrimination across markets in different countries, allowing it to establish itself in new foreign markets where competition may be stiff. In some cases, a firm may be the dominant firm in one country (e.g. the domestic market) and can charge a high price due to the price-inelastic demand it faces in this market, making supernormal profits. However, in the overseas markets, the firm will set a lower price as there are many substitutes available. The lower price set is to allow the firm to gain a foothold in the overseas market and increase its presence in terms of market share.	
Conclusion	Hence firms maximizing profits where MR=MC and choose to price discriminate to capture more profits.	

Mark Scheme

Knowledge, Understanding, Interpretation, Application and Analysis			
Level	**Analysis Level**	**Descriptors**	**Marks**
L3	A+A A+C+K A+C	Response addresses the question fully and contains excellent analytical explanations of profit-maximising output and price set by firms and reasons for price	8-10

		discrimination using relevant economic concepts, theories and principles in a precise, logical and reasoned manner. Response also contains appropriate examples to show application to current situations.	
L2	A+K C+C+K C+C A+0 C+K+K	Response may contain cursory explanations of profit-maximising output and price set by firms and reasons for price discrimination with ability to identify facts, some ability at diagrams but theory may be incompletely explained. Response may not fully address question requirements. Examples used may be inappropriate or there may be no examples used.	5-7
L1	C+0 K+K	Response shows some knowledge but does not indicate that the meaning of the question has been properly grasped, thus, answer may be mostly irrelevant. There may be some basic errors in theory and may contain a few valid points made incidentally.	1-4

Part b

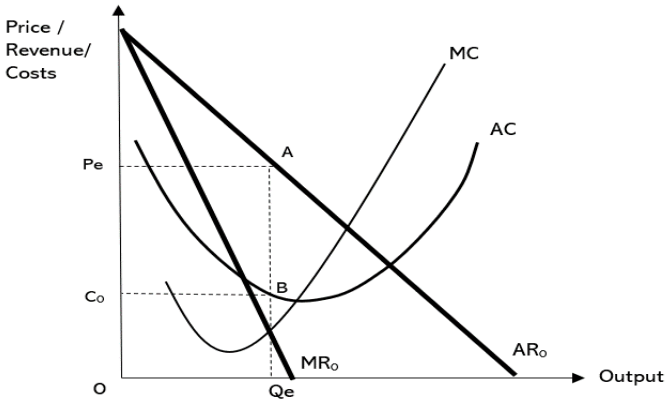
(b) Discuss whether an electric vehicle firm's profit level is always due to the presence of high barriers to entry. [15]

Question Interpretation

Command	Discuss – 2 perspectives
Content	Total profit = Total revenue – Total cost Factors affecting the level of profit earned by an EV firm
Context	Electric vehicle firm
Approach	**Requirement 1**: The high level of profits earned by an EV firm is due to the high barriers to entry to the industry EV of R1: High barriers to entry does not necessarily result in high profits among EV firms due to reasons such as: 1. Firm may seek alternative objectives such as market share 2. Firm experience internal diseconomies of scale **Requirement 2**: The high level of profits earned by an EV firm is due to the **competitive strategies** undertaken by the firm in either raising its revenue or reducing its unit cost of production EV of R2: The extent to which competitive strategies are successful in raising the firms' profits depends. **Alternative Requirement 2**: The high level of profits earned by an EV firm is due to **favourable demand factors** such as rising income or change in taste and preference of consumers EV of alternative R2: The extent to which demand factors influencing a firm's profits varies among firms. **Requirement 3** (optional): The high level of profits earned by an EV firm is due to government policy in promoting the use of EV in many countries

Suggested Answer

	Part	Description	Remarks
	Introduction	A firm's total profit is measured by the difference between total revenue and total cost. As indicated in the preamble, electric vehicle firms such as Tesla can enjoy significant supernormal profits. While the level of profits can be explained by the high barriers to entry into the industry, there are other factors contributing to the supernormal profits such as the successful competitive strategies adopted by firms, favourable demand factors as well as	Definition Overview/ Approach

		government policies in promoting the use of EV. The following essay explains the factors and evaluate their significance in contributing to supernormal profits.	
	Body - R1 High level of profits is due to high BTE	The significant level of supernormal profits enjoyed by an EV firm is due to high barriers to entry. There are natural barriers to entry in EV industry such as high start-up costs and substantial internal economies of scale. Poduction of EV requires a car assembly plant and hence the start-up cost is high. By expanding its scale of production, an EV firm can reap substantial internal economies of scale, lowering its unit cost. This can arise from technical economies of scale with the high cost of car assembly plant being spread over a large range of output, or marketing economies of scale as the incumbent firm can purchase inputs such as car tyres or leather in bulk and enjoy a better discount. Such substantial economies of scale allow incumbent firms enjoy cost advantage as unit cost much lower than an new entrant that produces at a relatively low level of output will incur a much higher cost. As a result of high barriers to entry, it is likely that the industry will have fewer firms or dominated by few large firms with each of them having a significant share of the market. In addition, as there are fewer substitutes available, incumbent firms such as Tesla and BYD will have a demand curve which is also price-inelastic. This gives rise to a high price-setting ability of firm, allowing the firm to increase price without significantly affecting its quantity demanded.  Figure 3 As explained in part (a), firm will produce at output Qe where MR=MC and set the price at Pe based on its demand curve. As EV firms have price-setting ability, they are able to restrict output and raise price. An EV firm can earn supernormal profit. Given the high barriers to entry, the EV firms are able to sustain the supernormal profits in the long run as new entrants will find it difficult to overcome the barriers.	

	In contrast, for industries where barriers to entry are low, firms will only earn normal profit in the long run. This is because any supernormal profits earned by incumbent firms will attract new firms to enter. As new firms enter, the incumbent firm will face a lower demand and its demand also becomes more price-elastic. In the long run, the entry of new firms in the industry will erode away the supernormal profits and firms will only earn normal profit in the long run.	
Body – Ev of R1	Despite having high barriers to entry in the electric vehicles industry, the supernormal profits earned by an EV firm may not be significant if it pursues other objectives. For instance, an EV firm may **forgo making a significant supernormal profit and instead choose to set a lower price in order to increase its output level beyond the profit-maximizing output. In this case, the firm seeks to achieve a higher market share as a short-term objective**. In a bid to become the market leader, the incumbent firm such as Tesla or BYD may adopt limit pricing to prevent the entry of new firms or even predatory pricing to drive out new entrants. Once it is able to capture a sizeable market share, it will adjust back to profit-maximization condition and earn significant supernormal profits in the long run. **OR** Despite the high barriers to entry allowing the firm to face less competition, an EV firm may enjoy lower level of profits if it experiences **internal diseconomies of scale**, giving rise to a higher unit cost of production. Diseconomies of scale may occur due to complexity in communication and management, slowing down communications. In this case, despite having a high barriers to entry, firms profit is not substantial due to higher unit cost arising from internal diseconomies of scale.	
Body – R2 High level of profits is due to competitive strategies adopted by an EV firm	The significant level of supernormal profits enjoyed by an EV firm is due to its successful competitive strategies. This consists of strategies that raise a firm's demand and hence its total revenue. Alternatively, an EV firm can adopt strategies that reduce the unit cost of production, contributing to higher level of profit. Student can explain how TR is increased through ● Product innovation/ development ● Marketing and advertising Some examples of **<u>product innovation</u>** are - development of battery to improve efficiency and safety - autonomous driving system for safety	

- development of ultra-fast charging and wireless charging

Innovation by an EV firm results in a new and unique feature, making it more appealing to consumers in terms of quality such as safety standard. This will lead to a rise in the firm's demand as shown by a rightward shift of the AR curve from AR 1 to AR 2. Also, with new feature that is unique, the EV become less substitutable and firm's demand will become more price-inelastic. Ceteris paribus, the EV firm will enjoy an increase in price and output to P2 and Q2 respectively. Total profit increases from P1ABC to P2DEF.

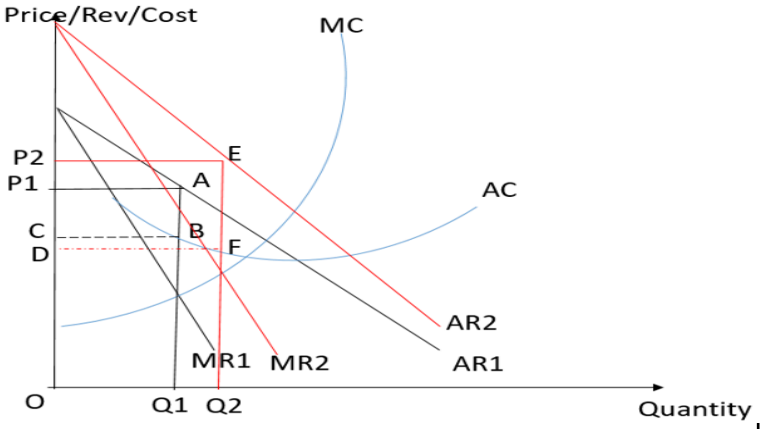
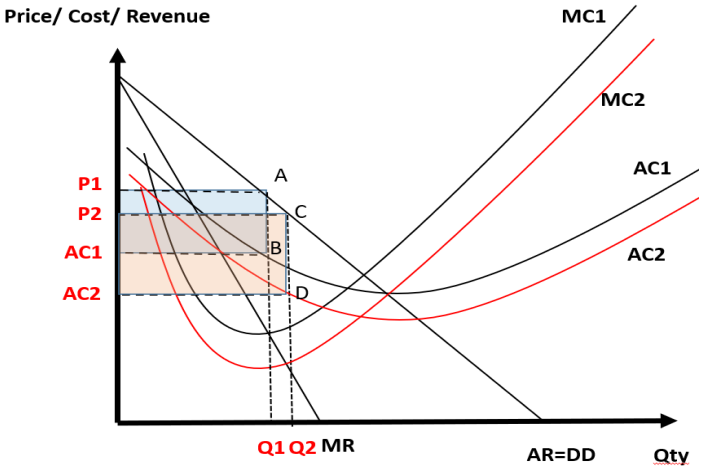


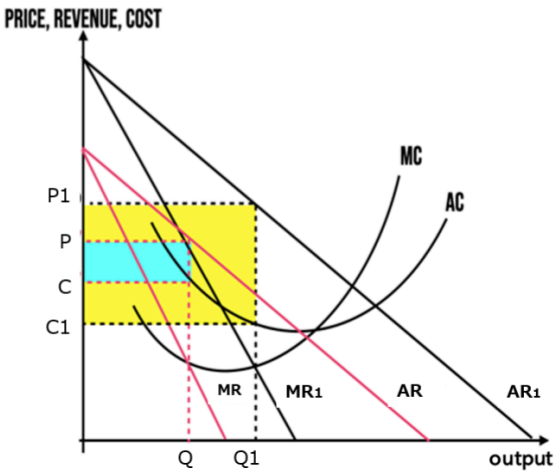
Figure 4: Effect of product innovation

Alternatively, students can explain how advertising and marketing campaign can increase total revenue. By adopting persuasive advertising, an EV firm can have a greater outreach to consumers, leading to an increase in firm's demand. In addition, advertising can develop the brand loyalty among consumers, leading to a more-inelastic demand.

OR

The high level of profit earned by an EV firm is made possible due to process innovation resulting in a reduction in the unit cost of production. For example, the use of robots in car assembly plants improves efficiency in production as the advanced machines excel in repetitive tasks such as component installation. As such, both AC and MC of production fall.

	 Figure 5: Process Innovation With reference to Figure 5, process innovation or use of technology would result in a fall in AC and MC from AC1and MC 1 to AC2 and MC2 respectively. The firm enjoys an increase in the level of profits from P1AC1BA to P2AC2DC. As such, the high level of profit is made possible through the use of technology and process innovation.	
Body – EV of R2	However, whether firm's competitive strategies result in high level of supernormal profits is not certain. The extent to which product differentiation can increase firm's demand, resulting in high level of supernormal profits depends on whether the new feature appeal to consumers' preference. In addition, R&D are costly. In the short run, if the cost of product innovation exceeds the increase in revenue generated from innovation, overall profits may not increase. Also, given the mutual interdependence among oligopolistic firms, any actions by an EV firm such as new design or persuasive advertising will trigger other firms to follow suit. The effect of such strategy on firm's profit will be largely offset by the reactions of rival firms.	
Body – Alternative R2 High level of profits is due to favourable demand factors	The high profit level earned by an electric vehicle firm can be due to favourable demand factors such as rising income and change in taste and preference of consumers towards EV.	

	 Figure 2 In many economies, post-pandemic economic recovery results in rising income among households. Electric vehicles are generally perceived by consumers as normal goods with positive income elasticity of demand. For high-end electric vehicles which are considered luxury goods, income elasticity of demand is positive and greater than one. As such, a rise in household's income will bring about a more than proportionate increase in demand for luxury electric vehicles, shifting firm's demand to the right from AR to AR1, as shown in Figure 2 above. An EV firm initially produces at where MR=MC at Q to maximise its total profit. With a rise in firm's demand, the profit-maximizing output increased from Q to Q1 and the price is also increased to P1. At the same time, the cost of production at Q1 is lower than before. Profit per unit is increased from PC to P1C1. This, together with a higher output, total profit is increased. Other possible demand factors are: - change in taste and preference. For consumers who are more environmentally conscious and develop a preference for EV over petrol-driven cars, demand for a EV firm will increase.	
Body – EV of alternative R2	However, the extent to which the demand for an EV firm increases in response to rising income and change in preference varies. If an EV firm is considered by consumers as luxury goods due to its distinctive performance and features, demand for such luxury EV is income-elastic. The higher the YED, the greater the increase in firm's profit in response to rising income.	

Body- R3 (Knowledge) High level of profits is due to govt policies	The high profit earned by an EV firm could also be due to government policies in promoting EV to reduce pollution arising from petrol cars. Policies such as subsidy on EV cars will reduce the unit cost of production, leading to lower MC and AC curves. Holding firm's demand constant, it will give rise to a higher output and the resultant profit will also be higher than before.	
Conclusion Criterion: Nature of the industry significant EOS	**Stand & substantiation** Among the factors discussed above, it can be concluded that the supernormal profit earned by an EV firm is NOT always due to the high barriers to entry, though it is an important factor. Given the nature of EV production, substantial EOS will act as natural barriers, effectively discouraging new firms from entering. As such, barriers to entry do play a pivotal role in allowing an EV firm to sustain supernormal profits in the long run. **Something special** However, there are other demand factors contributing to the high level of profits earned by EV firms. Having said that, it should be noted that the level of profits enjoyed by firms in the EV industry varies. Ultimately, it depends on the ability of a firm to raise its demand through product development and marketing as well as its ability to reduce the unit cost of production through technological advancement and process innovation.	

Mark Scheme

Knowledge, Understanding, Interpretation, Application and Analysis			
Level	**Analysis Level**	**Descriptors**	**Marks**
L3	A+A A+C+K A+C	Response addresses the question fully and contains excellent analytical explanations of (R1) high BTE leads to high profits earned by an EV firm and (R2) demand factors lead to high profits earned by an EV firm, using relevant economic concepts, theories and principles in a precise, logical and reasoned manner. Response also contains appropriate examples to show application to current situations.	8-10
L2	A+K C+C+K C+C A+0 C+K+K	Response may contain cursory explanations of (R1) high BTE leads to high profits earned by an EV firm and (R2) demand factors lead to high profits earned by an EV firm, with ability to identify facts, some ability at diagrams but theory may be incompletely explained. Response may not fully address question requirements. Examples used may be inappropriate or there may be no examples used.	5-7

L1	C+0 K+K	Response shows some knowledge but does not indicate that the meaning of the question has been properly grasped, thus, answer may be mostly irrelevant. There may be some basic errors in theory and may contain a few valid points made incidentally.	1-4

Evaluation

Level	Descriptors	Marks
E3	Response contains well-explained evaluative judgments for **<u>two</u>** requirements and a well-justified summative conclusion	5
E2	Response contains a well-explained evaluative judgment for at least 1 requirement, the other requirement may not be well evaluated. Response may not have a summative conclusion.	3-4
E1	Response contains evaluative judgments that is unexplained or not supported by the arguments presented in the answer. Judgment may not be linked to the context of the question. OR A well-explained evaluative judgment linked to one requirement.	1-2

Question 2

2. High electricity prices in the United States have encouraged some households to switch to solar energy. With advanced production capabilities, the sales volume of residential-use solar panels soared. To meet its target of solar energy transition, the government is considering providing direct subsidies through cash grants to households.

Source: Energy.gov 2023

(a) Explain the reasons for the observed change in sales volume of residential-use solar panels. [10]

(b) Discuss the factors the government of United States should consider when deciding if direct subsidies should be used to meet its solar energy transition target.

[15]

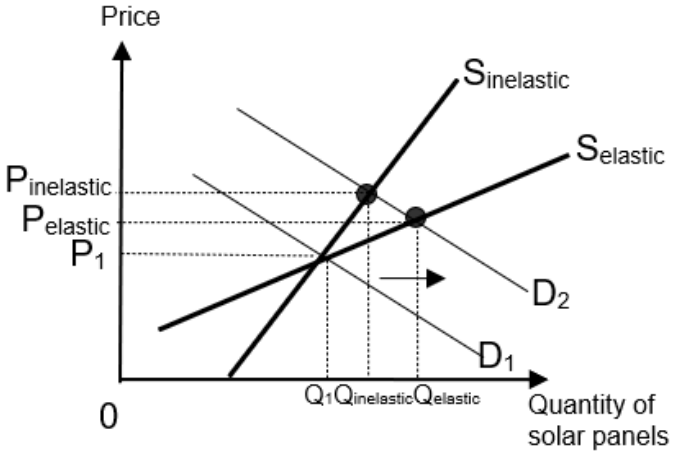
Part a

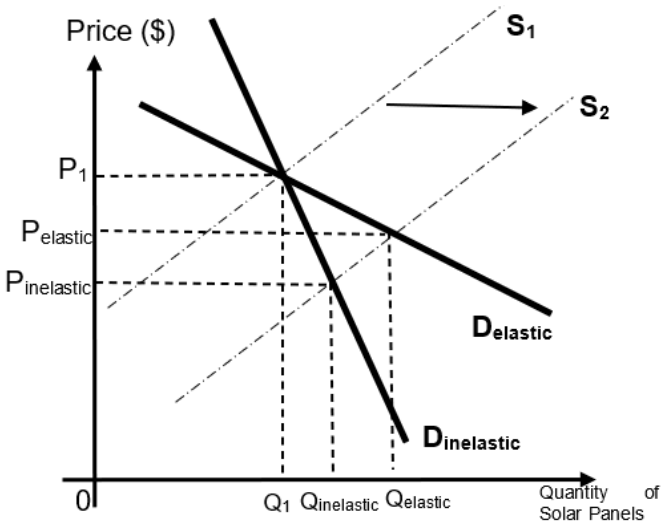
Question Interpretation

Command	Explain - making clear of causal links, supported by economic analysis
Content	Economic analysis: Demand and supply framework, with application of relevant elasticity concepts to explain the change in equilibrium quantity (sales volume)
Context	Residential-use solar panels market in the United States
Approach	R1: Increase in demand for solar panels due to high price of substitute (electricity prices, XED>0) + PES being more elastic (technological advancement shorten production time) a sharp increase in equilibrium quantity, ceteris paribus. R2: Increase in supply due to reduced unit cost of production from technological advancement + PED being elastic (high cost of solar adoption as a proportion of income) a sharp increase in equilibrium quantity, ceteris paribus.

Suggested Answer

Part	Description	Remarks
Introduction	Sales volume of residential-use solar panels is also known as equilibrium quantity. It is determined by market forces such as the interactions between demand and supply factors. The equilibrium quantity of residential-use solar panels soared (increased significantly) due to the rise in demand and supply and the elastic nature of both PED and PES.	
Body- R1	**Increase in demand + PES being elastic (PES>1)**	

	As mentioned in the preamble, the high price of electricity has encouraged households to switch to solar energy as an alternative energy source since they are substitutes in consumption (XED>0). The **cross-elasticity of demand for solar energy with electricity is positive**, which shows that they are substitutes both serves as energy sources that can satisfy the same wants of households in the use of electrical appliances without significant differences. Hence, **when prices of electricity increase, it will lead to more households switching over to solar energy, it will lead to an increase in demand for residential-use solar panels**, leading to rightward shift of demand from D1 to D2 in Figure 1 and thus sales volume of solar panels will increase, ceteris paribus.  Figure 1: Rise in Demand The **supply of solar panels is also relatively price elastic** due to the development of technology and streamline of the production process that **speeds up the production time as it takes shorten time to produce**. Thus, with any increase in price of solar panels due to the rise in demand, it will lead to a more than proportionate increase in quantity supplied (0Q1 to 0Qelastic) as producers are able to respond quickly to the changes in prices. Therefore, with rising demand and supply being price elastic, it can also lead to a sharp increase in sales volume of residential-use solar panels.	
Body- R2	**Increase in supply + PED being elastic (PED>1)** The technological advancements in production process have **improved productivity, leading to lower unit cost of production** for solar panels. This resulted in an increase in supply of solar panels, as mentioned in preamble, 'advanced production capabilities that significantly increased output'.	

	With reduced unit cost of production, **producers find it more profitable and are more willing and able to supply at all price levels, and the supply for solar panels is likely to increase**. The supply curve shifts rightwards from S1 to S2 in Figure 2, leading to an increase in equilibrium quantity, ceteris paribus.  Figure 2: Rise in Supply In addition, the **demand for residential use solar panels is relatively price elastic**, given the **high cost of adoption as a proportion of income OR available close substitutes in electricity.** Thus, with any decrease in price of solar panels due to the rise in supply, it will lead to a more than proportionate increase in quantity demanded as households are able to respond quickly to the changes in prices. This is seen from Figure 2, as the rise in equilibrium quantity will be larger from (0Q1 to 0Qelastic). Therefore, with rising supply and demand being price elastic, it can also lead to a sharp increase in sales volume of residential-use solar panels.	
Body- R3 (Knowledge)	*Students can also apply the determinant of an **increase in disposable income on from government direct subsidies** in the adoption of solar energy, thus the derived demand of solar panels will increase.*	
Conclusion	In conclusion, the combined effect of an increase in demand (from both rising price of substitute and higher disposable income) and an increase in supply (from improved productivity) will result in an increase in equilibrium quantity of residential-use solar panels in the United States. The elastic nature of PED and PES both contributed to the significant rise in sale volumes as producers and households	

	respond quickly to price changes, thereby leading to a more than proportionate increase in quantity of solar panels.	

Mark Scheme

Knowledge, Understanding, Interpretation, Application and Analysis			
Level	**Analysis Level**	**Descriptors**	**Marks**
L3	A+A A+C+K A+C	The response thoroughly addresses the question, offering clear and insightful analysis on the factors driving the increased demand for solar panels coupled with the elasticity of price elasticity of supply (PES), the rise in the supply of solar panels coupled with elasticity of price elasticity of demand (PED). Response using relevant economic concepts, theories and principles in a precise, logical and reasoned manner. Response also contains appropriate examples to show application to current situations.	8-10
L2	A+K C+C+K C+C A+0 C+K+K	Response may contain cursory explanations of the factors driving the increased demand for solar panels coupled with the elasticity of price elasticity of supply (PES), the rise in the supply of solar panels coupled with elasticity of price elasticity of demand (PED) with ability to identify facts, some ability at diagrams but theory may be incompletely explained. Response may not fully address question requirements. Examples used may be inappropriate or there may be no examples used.	5-7
L1	C+0 K+K	Response shows some knowledge but does not indicate that the meaning of the question has been properly grasped, thus, answer may be mostly irrelevant. There may be some basic errors in theory and may contain a few valid points made incidentally.	1-4

Part b
Question Interpretation

Command	Discuss' (whether) 2 sided arguments + Stand. Support answers with economic analysis
Content	Decision Making factors that the United States government would consider when deciding to use direct subsidies in achieving her solar energy transition target. What are the benefits and costs for using direct subsidies? What are the constraints to the government? What are some information to be gathered? What are the different perspectives the government will consider?
Context	United States and her solar energy transition target (i.e. in meeting the desired equilibrium quantity / usage)
Approach	**R1:** The benefits of using direct subsidies in raising demand for solar panels **Evaluation of R1**: Extent of Benefits depends on closeness of substitutes and any other side effects/trade-offs **R2:** The costs of using direct subsidies in raising demand for solar panels **Evaluation of R2:** Extent of costs depends on constraints on fiscal health and if private sector could co-fund the adoption by households **R3:** Information on other feasible policies OR any other relevant factors in Decision Making Framework **Overall Conclusion**

Suggested Answer

Part	Description	Remarks
Introduction	The United States government has set a solar energy transition target to meet its net-zero emission / sustainable development model of economic growth. And to do so, the government will seek to **increase both demand and supply** of solar panels across households and industries **to raise the usage (equilibrium quantity) in the solar panels market.** This essay seeks to discuss the factors the United States government would consider when deciding on the use of direct subsidies to raise the demand of solar panels by households, in the grand scheme of solar transition and attaining sustainable economic growth.	
Body- R1	**The benefits of using direct subsidies in increasing the equilibrium quantity of solar panels** The objective of using direct subsidies by government is to raise the demand of solar panels by households through cash grants as the **disposable income of households increases** and thus, **the purchasing power for solar panels will increase as well**. The government will consider the benefits of direct subsidies on achieving its targets of higher equilibrium quantity of solar panels usage. In addition, the rise in consumer	

surplus and producer surplus would also be possible benefits derived from the direct subsidies.

Mechanism of Direct Subsidy:
Direct subsidies through cash grants will **raise the demand for solar panels as the disposable income of households in consuming solar panels increases**. This is represented in Figure 2, where demand rises from D0 to D1. The rise in demand also creates a shortage of Q_0Q_2 at the initial price P_0. The shortage would exert upward pressure on price. In response to the rise in price, producers will increase their quantity supplied and consumers will reduce their quantity demanded according to the Laws of Supply and Demand respectively. The adjustment process continues until the new equilibrium P_1 and Q_1 is reached where Q_d equals to Q_s at Point E.

Therefore, a rise in demand for solar panels, ceteris paribus, will cause a **rise in both its equilibrium price and equilibrium quantity.** The higher equilibrium quantity will allow the United States to meet the solar transition target, thereby **achieving sustainable economic growth in the long run.**

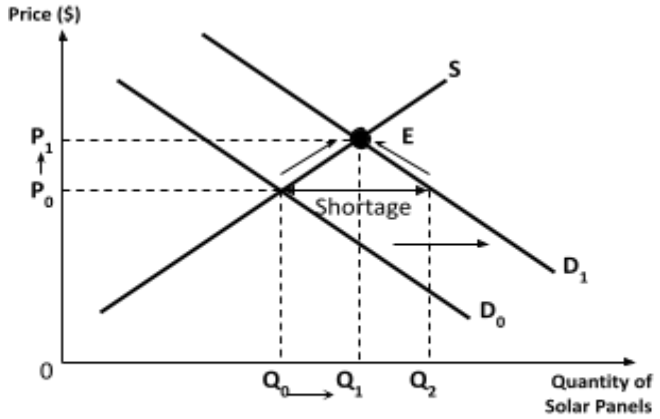
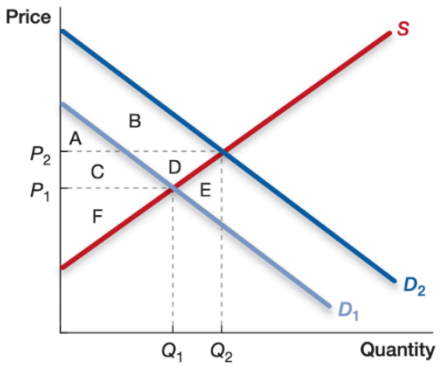


Figure 2: Increase in Demand

The rise in demand for solar panels will also **result in both the consumer surplus and producer surplus to increase**, benefiting both households and producers of solar panels. As seen in Figure 3, when demand increases, the consumer surplus increase from Area A+C to Area B+A, while producer surplus increase from Area F to Area F+C+D.

	 **<u>Figure 3: Increase in Demand and effects on CS & PS</u>** *Note: Credit is given for responses which adequately explain how direct subsidy on solar panels will resolve the market failure due to either negative externalities in consumption of electricity generated from fossil fuels or positive externalities in consumption of solar panels. Such responses should correctly link to how direct subsidy will affect the demand (MPB) of the associated goods, thus addressing the market failure.*	
Body- Eval1	However, the effect of this direct subsidy will depend on the substitutability between solar power and electricity, **as the XED value is positive but less than 1 (not close substitutes)**. Despite the cash grants, some **households might not switch to solar power as the overall cost of adoption is still high and coupled with low reliability**, the demand might not increase as expected. In addition, the rise in demand for solar panels will lead to an increase in the price of solar panels, ceteris paribus. This will **price out low-income households from the switch and worsen equity** in terms of access to the limited resources. Also, the successful switch to solar power will also lead to the fall in revenue and profit levels of electricity producers. This might trigger **large-scale retrenchment of workers who will be structurally unemployment** if they lack the skills to transit to the green economy.	
Body- R2	**<u>The costs of using direct subsidies in increasing the equilibrium quantity of solar panels</u>** The total monetary cost of direct subsidies will need to be considered by the US government, especially as given the PES > 1 nature of solar panels, the rise in quantity supplied given an increase in demand will be more than proportionate than the change in price, ceteris paribus. This **will mean that the rise in equilibrium quantity will be significant, which will incur a large total sum of direct subsidies to be financed by the government**. The ability of the US government to fund this	

	endeavor will depends on the constraints of fiscal budget vis-à-vis other competing needs and social spendings. Besides the explicit monetary costs incurred by the government, the **implicit costs (opportunity cost) should also be considered** before implementation of the direct subsidy. For example, if direct subsidies are provided to households to reduce the cost of solar adoption, the subsidies provided will incur opportunity costs as **funds for such subsidies can be used for other areas such as development of infrastructure, hospitals and educational institutions**. The benefits forgone from these potential investments (healthier and educated population that will increase overall economic productivity) will be the opportunity cost incurred.	
Body- Eval2	The United States has been **running a fiscal deficit and its size of deficit has been increasing over the years**. This will not only constraint the micro and macro interventions affecting the current living standards of the average Americans, but the long-term growth prospects will also be severely implicated. If the government can **leverage on market-oriented policies** to encourage private firms towards higher competition and efficiency and offering households solar energy adoption at lower cost, then the **financial strain on the government will be significantly reduced.** This is highly possible in the US given the scale of the domestic market and its vibrant enterprising culture.	
Body- R3 (Knowledge)	Beyond the use of direct subsidies, the government should also consider other policies that will increasing the overall quantity of solar panels used in the United States. For example, the government can **encourage the adoption of solar panels through public education** to raise awareness and thus, promote a change in tastes & preference of households. This will likely be less costly than a direct subsidy in the long term. Additionally, **a tax could be levied on the use of non-renewable energy** (such as electricity tax) to encourage the switch to solar energy. This is also fostered by loss aversion theory, as households are more likely to be nudged from a tax rather than a subsidy of an equal amount. Lastly, the government can also consider **implementing policies to increase the supply of solar panels,** either through increase competition in the market by encouraging more producers or co-funding to producers to lower their unit cost of production on research.	
Conclusion	**Stand & Substantiation:** On balance, the US government would likely have valued the benefits of using direct subsidies grater than the costs – simply because the threat of global	

	warming is an existential one and thus, **the long-term benefits of sustainable growth through renewable energy cannot be under-estimated**. **Something Special:** While there are challenges and unintended consequences from the solar adoption, the US government can mitigate the negative impacts through retraining schemes to facilitate the transition of industries and workers towards green technology and net-zero production processes. In addition, the initial government spending on cash grants will act as a trigger for the private sector investments towards solar energy as the demand gradually increases. This can also be fostered through rules and regulations (i.e. Paris Agreement on climate change) to hold people, private and public sector accountable towards the net-zero target.	

Mark Scheme

Knowledge, Understanding, Interpretation, Application and Analysis			
Level	**Analysis Level**	**Descriptors**	**Marks**
L3	A+A A+C+K A+C	Response addresses the question fully and contains excellent analytical explanations of the benefits of using direct subsidies in raising demand for solar panels and cost of using direct subsidies in raising demand for solar panels using relevant economic concepts, theories and principles in a precise, logical and reasoned manner. Response also contains appropriate examples to show application to current situations.	8-10
L2	A+K C+C+K C+C A+0 C+K+K	Response may contain cursory explanations of explanations of the benefits of using direct subsidies in raising demand for solar panels and cost of using direct subsidies in raising demand for solar panels with ability to identify facts, some ability at diagrams but theory may be incompletely explained. Response may not fully address question requirements. Examples used may be inappropriate or there may be no examples used.	5-7
L1	C+0 K+K	Response shows some knowledge but does not indicate that the meaning of the question has been properly grasped, thus, answer may be mostly irrelevant. There may be some basic errors in theory and may contain a few valid points made incidentally.	1-4

Evaluation

Level	Descriptors	Marks
E3	Response contains well-explained evaluative judgments for **two** requirements and a well-justified summative conclusion	5

E2	Response contains a well-explained evaluative judgment for at least 1 requirement, the other requirement may not be well evaluated. Response may not have a summative conclusion.	3-4
E1	Response contains evaluative judgments that is unexplained or not supported by the arguments presented in the answer. Judgment may not be linked to the context of the question. OR A well-explained evaluative judgment linked to one requirement.	1-2

Question 3

3. The pharmaceutical industry is dominated by a few large companies such as Pfizer, Johnson & Johnson, and Merck. Consumers also face imperfect information, particularly in understanding that branded and generic drugs can be similar in efficacy and safety.

(a) Explain how market dominance and information failure may lead to market failure. [10]

Command	Explain how – explain the process with the use of relevant illustrations where possible.
Content	Market failure in terms of allocative inefficiency, productive inefficiency. Information failure leading to an overvaluation of the perceived benefit
Context	Pharmaceutical industry
Approach	**R1: Market dominance leading to market failure:** **R2: Information failure leading to market failure:**

Suggested Answer

Part	Description	Remarks
Introduction	Market dominance occurs when a firm holds significant market power, which refers to the ability of a firm to set prices. Market failure occurs when the free market fails to allocate resources efficiently that would maximize society's welfare. Overview: A dominant firm will be allocative inefficient and productive inefficient, leading to market failure. Additionally, overvaluation of the perceived benefits of consuming branded drugs will lead to market failure.	
Body- R1	One cause of market failure in the pharmaceutical industry is market dominance. This occurs when high barriers to entry allow a few major firms, like Pfizer, Johnson & Johnson, and Merck, to control a significant portion of the market and, hence dominating the industry. Market dominance leads to allocative inefficiency. A dominant firm is a firm with market power and is a price setter. Therefore, it faces a downward demand curve. To maximize profits, they need to produce at marginal revenue (MR) = marginal cost (MC) and price their goods accordingly. A profit maximising monopolist restricts	

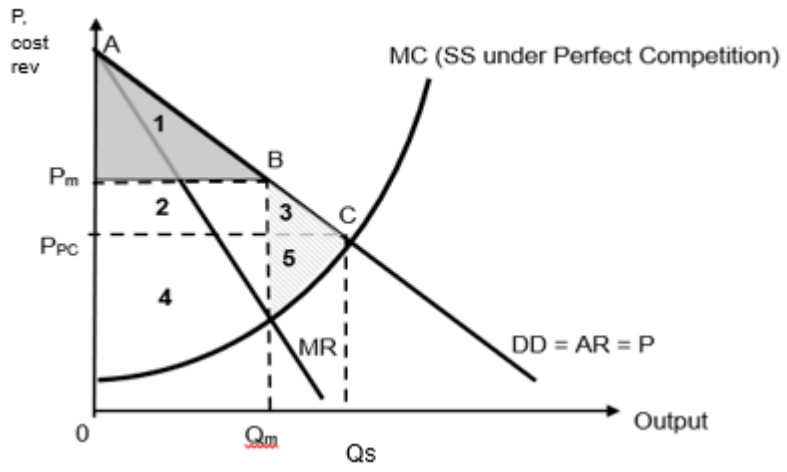
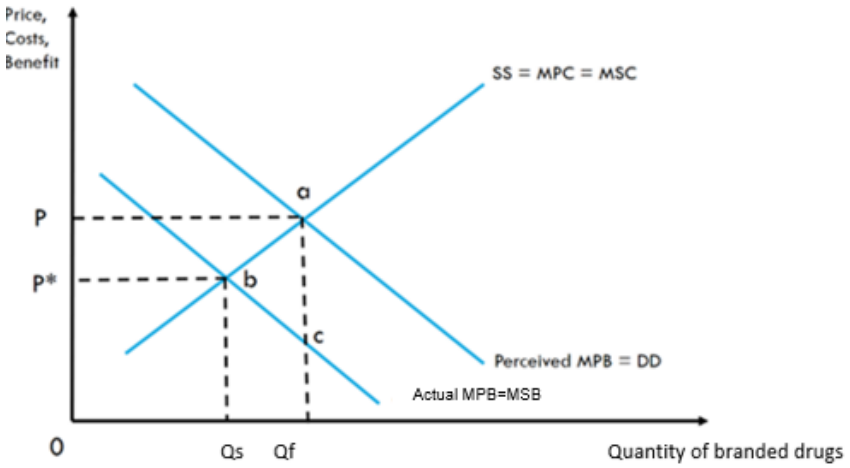
	output at where MC=MR and charges a price that is higher than its marginal costs (P>MC), this means that the value placed on the good by the society is higher than the opportunity cost in producing the last unit. However, allocative efficiency is achieved at the socially optimum output that occurs at P=MC, that is at Qs. Compared to the socially optimum output, a dominant firm seeking to maximise profits will underproduce the good by QmQs. As a result of underproduction, there is a DWL to society denoted by areas 3 and 5. **Figure 1: Underproduction of Pharmaceutical firm**  Therefore, market dominance can lead to partial market failure due to the underproduction of drugs.	
Body- R2	Imperfect Information (Overvaluation of MPB) due to **persuasive advertising** in the branded drugs market. In the branded drugs market, persuasive advertising can lead to an overvaluation of MPB, causing supplier-induced demand. Pharmaceutical companies often have more information about their branded drugs than consumers do. This knowledge gap can lead to **supplier-induced demand** when companies use persuasive advertising to make their branded drugs seem more effective and necessary than generic alternatives. For example, **branded drugs might be marketed as 'superior' and 'essential' for effective treatmen**t, even though their active ingredients and efficacy are often similar to those of generic drugs. Consumers, unaware of this, may perceive these branded drugs as more effective, resulting in an **overestimation of the benefit** and hence a difference between perceived and actual marginal private benefit (MPB). Therefore, the perceived MPB curve is higher than the actual MPB curve.	

	Figure 2: Branded drugs market  Consumers will base their decision on their perceived Marginal Private Benefit (MPB) and Marginal private cost at Qf. The socially optimal quantity is at Qs, whereby MSB (actual MPB) equals MSC. Due to **imperfect information and salience bias**, consumers tend to over-consume branded drugs. Branded drugs are often more visible in advertisements and packaging, which makes their attributes—such as brand name, perceived quality, or reputation—more prominent in consumers' minds. This leads to **an overestimation** of the perceived MPB of branded drugs, even though generic drugs may provide the same efficacy at a lower cost. As a result, consumers consume more branded drugs than is socially optimal, contributing to market failure. Between Qf and Qs, the total social costs, measured by area abQfQs, outweigh the total social benefits, measured by area acQfQs. **Link:** Therefore, the free market has failed to achieve allocative efficiency due to over consumption in the branded drugs market.	
R3:	Productive inefficiency in oligopolistic firms can lead to market failure by causing excess capacity, where firms are not producing at the lowest possible cost (i.e., not at the minimum point of their long-run average cost curve). This means that from society's perspective, resources are being used inefficiently, as firms could produce more output at lower costs but fail to do so. As a result, there is a welfare loss, since fewer resources are available for other valued uses, and consumers may pay higher prices in the market.	
Conclusion	Hence, market dominance and information failure will lead to market failure in the pharmaceutical industry.	

Mark Scheme

Knowledge, Understanding, Interpretation, Application and Analysis			
Level	**Analysis Level**	**Descriptors**	**Marks**
L3	A+A A+C+K A+C	Response addresses the question fully and contains excellent analytical explanations of **market dominance leading to market failure** and **information failure leading to market failure** using relevant economic concepts, theories and principles in a precise, logical and reasoned manner. Response also contains appropriate examples to show application to current situations.	8-10
L2	A+K C+C+K C+C A+0 C+K+K	Response may contain cursory explanations of **market dominance leading to market failure** and **information failure leading to market failure** with ability to identify facts, some ability at diagrams but theory may be incompletely explained. Response may not fully address question requirements. Examples used may be inappropriate or there may be no examples used.	5-7
L1	C+0 K+K	Response shows some knowledge but does not indicate that the meaning of the question has been properly grasped, thus, answer may be mostly irrelevant. There may be some basic errors in theory and may contain a few valid points made incidentally.	1-4

Part b

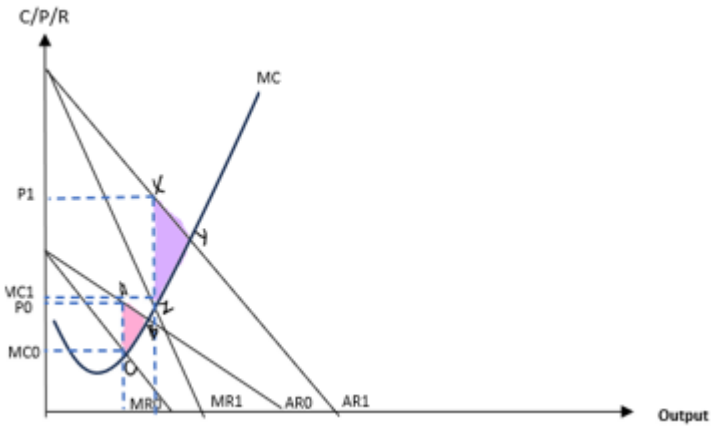
Discuss the extent to which government policy measures are likely to address the above sources of market failure.

Question Interpretation

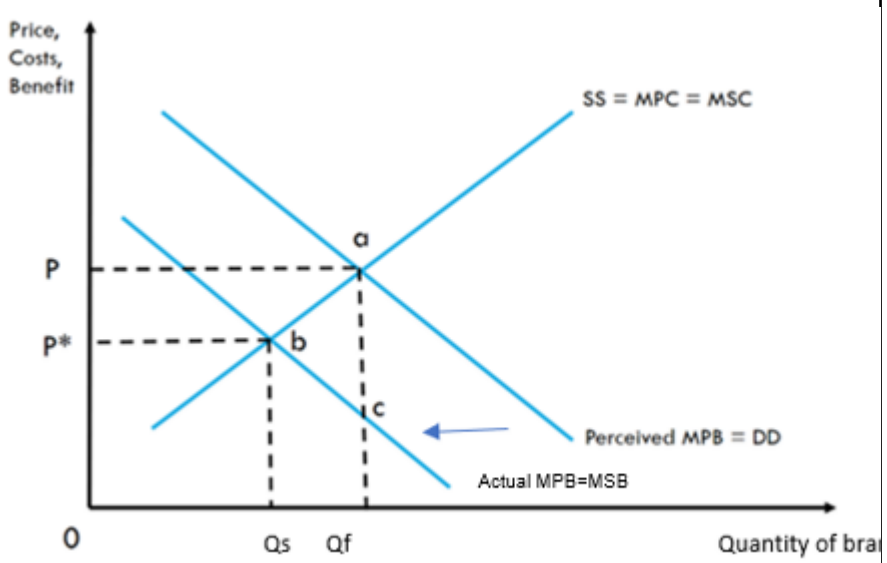
Command	Discuss the extent: Two-sided answer with a well-rationalised stand on whether the Government should intervene in the markets.
Content	Policies to resolve market failure caused by imperfect information and market dominance
Context	Pharmaceutical drugs
Approach	R1: **Policy of deregulation to address market dominance in the Branded Drugs Market** Evaluation 1: Governments should not intervene due to some policy limitations + Governments should not intervene due to government failure. R1: **Policy of Public Education to address Imperfect Information in the Branded Drugs Market**

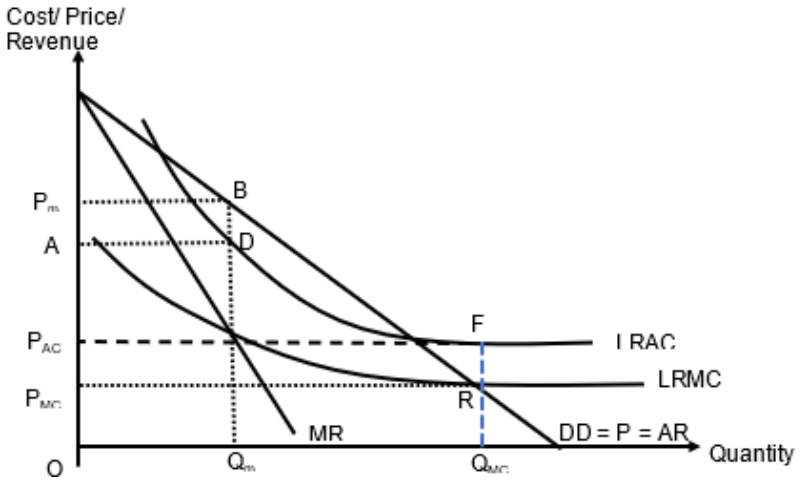
	Evaluation 1: Governments should not intervene due to some policy limitations + Governments should not intervene due to government failure.

Suggested Answer

Part	Description	Remarks
Introduction	In part (a), it is established that the markets for pharmaceutical drugs have failed due to market dominance and imperfect information. As such, the government should intervene and eliminate the welfare loss. This essay will explain the intervention of public education and rules and regulation to address both market failure caused by imperfect information and market dominance.	
Body- R1	To reduce the market dominance of incumbent firms in the branded drug pharmaceutical market, the government is removing unnecessary barriers to entry by deregulation so that new firms can enter the market more easily and increase the level of competition. This may cause an incumbent firm's demand to fall to D1 = AR1 and become more price elastic due to an increase in the availability of substitutes, thus reducing its market power. As a result, the firm will produce a lower output at Q1 and charge a lower price of P1. This reduces the extent to which price exceeds marginal cost (i.e., P0 – MC0 > P1 – MC1), and hence, the extent of allocative inefficiency, with the DWL reducing from triangle XYZ to triangle ABC. **Figure 3: Reducing market dominance and hence DWL**  	

EV of R1	New entrants into the branded drug pharmaceutical market might find it extremely difficult to convince consumers that their products are similar or even superior to established brands. Many consumers have strong brand loyalty and perceive branded drugs as more effective or safer due to extensive marketing and established trust in incumbent brands. As a result, new entrants may suffer from a disadvantage in terms of lower perceived product quality relative to incumbents and hence be unable to compete on an equal footing. This situation can result in demand for incumbent firms not falling or becoming more price elastic as expected. Consequently, the anticipated increase in competition may not materialize fully, and the market power of incumbent firms may remain. Hence allocative inefficiency from market dominance is not removed.	
Body- R2	The government can implement cost-effective, smaller-scale **public education** campaigns, such as delegating representatives to conduct public interviews on the actual benefits of branded drugs. By informing consumers that the effectiveness of branded drugs is comparable to generic ones, the extent of consumer ignorance can be reduced. For instance, medical experts could publicly explain that branded drugs like Lipitor (a cholesterol-lowering drug) have the same active ingredients and efficacy as its generic version, atorvastatin or healthcare professionals could publicly explain that branded drugs like Panadol have the same active ingredients and efficacy as generic paracetamol. This education effort can help close the information gap between perceived MPB and actual MPB. **Figure 4: Resolving imperfect information in the branded drugs market**	

	 When the perceived MPB moves to actual MPB, there will be a surplus at initial price level P, putting a downward pressure on the price from P to P*. Equilibrium quantity will fall from Qf to Qs. DWL is eliminated and allocative efficiency is achieved.	
Body-Eval2	However, one limitation of public education campaigns is the limited reach to all segments of society. People who do not regularly engage with healthcare information or those in rural areas may remain uninformed. Hence, there is a limited change in the information gap and hence a limited change in the perceived MPB of branded drugs. Allocative inefficiency persists. Furthermore, complex information about the different nature of the drugs is hard to understand. The general public might need help to understand the technical details about active ingredients and efficacy between branded and generic drugs. Simplifying the message without losing accuracy is difficult.	
R3	The government can be using MC pricing and AC pricing to reduce market failure due to market dominance. The government may allow monopolies to continue e.g. in a natural monopoly situation but passes legislations to make sure that they do not act 'against the public interest'. Usually, they are required to practise certain pricing policies. The benefit of charging at MC pricing is that the price is lower and output much greater than the unregulated monopolist. There is allocative efficiency since price is equal to MC. The firm is producing the quantity of Qmc desired by the consumers. Hence allocative efficiency is achieved. **Figure 5: MC pricing**	

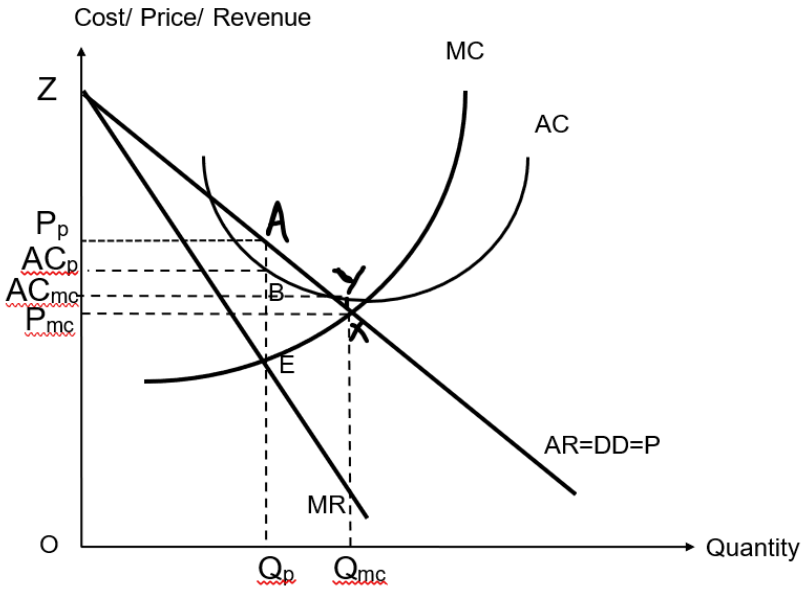


Or

A profit-maximising firm like Pfizer will produce at the point where **MC intersects MR** at Qp and its price will be at Pp.

Under MC pricing, the government-regulated price is set equal to the marginal cost of producing the last unit of the output **(i.e. P = MC)** where AR=DD intersects the MC curve. By regulating the price to be set at P_{mc}, firms' output will be at Q_{MC}.
There is allocative efficiency since price is equal to MC. The firm is producing the quantity of Qmc desired by the consumers. Hence allocative efficiency is achieved.

Figure 6: MC pricing



Body-Eval2	However, from figure 5, the firm incurs a loss (subnormal profit) given by the area of the rectangle $P_{MC}P_{AC}FR$. This means the firm will not be viable in the LR unless the government subsidises the firm. Hence, the government can use AC pricing, ensuring that firm	

	are still earning normal profits while reducing allocative inefficiency. **Or** One limitation of MC pricing from figure 6 is that Pfizer will now make **subnormal profits $AC_{MC}P_{MC}XY$.** If there is no government support, it will eventually have to **shut down**. Instead of the intended Q_{MC} amount, zero output would result instead, denying consumers of any satisfaction. This led to greater allocative inefficiency.	
Conclusion	In conclusion, public education empowers consumers with knowledge, but impact can be slower while rules and regulations of firms with market dominance has immediacy effect. The government can use a multipronged approach; regulation to ensure baseline standards and immediate effects while public education to address the root cause in the long run.	

Mark Scheme

Knowledge, Understanding, Interpretation, Application and Analysis			
Level	**Analysis Level**	**Descriptors**	**Marks**
L3	A+A A+C+K A+C	Response addresses the question fully and contains excellent analytical explanations of deregulation to address market dominance in the branded drugs and Public Education to address Imperfect Information in the Branded Drugs Market **us**ing relevant economic concepts, theories and principles in a precise, logical and reasoned manner. Response also contains appropriate examples to show application to current situations.	8-10
L2	A+K C+C+K C+C A+0 C+K+K	Response may contain cursory explanations of deregulation to address market dominance in the branded drugs and Public Education to address Imperfect Information in the Branded Drugs Market with ability to identify facts, some ability at diagrams but theory may be incompletely explained. Response may not fully address question requirements. Examples used may be inappropriate or there may be no examples used.	5-7
L1	C+0 K+K	Response shows some knowledge but does not indicate that the meaning of the question has been properly grasped, thus, answer may be mostly irrelevant. There may be some basic errors in theory and may contain a few valid points made incidentally.	1-4

Evaluation

Level	Descriptors	Marks
E3	Response contains well-explained evaluative judgments for **<u>two</u>** requirements and a well-justified summative conclusion	5
E2	Response contains a well-explained evaluative judgment for at least 1 requirement, the other requirement may not be well evaluated. Response may not have a summative conclusion.	3-4
E1	Response contains evaluative judgments that is unexplained or not supported by the arguments presented in the answer. Judgment may not be linked to the context of the question. OR A well-explained evaluative judgment linked to one requirement.	1-2

Question 4

4. China's economy is being undermined by a confluence of factors. A massive downturn in the property market and ongoing trade tensions have affected demand. Furthermore, demographic shifts toward an aging population as well as the rapid adoption of Artificial Intelligence further dampen economic activity.

Source: Various

(a) Explain why governments seek to achieve low unemployment and a healthy current account balance. [10]

(b) Discuss the relative effectiveness of policies to address unemployment in China. [15]

Part a

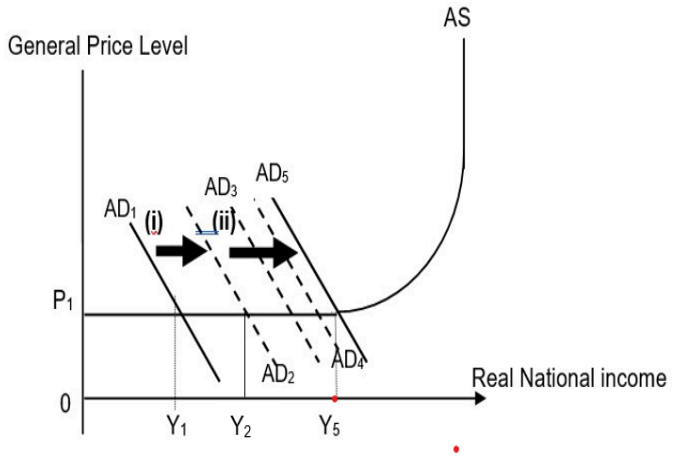
Question Interpretation

Command	Explain – give a detailed account of the reasons
Content	Benefits of low unemployment and healthy current account balance
Context	Any context, including China
Approach	R1: Governments seek to achieve low unemployment because there are positive effects to the economy R2: Governments seek to achieve a healthy current account balance because there are positive effects to the economy

Suggested Answer

Part	Description	Remarks
Introduction	The governments aim to achieve low unemployment and a healthy current account balance because this will help it to achieve other macro goals or a higher standard of living in the country.	Definition Overview
Body- R1	**R1: Benefits of low unemployment** Unemployment is the situation where those who are capable of and willing to work but are unable to find suitable employment. When the unemployment rate is low, more individuals will have an income. With the rise in income, purchasing power rise, and thus, consumers are able to buy more goods and services. Assuming that the population remains constant, there is a rise in real GDP per capita, causing the material standard of living to improve. After experiencing economic slowdowns during the COVID-19 pandemic, China began to recover as restrictions eased and economic activity resumed. By 2023,	

	the unemployment rate had decreased from the pandemic peak although it remained higher among specific demographic groups, such as youth, allowing the country to enjoy a higher material standard of living. Furthermore, a low unemployment rate is also linked with lower crime rates and therefore better security in the country. This causes non-material standard of living to improve as well. For example, Singapore is known to be a safe country with low levels of crime. This is highly related to the fact that our unemployment levels are considered to be relatively low. When individuals have a job and income, they are also better able to afford healthcare. With better health, this raises life expectancy, which raises the Human Development Index of the country. The increase in quality of life would also lead to a higher non-material standard of living. For example, a country like Singapore with relatively low levels of unemployment rate experiences higher levels of life expectancy.	
Body- R2	**R2: Benefits of a healthy current account balance** A healthy current account balance is usually one where there is a consistent, moderate surplus, suggesting that its export revenue is greater than its import expenditure where X > M over a sustained period of time. It can also be one where the current account is in balance. A surplus that is too large can be seen to be unhealthy as it might result in inflationary pressure. Although it is possible that a slight current account deficit can also be healthy if it is offset by a capital and financial account surplus and not by borrowing, we will focus our analysis on the former. A healthy current account balance is very likely due to a balance of trade surplus where the (X-M) must have risen until it becomes more than zero. Furthermore, a moderate current account surplus helps to build up a country's foreign reserves. With a larger store of foreign reserves, the country has a greater ability to support the value of its currency by intervening in the forex market when the currency is depreciating sharply. This helps to ensure a more stable exchange rate which makes it easier for firms to predict streams of export revenues and import expenditures. I increases and AD rises. As (X-M) and I are components of AD, this will lead to a rise in AD.	

	 Assuming the economy is not at full capacity, when there is an increase in AD, there is a rightward shift of the AD curve from AD1 to AD2. Firms will employ more factors of production to increase production of output, which increases RNY from Y1 to Y2. This causes an increase in national income, which will increase income induced consumption and result in a further increase in AD. This triggers successive rounds of increases in national income and income induced consumption. At each round, the increases in both get smaller. The multiplier process will end when the increase in national income is too small to generate further increase in induced consumption. Thus, the autonomous increase in AD from AD1 to AD2 results in a multiplied increase in RNY from Y1 to Y5, and therefore actual economic growth is achieved. Furthermore, due to the multiplied increase in real national income and real output, the derived demand for all factors of production including labour will also decrease, causing demand-deficient unemployment to rise. In recent years, whilst China still generally enjoys current account surpluses, the huge surpluses from past years which some may consider inflationary have been reduced. Therefore, China is experiencing a healthy current account which, is more balanced, reduces trade tensions with other countries and which supports its economic growth.	
Conclusion	<u>Conclusion</u> In conclusion, the above benefits are why governments seek to achieve low unemployment and a healthy current account balance.	

<u>Mark Scheme</u>

Knowledge, Understanding, Interpretation, Application and Analysis			
Level	**Analysis Level**	**Descriptors**	**Marks**

L3	A+A A+C+K A+C	Response addresses the question fully and contains excellent analytical explanations of why governments aim to achieve low unemployment and a healthy current account balance, using relevant economic concepts, theories and principles in a precise, logical and reasoned manner. Response also contains appropriate examples to show application to current situations.	8-10
L2	A+K C+C+K C+C A+0 C+K+K	Response may contain cursory explanations of why governments aim to achieve low unemployment and a healthy current account balance, using relevant economic concepts, theories and principles in a precise, logical and reasoned manner, with ability to identify facts, some ability at diagrams but theory may be incompletely explained. Response may not fully address question requirements. Examples used may be inappropriate or there may be no examples used.	5-7
L1	C+0 K+K	Response shows some knowledge but does not indicate that the meaning of the question has been properly grasped, thus, answer may be mostly irrelevant. There may be some basic errors in theory and may contain a few valid points made incidentally.	1-4

Part b

Discuss the relative effectiveness of policies to address unemployment in China. [15]

Question Interpretation

Command	Discuss- explain and evaluate
Content	Policies to resolve unemployment, taking into account the root causes of the unemployment
Context	China
Approach	• R1: Demand-management policies can solve demand-deficient unemployment in China • EV of R1: Evaluation of demand management policies • R2: Supply side policies can solve structural unemployment in China • EV of R2: Evaluation of supply side policies

Suggested Answer

Part	Description	Remarks
Introduction	The Chinese government can use demand-management policies like expansionary fiscal policy to target demand-deficient unemployment as well as supply side policies like training to target structural unemployment.	Overview
Body- R1	• R1: Demand-management policies such as expansionary fiscal policy can solve demand-deficient unemployment in China	

Problem:

Based on the pre-amble, China is suffering from demand-deficient unemployment. The “massive downturn in the property market” means that there has been a significant fall in housing prices. This causes household wealth to fall and therefore their purchasing power falls. C falls and AD decreases. Furthermore, there has been “ongoing trade tensions” with the US where both sides are implementing tariffs on each others’ exports. If so, China’s exports to the US will become relatively more expensive. Assuming the demand for Chinese exports is price elastic, Qd falls by more than proportionately. Export revenue (X) decreases. (X-M) falls and AD falls.

Assuming the economy is not operating at full capacity, this leads to a multiplied decrease in real GDP. Furthermore, as real national output decreases, firms will need to hire less labour and the derived demand for labour decreases. Demand-deficient unemployment is increased.

Policy mechanism:

The government can implement expansionary fiscal policy where it increases G to directly increase the AD and reduce T. An example of a rise in G is when the Chinese government builds new airports throughout the country, including the recently built Beijing Daxing Airport. The reduction in income tax increases disposable income, which then results in a rise in consumers’ purchasing power, this increases C. Any reduction in corporate tax increases post-tax profits and therefore increases I. The increases in G, C and I would lead to an increase in the aggregate demand (AD), as represented by a rightward shift of AD curve from AD1 to AD2 in figure 2 below

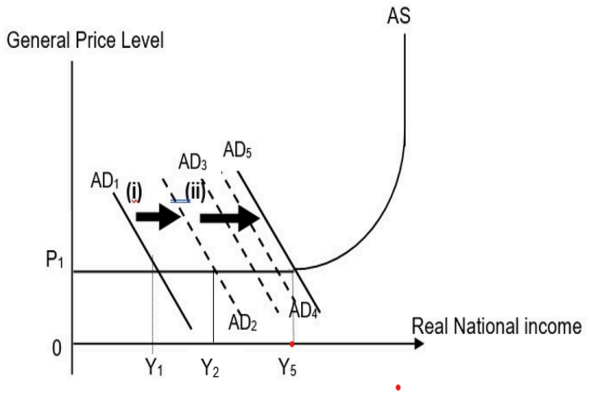


Figure 2

Assuming the economy is not at full capacity, firms will employ more factors of production to increase production of output, which increases RNY from Y1 to Y2. This causes an increase in national income, which will increase income induced

	consumption and result in a further increase in AD. This triggers successive rounds of increases in national income and income induced consumption. At each round, the increase in both gets smaller. The multiplier process will end when the increase in national income is too small to generate further increase in induced consumption. Thus, the autonomous increase in AD from AD1 to AD2 results in a multiplied increase in RNY from Y1 to Y5. As real national output increases, firms will need to hire more labour and the derived demand for labour increases. Demand-deficient unemployment is reduced.	
Body- Eval1	Given that the economy was facing ongoing trade tensions and that the property market is in a slump, it is likely that there is a negative economic outlook. Therefore, even if income taxes and corporate taxes were to fall, C and I might be interest insensitive. For example, firms might be unwilling to raise I by a large extent because there are worries, especially amongst exporting firms, about how ongoing trade tensions would affect their future profits. Firms might not increase their I to a large extent. Therefore, the rise in AD and real national income would not be significant. The fall in demand-deficient unemployment may be limited.	
Body- R2	R2: Supply side policies can solve structural unemployment in China Problem: The pre-amble mentions that there is a “rapid adoption of Artificial Intelligence”. With the rapid improvement in technology, some lower-skilled workers may be retrenched as they do not possess the right skills to handle artificial intelligence in their jobs. However, they also do not have the right skillsets to take up jobs in the sunrise industries. Therefore, there is a mismatch between the skills that the unemployed possess and the skills that the vacancies require. There is a situation of occupational immobility and therefore structural unemployment. Furthermore, the problem of ageing population worsens this structural unemployment because the elderly may find it more difficult to pick up new technological skills which might make them obsolete. Policy: To tackle structural unemployment due to skills mismatch and occupational immobility, Chinese government can subsidise training and upskilling. By equipping the unemployed with the relevant skills to operate the more advanced machines, workers become more employable as they now possess the relevant skills. Hence retraining reduces the mismatch of skills and decreases workers’ occupational immobility. This tackles the structural unemployment in China arising from the use of innovation-based equipment and the deployment of AI solutions.	

Body- Eval2	The benefits of training is likely to be realised only in the long run. Time is required for training to be completed. Furthermore, in this ever-changing world, the skills acquired may be deemed useless and outdated due to another round of structural changes in the economy, making the policy less effective. For example, artificial intelligence is progressing rapidly and training to learn how to use a particular generation of AI may be obsolete or may not be that useful when there is a new generation available. Therefore, the effectiveness of using training to solve structural unemployment may be limited.	
Body- R3	To raise the level of AD to tackle demand-deficient unemployment, the Central Bank of China, People's Bank of China, can cut the interest rates. This was carried out in 2023 in the midst of weak consumer spending. This will reduce the cost of borrowing to consumers and firms. Lower interest rates also mean that the returns on savings will be reduced. As cost of borrowing is reduced, households are now more incentivised to borrow to purchase big-ticket items such as cars, this will encourage more consumption expenditure (C). With a fall in interest rates, cost of borrowing is reduced, there are more investment projects where the expected rate of returns exceeds the costs of borrowing. Hence firms will increase their investment expenditure (I). The increases in C and I would lead to an increase in the AD, as represented by a rightward shift of AD curve This leads to a multiplied increase in real GDP via the multiplier process. As real national output increases, firms will need to hire more labour and the derived demand for labour increases. Demand-deficient unemployment is reduced.	
Conclusion	**Stand** The relative effectiveness of the policies depends on the more significant root cause of the unemployment. **Substantiation (Using STRAWS- Situation)** Whilst both a fall in AD causing demand-deficient unemployment and a mismatch of skills resulting in structural unemployment are significant root causes, it is likely that demand-deficient unemployment due to trade tensions is the more significant root cause. This is because trade tensions have a more direct and immediate impact on employment, particularly in export-dependent sectors. Job losses can occur in an entire industry very swiftly when the US implements tariffs on an entire industry eg. solar panels. Furthermore, China is an export-oriented economy and tariffs on its exports can have a very significant impact on unemployment. Therefore, demand management policies like expansionary monetary policy and expansionary fiscal policy which target demand-deficient unemployment by raising internal demand to offset the fall in external demand might be relatively more effective in solving unemployment in China.	

Mark Scheme

Knowledge, Understanding, Interpretation, Application and Analysis

Level	Analysis Level	Descriptors	Marks
L3	A+A A+C+K A+C	Response addresses the question fully and contains excellent analytical explanations of demand management policies and supply side policies using relevant economic concepts, theories and principles in a precise, logical and reasoned manner. Response also contains appropriate examples to show application to current situations.	8-10
L2	A+K C+C+K C+C A+0 C+K+K	Response may contain cursory explanations of demand-management policies and supply side policies with ability to identify facts, some ability at diagrams but theory may be incompletely explained. Response may not fully address question requirements. Examples used may be inappropriate or there may be no examples used.	5-7
L1	C+0 K+K	Response shows some knowledge but does not indicate that the meaning of the question has been properly grasped, thus, answer may be mostly irrelevant. There may be some basic errors in theory and may contain a few valid points made incidentally.	1-4

Evaluation

Level	Descriptors	Marks
E3	Response contains well-explained evaluative judgments for **two** requirements and a well-justified summative conclusion	5
E2	Response contains a well-explained evaluative judgment for at least 1 requirement, the other requirement may not be well evaluated. Response may not have a summative conclusion.	3-4
E1	Response contains evaluative judgments that is unexplained or not supported by the arguments presented in the answer. Judgment may not be linked to the context of the question. OR A well-explained evaluative judgment linked to one requirement.	1-2

Question 5

5. Since March 2022, the United States Federal Reserve has raised its interest rate 11 times, from 0.25% to 5.50%, to ease high inflation stemming from increases in household demand and supply-chain disruptions.

Source: CNBC, 2023

(a) Explain how the above-mentioned factors may have caused the rate of inflation to rise in the United States. [10]

(b) Discuss whether the rise in the United States interest rates will have positive or negative effects for small and open economies such as Singapore. [15]

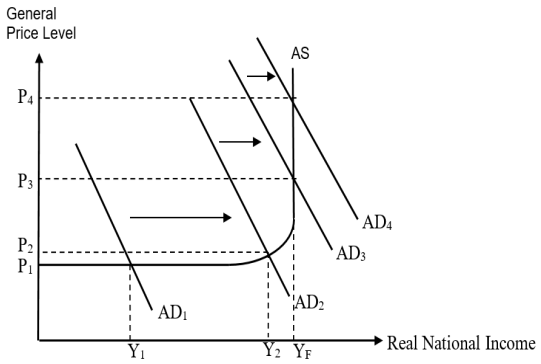
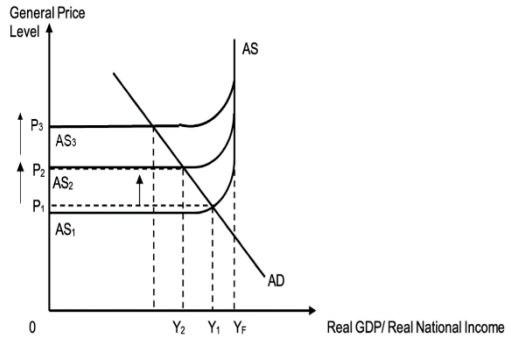
Part a

Question Interpretation

Command	Explain – give a detailed account of the reasons
Content	Causes of Inflation
Context	Increase in household demand, supply-chain disruptions faced by the US; students are to use contextual knowledge
Approach	R1: Increases in household demand will lead to a rise in inflation in the US R2: Supply chain disruptions will lead to a rise in inflation in the US

Suggested Answer

Part	**Description**	**Remarks**
Introduction	Inflation refers to a situation whereby there is a sustained increase in general price level in an economy. In this essay, we will look at growth in private consumption which cause demand-pull inflation, as well as the impact of rising factor input prices which causes cost push inflation.	Definition Overview
Body- R1	**R1: Increase in household demand will lead a rise in demand-pull inflation in the US** Increase in household demand may be due to 'pent-up' demand / revenge spending or the economic recovery (i.e. increase in household disposable incomes) in the US.	

	 Many households accumulated savings over the pandemic as they were unable to spend due to the lockdown measures. As the pandemic has eased, they are able to return to day-to-day retail shopping or engage in 'revenge spending'. This will lead to a rise in C, leading to an increase in AD. There is also an expectation that with the economic recovery post-pandemic, that the future expectation of income will rise, which will increase C, leading to a rise in AD. As AD increases from AD1 to AD4, this results in a shortage at the initial price level GPL1. There will be competition for scarce resources, producers will start to bid up the price of factor inputs, resulting in upward pressure on prices from GPL1 to GPL4. This results in demand-pull inflation.	
Body- R2	**<u>R2: Supply-chain disruptions will lead to a rise in cost-push inflation in the US</u>** Supply-chain shortages due to the Russia-Ukraine conflict may have led to a rise in the rate of inflation in the US.  The Russia-Ukraine conflict has led to supply-chain shortages as hundreds of ships laden with wheat and corn have been stranded at Ukrainian ports, as the war restricts shipping in the Black Sea. This has led to global shortages of food commodities, which results in the rise in the price of factor inputs.	

	In addition, there has been a fall in the availability of oil for commercial use as the oil has been flagged to be used in the conflict areas, which has led to supply-chain shortages due to the lack of availability of oil which is widely used in production, resulting in the rise in the price of factor inputs. As crude oil is an essential raw material for the generation of electricity and for transport, a rise in oil prices will increase unit cost of production for firms assuming all other costs remain unchanged. As there is a rise in the unit COP, the SRAS decreases from AS1 to AS3, this results in a shortage at the initial price level GPL1, resulting in upward pressure on prices from GPL1 to GPL3. This results in cost-push inflation.	
Conclusion	<u>Conclusion</u> As seen from the above analysis, the two factors could have led to a persistent rise in AD and a decrease in SRAS, which would have contributed to inflation in the United States.	

<u>Mark Scheme</u>

Knowledge, Understanding, Interpretation, Application and Analysis			
Level	**Analysis Level**	**Descriptors**	**Marks**
L3	A+A A+C+K A+C	Response addresses the question fully and contains excellent analytical explanations of how a rise in the household demand and supply chain disruptions may have led to a rise in inflation in the US using relevant economic concepts, theories and principles in a precise, logical and reasoned manner. Response also contains appropriate examples to show <u>application to current situations.</u>	8-10
L2	A+K C+C+K C+C A+0 C+K+K	Response may contain cursory explanations of how a rise in the household demand and supply chain disruptions may have led to a rise in inflation in the US, with ability to identify facts, some ability at diagrams but theory may be incompletely explained. Response may not fully address question requirements. Examples used may be inappropriate or there may be no examples used.	5-7
L1	C+0 K+K	Response shows some knowledge but does not indicate that the meaning of the question has been properly grasped, thus, answer may be mostly irrelevant. There may be some basic errors in theory and may contain a few valid points made incidentally.	1-4

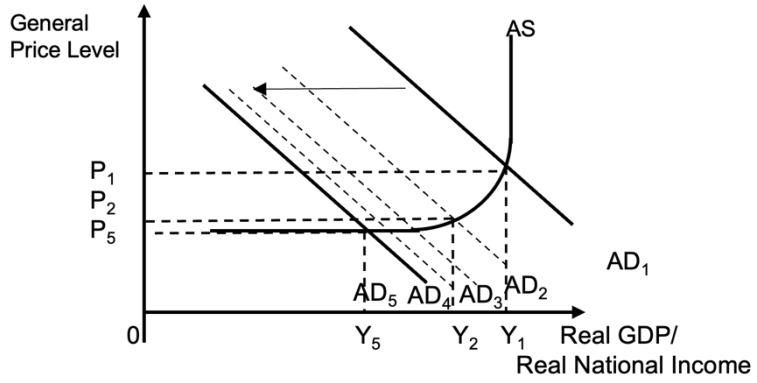
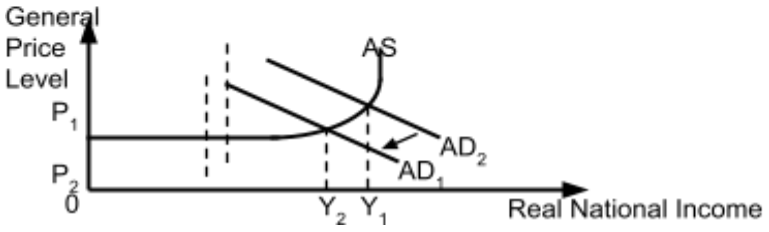
Part b

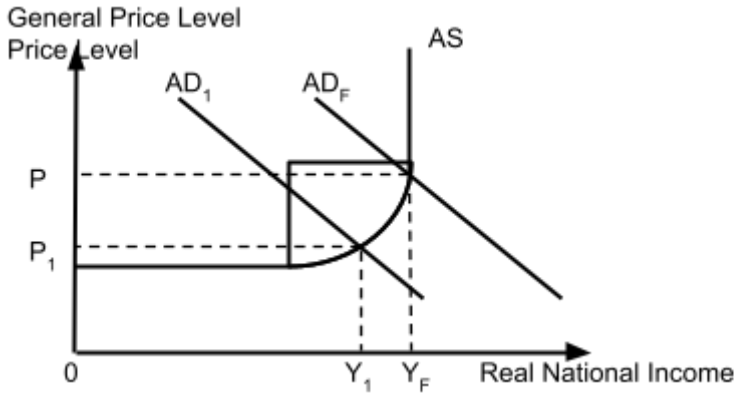
Question Interpretation

Command	Discuss- two-sided analysis (positive and negative effects)
Content	Effects on macroeconomics objectives and monetary policies.
Context	Singapore
Approach	• R1: Rise in US interest rates to ease high inflation will have a positive effect for small and open economies such as Singapore. • EVR1: Extent of positive effect for Singapore • R2: Rise in US interest rates to ease high inflation will have a negative effect for small and open economies such as Singapore. • EVR2: Extent of negative effect for Singapore

Suggested Answer

Part	Description	Remarks
Introduction	A small and open economy refers to an economy that is relatively small compared to the global economy and is significantly influenced by international trade and capital flows. Because it is open to global markets, changes in the international economy can have a substantial impact on its economic conditions. As Singapore is one example of a small and open economy, the rise in US interest rates will have positive and negative on our macroeconomics objectives.	Definition Overview
Body- R1	**R1: Rise in US interest rates to ease high inflation will have a positive effect for small and open economies such as Singapore.** Rise in US interest rates will lead to an increase in cost of borrowing. With the rise in interest rate, there will be a fall in consumption as opportunity cost of consumption has increased and there will be a fall in investment as previously profitable projects now become less profitable. With the fall in C and I, there will be a fall in AD as C and I are components of AD. A fall in AD will result in a fall in Real National Income from Y1 to Y2. This will then lead to a fall in income induced consumption and thereafter, a further fall in AD. This triggers many successive rounds of decrease in national income and income induced consumption. At each round, the decrease in both gets smaller. The multiplier process will end when the decrease in national income is too small to generate further decreases in induced consumption. The autonomous fall in AD from AD1 to AD2 results in a multiplied decrease in RNY from Y1 to Y5 as shown in the	

	figure below. This results in negative actual economic growth for USA.  With the negative actual economic growth in the US, it will lead a fall in their purchasing power, and it will cause a fall demand for imports from Singapore. With a fall in Singapore's export, this results in AD decreasing, ceteris paribus. Thus, AD shifts leftwards from AD1 to AD2 as shown in the figure below. This creates a surplus of goods at the initial GPL (P1), thus creating a downward pressure on price. Firms will decrease production in response to the lower prices. A decrease production results in less competition for scarce resources, reducing factor prices. Firms would therefore be willing to sell additional units at a lower price (shown by a movement down along the AS curve). Thus, the economy re-equilibrates at lower GPL, P2.  Thus, demand-pull inflation is mitigated, achieving price stability.	
Body- Eval1	The extent of the positive impact to be large as USA is a major export destination alongside with China and Malaysia. As USA is a key destination of exports for Singapore, the fall in exports share for Singapore will be large. The larger fall in exports	

	leads to larger fall in GPL for Singapore. Hence, larger positive impact for Singapore to control demand-pull inflation.	
Body- R2	**R2: Rise in US interest rates to ease high inflation will have a negative effect for small and open economies such as Singapore.** As explained in R1, there will be a fall in exports for Singapore and this will lead to a fall in AD from ADF to AD1 as shown in the figure below causes firms to reduce production in the face of lower demand.  This results in a fall in derived demand for factors of production including labour, resulting in demand-deficient unemployment. A fall in AD will trigger successive rounds of decreases in national income and income-induced consumption. At each round, the decrease in both gets smaller. The multiplier process ends when the decrease in national income is too small to generate further decreases in income-induced consumption. Due to the multiplied decrease in real national income causing negative actual growth for Singapore. Plus, with the fall in real output, thus the derived demand for all factors of production including labour will also decrease and hence causing a rise in demand deficient unemployment.	
Body- Eval2	**Extent of negative effect for Singapore (Small)** Singapore has a small multiplier, and this is due to Singapore's high marginal propensity to import (MPM) and marginal propensity to save (MPS). The high MPM is due to the need to import many things from overseas as Singapore is too small to be self sufficient and the high MPS is due to the enforced saving known as the CPF scheme and the Asian culture of thrift. With a small multiplier, the fall in national income is smaller and thus, the extent of negative effect is smaller.	
Body- Possible R2	**Alternative points** With the increase in interest rate in US, this will lead to hot money outflow from Singapore. As more people sell SGD to get more USD, this will cause an increase in supply of SGD and depreciation of SGD happens. With the depreciation of SGD, our exports will be cheaper in terms of foreign currency and resulting in an increase in export revenue. As for imports, price of imported goods will be more expensive in terms of	

	domestic currency and assuming demand for imports are price elastic, imports expenditure will decrease. Overall, there will be a rise in net exports and leading an increase in AD. As AD increases, this results in a shortage at the initial price level. There will be competition for scarce resources, producers will start to bid up the price of factor inputs, resulting in upward pressure on prices to increase. This results in demand-pull inflation. **Or** With the increase in interest rate in USA and Singapore as an interest taker also increase our interest rates. With the increase in the cost of borrowing, there will be a fall in C and I and leading to a leftward shift of AD. A fall in AD will result in a fall in Real National Income. This will then lead to a fall in income induced consumption and thereafter, a further fall in AD. This triggers many successive rounds of decrease in national income and income induced consumption. At each round, the decrease in both gets smaller. The multiplier process will end when the decrease in national income is too small to generate further decreases in induced consumption. The autonomous fall in AD results in a multiplied decrease in RNY. This results in negative actual economic growth for Singapore. Additionally, the fall in RNY will also lead to a fall in derived demand for labour and thus eventually leading to an increase in demand deficient unemployment.	
Conclusion	**Clear stand** The rise in interest rate in the US is more likely to cause a net positive impact for Singapore. **Substantiation (Using STRAWS- Situation)** As Singapore is having high inflation for some years after the covid pandemic, the fall in exports will help Singapore mitigate against the current high inflation problem and having a small multiplier value, we are also sheltered from a big fall in our national income. Hence, the rise in interest rate seems to have a net positive effect for Singapore.	

Mark Scheme

Knowledge, Understanding, Interpretation, Application and Analysis			
Level	**Analysis Level**	**Descriptors**	**Marks**
L3	A+A A+C+K A+C	Response addresses the question fully and contains excellent analytical explanations of (R1: Rise in US interest rates to ease high inflation will have a positive effect for small and open economies such as Singapore.) and (R2: Rise in US interest rates to ease high inflation will have a negative effect for small and open economies such as Singapore) using relevant economic concepts,	8-10

		theories and principles in a precise, logical and reasoned manner. Response also contains appropriate examples to show application to current situations.	
L2	A+K C+C+K C+C A+0 C+K+K	Response may contain cursory explanations of (R1: Rise in US interest rates to ease high inflation will have a positive effect for small and open economies such as Singapore) and (R2: Rise in US interest rates to ease high inflation will have a negative effect for small and open economies such as Singapore.) with ability to identify facts, some ability at diagrams but theory may be incompletely explained. Response may not fully address question requirements. Examples used may be inappropriate or there may be no examples used.	5-7
L1	C+0 K+K	Response shows some knowledge but does not indicate that the meaning of the question has been properly grasped, thus, answer may be mostly irrelevant. There may be some basic errors in theory and may contain a few valid points made incidentally.	1-4

Evaluation

Level	Descriptors	Marks
E3	Response contains well-explained evaluative judgments for **<u>two</u>** requirements and a well-justified summative conclusion	5
E2	Response contains a well-explained evaluative judgment for at least 1 requirement, the other requirement may not be well evaluated. Response may not have a summative conclusion.	3-4
E1	Response contains evaluative judgments that is unexplained or not supported by the arguments presented in the answer. Judgment may not be linked to the context of the question. OR <u>A well-explained evaluative judgment linked to one requirement.</u>	1-2

Question 6

6. President Joe Biden believes that the government needs to fight for American workers and companies in an increasingly competitive global environment that has eroded America's comparative advantage.

Source: The Washington Post, 2023

(a) Explain why a country's comparative advantage may change over time. [10]

(b) Discuss whether protectionist policies are the best way to deal with the problems arising from a loss of comparative advantage in an economy. [15]

Part (a)

(a) Explain why a country's comparative advantage may change over time. [10]

Question Interpretation:

Command	**'Explain why'**– give reasons / account for something
Content	**Theory of Comparative Advantage** – Factors affecting C.A. linked to lower opportunity cost
Context	**Any Economy** – preferably different economies as egs
Approach	R1: Reason 1- Changes to **Level of Factor Endowments** R2: Reason 2- Changes in **Level of Technology** R3: Reason 3- Changes in **Government Policies (Optional)**

Suggested Answer:

Part	**Description**	**Remarks**
Intro	Theory of CA – a country is able to benefit from trade by <u>specializing in production and export of a good which it has a CA in</u> and import a good that it is has no CA in. A country has a CA in production of a good when it is able to produce a good at <u>a lower opportunity cost compared to its trading partners.</u> Traditional Theory of CA assumes that a country's CA is inherent to its factor endowment and thus is static, but <u>CA patterns can be dynamic and change in the real world.</u> We will be exploring the various factors that lead to changes in CA in different economies and attempt to illustrate this through ***changing opportunity costs***.	Definition Overview
Body – R1	**Requirement 1: Changes to Factor Endowments**	Point

	Factor endowments changes over time due to discovery of new resources. For example, 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. **Link to opportunity cost:** Hence the Greenland Rare Earth Projects allow for the production of high-tech products at a lower opportunity cost. Hence, a country can gain comparative advantage when the opportunity cost incurred decreases and lower than other countries due a discovery of factors of production. **OR** Factor endowments changes over time due to depletion in resources. Eg: Brunei is losing its CA in the hydrocarbon industry as its levels of oil reserves is slowly depleting Countries that specialize in the export of natural resources like iron ore or oil , factor endowments are depleting / depleted (e.g. exhaustion of non-replaceable natural resources such as oil) As these resources are depleted, the cost of extracting these resources increases since it would become increasingly more costly to extract the remaining reserves eg. more labour might be needed as drilling for it might become more difficult and complex. **Link to opportunity cost:** Therefore, is higher opportunity cost incurred in terms of another good forgone. Hence, a country can lose comparative advantage when the opportunity cost incurred increases to be higher than other countries due a depletion of factor endowment	Example Explanation Link Point Example Explanation Link
Body – R2	**Requirement 2: Changes in State of Technology** As state of technology improves, new methods of production in a particular good may be discovered, such that fewer resources are required to produce the same combination of goods and services as compared to before.	Point

	Link to Opportunity cost: This means that the opportunity cost incurred in the production of this good, after the improvement in technology, would be lower since fewer units of another good need to be given up. For example, the improvement in technology made fracking a lot more cost-effective in the US and gave it a comparative advantage in natural gas production. With improved technology, the opportunity cost in the production of natural gas has fallen to be lower than other countries due a improvements in technology.	Explanation Example Link
Body – R3	**Requirement 3: Changes due to Government Policies** Government policies can lead to accumulation of capital through investments, and also increase the skills and productivity of the labour force through education and training R&D and improved skills will raise the productivity of factors of production, thus improving the quality of labour – i.e. to produce the same amount of a particular good, fewer workers may be required with an improvement in productivity. R&D will also allow countries to develop new areas of CA **Link to opportunity cost:** This means that the opportunity cost of producing this good would have been lowered since fewer units of the other good (also requiring labour) need to be given up. E.g. Singapore's government investment in bio-medical research, pharmaceutical industry and satellite technology improving quality of capital. And use of Skills Future will improve quality of labour. Thus, changes in government policies can result in countries gaining comparative advantage when opportunity costs fall and are lower than other countries.	Point Explanation Example Link
Conclusion	An economy's CA might change over time due to a combination of factors. Globalisation has been a key factor in changing CA across economies. Singapore's drive in developing new areas of CA is mainly due to increased global competition from other economies.	Summary of Points

Mark Scheme

Knowledge, Understanding, Interpretation, Application and Analysis			
Level	**Analysis Level**	**Descriptors**	**Marks**
L3	A+A A+C+K A+C	Response addresses the question fully and contains excellent analytical explanations of (R1- Changes in Factor endowments) and (R2- Improvement in technology or Government Policies) using relevant economic	8-10

		concepts, theories and principles in a precise, logical and reasoned manner. Response also contains appropriate examples to show application to current situations.	
L2	A+K C+C+K C+C A+0 C+K+K	Response may contain cursory explanations of (R1- Changes in Factor endowments) and (R2- Improvement in technology or Government Policies) with ability to identify facts, some ability at diagrams but theory may be incompletely explained. Response may not fully address question requirements. Examples used may be inappropriate or there may be no examples used.	5-7
L1	C+0 K+K	Response shows some knowledge but does not indicate that the meaning of the question has been properly grasped, thus, answer may be mostly irrelevant. There may be some basic errors in theory and may contain a few valid points made incidentally.	1-4

Part (b)

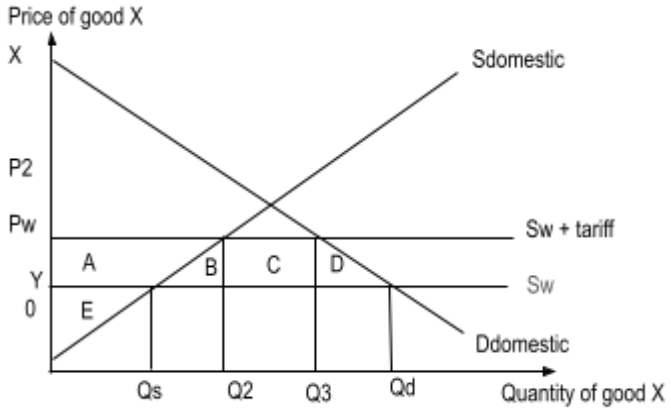
(b) Discuss whether protectionist policies are the best way to deal with the problems arising from a loss of comparative advantage in an economy. [15]

Question Interpretation:

Command	Discuss whether – need to provide 2 perspectives (at least) and a reasoned conclusion
Content	Identify problems that may arise due to loss of comparative advantage Protectionist Policies + other policies to mitigate these problems
Context	Any economy – but can use US since the preamble is on US
Approach	**Introduction:** Identify problems that may arise **Body:** R1: Explain how protectionist measures may address these problems Ev of R1: Limitations of protectionist measures R2: Explain how SSP may address these problems Ev of R2: Limitations of the policy R3 (Optional): Explain how another policy such as EFP or EMP to address the problem **Summative conclusion:** - Make a stand if protectionist policies may be the best - Substantiate the stand with reasons drawn from the arguments presented above - Make a recommendation on the best way forward for the country

Suggested Answer

Part	Description	Remarks

Intro	**Identify the problems that may arise to a country due to loss of comparative advantage**. If the good that the country loses comparative advantage is a significant export for the country, the loss will result in a fall in export revenue and therefore a fall in AD, ceteris paribus, resulting in negative EG, demand deficient unemployment and worsening of BOP position. In addition, the loss of comparative advantage would cause a contraction of the industry, leading to structural unemployment as workers displaced from the industry may not be able to find employment elsewhere due to lack of skills. In this part, I will assess if protectionist measures may be the best way to address these issues.	Contexualisation Overview
Body - R1	**Requirement 1: Explain how protectionist measures may address these problems** The government could impose a tariff which is a tax on imports to try to increase rate of economic growth, improve BOT and increase employment in the country. <u>Figure 1: Effects of a tariff</u>  • Assuming that the country is a price-taker in the world market, before the imposition of the tariff, the world price is Pw. At Pw, quantity supplied domestically is Qs and quantity demanded in Qd, resulting in imports of QsQd. • The tariff will lead to an increase in price of the good to P2, decreasing consumption of imports to Q2Q3. • **Effect on RNY & demand deficient unemployment** - Assuming the country like US imposes tariffs on many goods, the decrease in import expenditure, assuming PEDm>1. Assuming exports remains unchanged will increase in net exports and AD, c.p. Assuming the economy is operating below full employment, this will result in many rounds of increases in national income and income-induced consumption, lead to a larger increase in RNY via the multiplier process. This would result in positive	

	economic growth and decrease in demand deficient unemployment. • **Effect on BOT and BOP** - The decrease in import expenditure will also lead to an improvement in BOT, assuming exports are unchanged. Ceteris paribus, this could result in an improvement in current account balance and BOP. • **Effect on structural unemployment** - Protection may also buy time for the workers in the industry that has lost comparative advantage to re-skill themselves and seek employment in other industries, reducing structural unemployment.	
	Ev of R1: Limitations of protectionist measures - Use of protectionist measures may lead to retaliation where countries importing impose their own import restrictions thus causing the initiating country's exports, output and employment to suffer. The reduction in price competitiveness of the country's exports due to retaliation by trading partners, would limit any benefit the county may have enjoyed due to the imposition of protectionist measures. - Use of protectionist measures may lead to beggar thy neighbour effect. When a country imposes protectionist measures, the foreigners' income level will fall because their export revenue will decrease. This will cause a fall in the home country's exports assuming YED>0, resulting in limited or no improvement to RNY, employment or its balance of payments position.	
Body-R2	**Requirement 2: Explain how supply side policies may address these problems** - Interventionist supply side policies e.g. innovation grants would encourage firms to engage in process innovation. With successful process innovation in the industry that has lost comparative advantage, the efficiency in production would be improved, reducing unit cost of production. This would lower price of exports, increasing export revenue, assuming PEDx>1. - Firms in the industry could also engage in product innovation, improving the quality of exports. If the innovation is successful in meeting the wants of consumers, this would increase demand and make demand more inelastic as the product may be seen to be more unique and therefore less substitutable, increasing export revenue. - Innovation to improve technology may result improvements in technology in different areas of production which may result in development of new areas of comparative advantage where the country is able to produce the good at a lower opportunity cost than trading partners. As such, the country may be	

	able to sell the product at a lower price, increasing export revenue assuming PEDx > 1. - Interventionist supply side policies like training grants increase productivity of workers, increasing output per worker, lower unit cost of production. This would lower price of exports. Assuming the PEDx> 1, there would be an increase in export revenue. - **Effect on RNY and demand deficient unemployment** - The increase in exports, assuming imports remain unchanged will increase in net exports and AD, c.p. Assuming the economy is operating below full employment, this will result in many rounds of increases in national income and income-induced consumption, lead to a larger increase in RNY via the multiplier process. This would result in positive economic growth and decrease in demand deficient unemployment. - **Effect on BOT and BOP** - The increase in export revenue will also lead to an improvement in BOT, assuming imports are unchanged. Ceteris paribus, this could result in an improvement in current account balance and BOP. - **Effect on structural unemployment** - Training grants re-skill workers reduce mismatch of skills and occupational immobility reduction in structural unemployment	
	Ev of R2: Limitations of the policy - The R&D costs borne by the government may lead to a rise in government debt which may result in a loss of confidence in the economy that may reduce FDIs flowing in, slowing down actual and potential growth of the country. - It will take time for successful research outcomes and commercialisation of research findings. Should this take a long time, other competitors may have developed a higher quality substitute and hence the policy would have little impact on improving a country's export competitiveness, limiting the benefits.	
Body- R3	**R3 (Optional): Another policy to address the problem** Students may also use expansionary FP, Interest rate centred MP or exchange rate centred MP increase in AD increase in RNY via k AEG rate increases and demand deficient unemployment falls Depreciation may also cause an improvement in BOT assuming Marshall-Lerner condition holds Students may also use FTA	

Conclusion	**Summative conclusion:** Protectionism may be the best SR policy as it can help to ensure that they negative effects of the loss of comparative advantage on the country are mitigated or limited. However, if protectionism is extended and invite retaliation if continued for an extended period, this may give rise to negative effects on the economy. Therefore, supply side policies are required to ensure that the country addresses the root cause of loss of competitiveness by improving price and non-price competitiveness as well as by developing new areas of comparative advantage and ensuring that workers are trained to move into these sunrise industries. In addition, the revenue gained from the tariff could be used to fund the supply side policies implemented.	

Mark Scheme

Knowledge, Understanding, Interpretation, Application and Analysis			
Level	**Analysis Level**	**Descriptors**	**Marks**
L3	A+A A+C+K A+C	Response addresses the question fully and contains excellent analytical explanations of (R1- Protectionist measures) and (R2- Supply Side Policies) using relevant economic concepts, theories and principles in a precise, logical and reasoned manner. Response also contains appropriate examples to show application to current situations.	8-10
L2	A+K C+C+K C+C A+0 C+K+K	Response may contain cursory explanations of (R1- Protectionist measures) and (R2- Supply Side Policies) with ability to identify facts, some ability at diagrams but theory may be incompletely explained. Response may not fully address question requirements. Examples used may be inappropriate or there may be no examples used.	5-7
L1	C+0 K+K	Response shows some knowledge but does not indicate that the meaning of the question has been properly grasped, thus, answer may be mostly irrelevant. There may be some basic errors in theory and may contain a few valid points made incidentally.	1-4

Evaluation

Level	**Descriptors**	**Marks**
E3	Response contains well-explained evaluative judgments for **two** requirements and a well-justified summative conclusion	5
E2	Response contains a well-explained evaluative judgment for at least 1 requirement, the other requirement may not be well evaluated. Response may not have a summative conclusion.	3-4

E1	Response contains evaluative judgments that is unexplained or not supported by the arguments presented in the answer. Judgment may not be linked to the context of the question. OR A well-explained evaluative judgment linked to one requirement.	1-2