

Level 5 Exemplar

Section A (44 marks)

1. A free good must be free of charge. Do you agree? Explain your answer. (3 marks)

Yes. Because people are unwilling to pay for extra unit of free good such as sand in desert. The supply of free good is unlimited and can satisfy all human's need.

2. A chain restaurant providing Chinese cuisine set up a cake shop.

- (a) Explain which type of expansion this was. (2 marks)
- (b) List **TWO** possible motives for the above expansion. (2 marks)
- (c) After the opening of 10 more restaurants, the firm found that its average cost decreased. State **TWO** possible reasons for this. (2 marks)

a) Lateral expansion. The cake sold is related to Chinese cuisine which are both food but not directly competitive.

b) To diversify the risk over variety of products and make good use of the brand name to gain more profit.

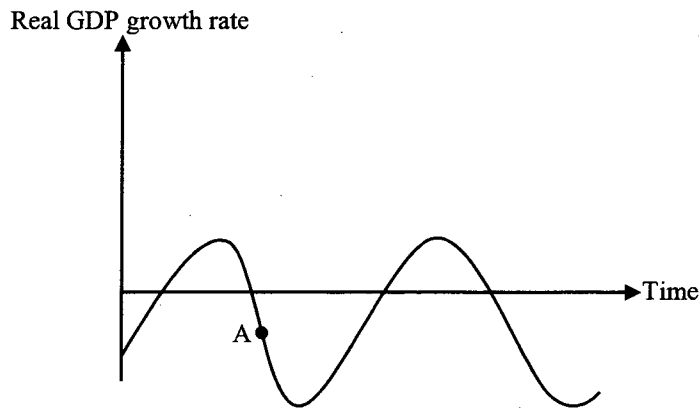
c) The firm purchases inputs in bulk and obtains discount. Thus, the average cost decreased. Also, the advertising cost can be spread by more types of products.

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3. Below are the gross domestic product (GDP) data of a country.



- (a) Identify the phase of business cycle which point A is in. (1 mark)
- (b) Apart from increasing unemployment rate, list **TWO** general economic phenomena which occur at point A. (2 marks)
- (c) State **TWO** losses to society caused by unemployment. (2 marks)

a) Recession

b) A decrease in general price level and the incentive to invest and consume

c) Loss of output and social instability with higher crime rate

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4. Study the following information of an economy.

Year	Consumer price index (CPI)
2018	110
2019	117

- (a) Calculate the inflation rate in 2019. (1 mark)
- (b) Explain **ONE** difference between using CPI and GDP deflator to measure the change in the price level. (2 marks)
- (c) 'The continuous open market purchase of government bonds by the central bank is the cause of inflation in the economy.' Justify the statement with reference to the classical quantity theory of money. (4 marks)

a) Inflation rate = $\frac{117-110}{110} \times 100\%$

= 6.36% cor. to 3 sig. fig.

b) CPI measures ^{prices of} all consumer goods including imports. GDP deflator only measures the prices of products produced by the economy. The change in the price level by using CPI can better reflect the cost of living.

c) The classical quantity theory of money states that $M\bar{V} = P\bar{Y}$ where M = money supply, \bar{V} = velocity of money which is constant, p = price level and \bar{Y} = output level which is constant. When the central bank purchases government bonds from the market, the money supply will increase, leading to a proportional increase in price level. Thus, there will be inflation.

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5. (a) What is the opportunity cost of holding money? Explain. (2 marks)
- (b) Peter owes Mary \$100 and he has no cash in his wallet. He suggests repaying Mary by a cash coupon (with a face value of \$100) issued by a supermarket chain. Give **TWO** economic reasons to explain why Mary would refuse to accept the cash coupon as a repayment of Peter's debt. (4 marks)

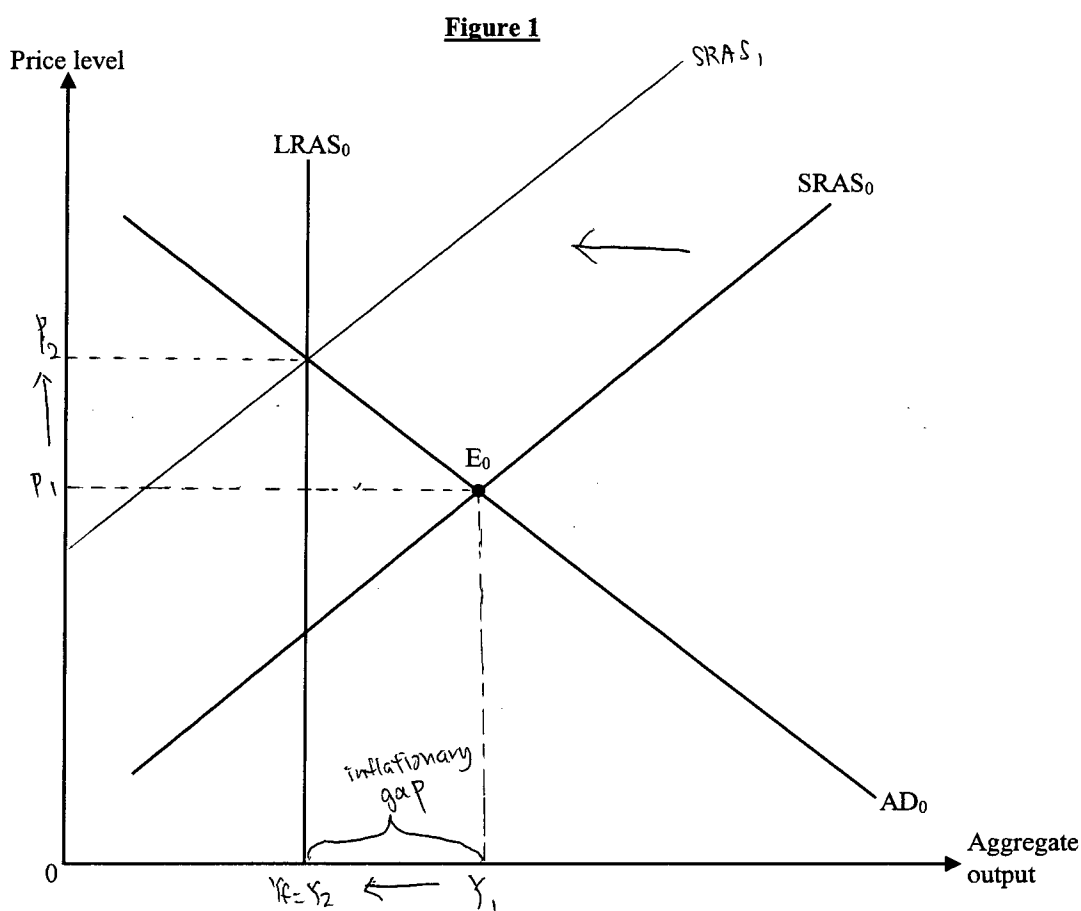
a) The nominal interest ^{rate} of financial assets. When you hold money, you give up the returns of assets such as dividends.

b) The cash coupon is not generally accepted as it can only be used in specific supermarket chain. Besides, the cash coupon is not used as unit of account since the prices of goods are mostly using cash dollar as unit.

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6. Refer to Figure 1.



Suppose an economy initially operates at E_0 . With the aid of Figure 1, explain how market forces can restore the aggregate output level to the full-employment output level in the long run. (5 marks)

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At E_0 , the output level Y_1 is above the full-employment output Y_f . There is a inflationary gap the overproduction in the short run. In the long run, the inflationary gap will lead to an upward pressure on factor prices such as wages. The cost of production will increase. The short-run aggregate supply will decrease and shifts from $SRAS_0$ to $SRAS_1$. The aggregate output level will restore from Y_1 to Y_2 and the inflationary gap will be eventually closed. The price level will increase from P_1 to P_2 .

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7. Suppose the outputs per unit of resources of Country A and Country B are as follows:

	Toys (units)		Cars (units)
Country A	10	OR	10
Country B	20	OR	10

$$1C = 1.25T$$

- (a) Which good would Country B export according to its comparative advantage? Explain. (3 marks)
- (b) Suppose Country A and Country B trade at an exchange ratio of 5 units of toys to 4 units of cars. A transportation cost of 0.2 units of cars is required to exchange for 1 unit of toys and the cost is equally shared by both countries. Calculate the gain per unit of export of Country B. Show your workings. (3 marks)

a) The opportunity cost of Country A producing 1 T is $\frac{10}{10} = 1C$. The opportunity cost of Country B producing 1 T is $\frac{10}{20} = 0.5C$. Since $0.5C < 1C$, Country B has lower opportunity cost and comparative advantage in producing toys. Thus, Country B will export toys.

b) The exchange ratio is $5T = 4C$

$$1T = 0.8C$$

$$\begin{aligned} \text{The gain per unit of export of Country B} &= 0.8 - (0.5 + 0.1) \\ &= 0.2C \end{aligned}$$

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8. Study the following balance sheet of the banking system in Country A.

Assets (\$million)		Liabilities (\$million)	
Reserves	1000	Deposits	4000
Loans	3000		

Suppose the public always hold \$800 million cash and the banking system does not hold excess reserves.

- (a) Find the monetary base and money supply in Country A. (2 marks)
- (b) Suppose firms withdraw \$700 million from the banking system and remit the whole amount overseas.
- (i) Find the change in monetary base in Country A. (1 mark)
- (ii) Calculate the maximum possible change in money supply in Country A. Show your workings. (3 marks)

a) Monetary base = $C_p + R$
 $= 800 + 1000$
 $= \$1800 \text{ million}$

Money supply = $C_p + D$
 $= 800 + 4000$
 $= \$4800 \text{ million}$

b) Change in monetary base = $(1000 - 700 + 800) - 1800$
 $= -\$700 \text{ million}$

i) The new reserve = $1000 - 700 = \$300 \text{ million}$

The required reserve ratio = $\frac{1000}{4000} \times 100\% = 25\%$

The new deposit = $300 \div 25\% = \$1200 \text{ million}$

The new money supply = $1200 + 800 = \$2000 \text{ million}$

The maximum possible change in money supply = $2000 - 4800$
 $= -\$2800 \text{ million}$

END OF SECTION A

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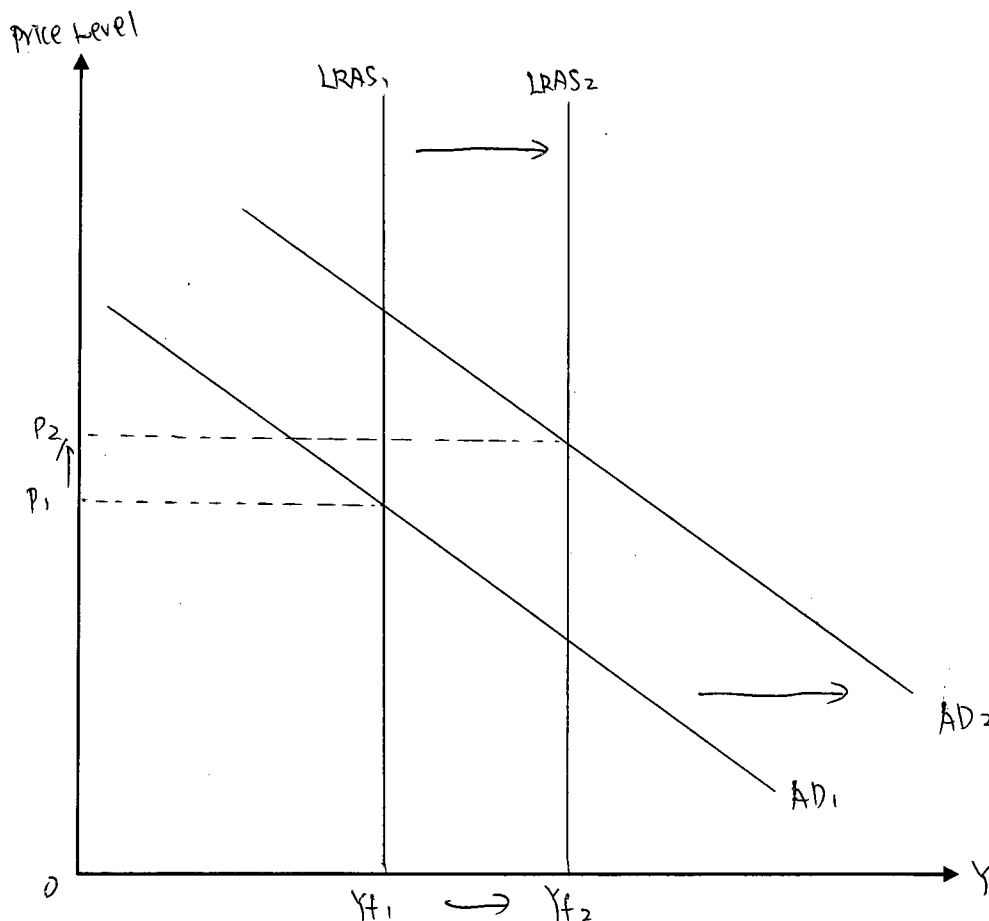
Section B (60 marks)

9. Ocean Park and Hong Kong Disneyland are the two large theme parks in Hong Kong.

- (a) What is the market structure of the theme park industry in Hong Kong? List **TWO** features of this market structure. (3 marks)

The first hotel in Ocean Park was launched in 2018 while the second hotel and the water park were scheduled to be opened before 2021. It is expected that such infrastructure development can attract more tourists to stay longer in Hong Kong.

- (b) Other things being equal, what will be the effects of the infrastructure development on Hong Kong's aggregate demand and long run aggregate supply in the future? How about on aggregate output? Explain your answers with the aid of a diagram. (8 marks)



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- (c) Instead of obtaining bank loans to finance the infrastructure development, it is suggested that Ocean Park can be listed in the stock market and issue shares to raise capital. State **TWO** advantages of issuing shares over obtaining loans from banks for raising capital. (2 marks)
- (d) The contribution of the infrastructure development of Ocean Park to Hong Kong's GDP in 2019 could be smaller than the total amount invested in the two hotels and the water park. Explain why the statement may be correct with **TWO** reasons. (4 marks)

a) oligopoly. There are a few dominant sellers in the market and there are entry barriers to the market.

b) since there is more infrastructure in Hong Kong, the production capacity increases. The long-run aggregate supply will increase and shifts from $LRAS_1$ to $LRAS_2$. At the same time, the hotel will attract more tourists to Hong Kong which increases the value of export of services. The net value of export increases. The aggregate demand will thus increase and shifts from AD_1 to AD_2 . The aggregate output will increase from Y_{f1} to Y_{f2} while the change in price level is uncertain.

c) There is no obligation for the ocean park to redeem maturity for shares but there is interest for obtaining loans from banks. Also, issuing shares will not increase the liabilities to assets ratio but obtaining loans will. The Ocean park will have to pay higher interest rate and more difficult to obtain loans from bank in the future if the ratio increases.

d) Part of the amount invested in the two hotels and the water park may not be invested in 2019. Thus, these amount are not counted as the value of production in current year which is 2019. Besides, the production of the infrastructure may includes the imported materials which are not the products produced by resident-producing units in Hong Kong. The value of these imported materials should be deducted from the amount invested. Thus, the contribution to GDP in 2019 of the infrastructure could be smaller than the total amount invested.

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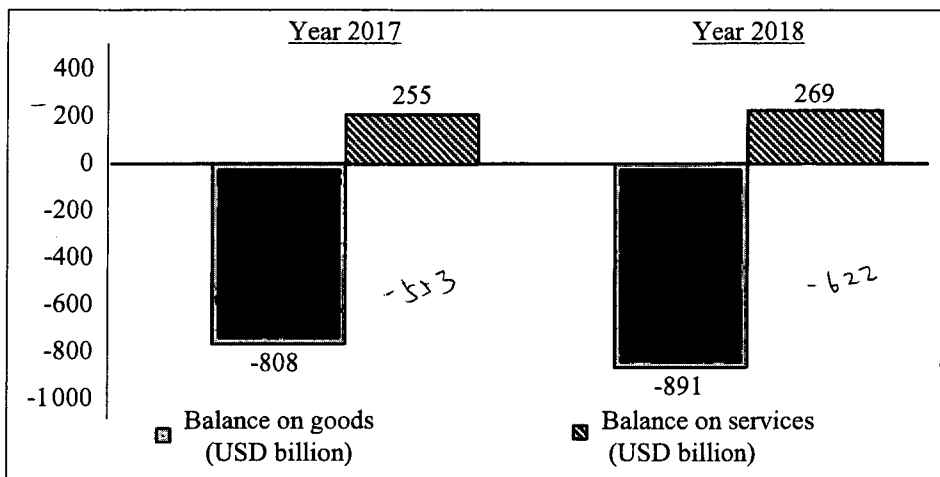
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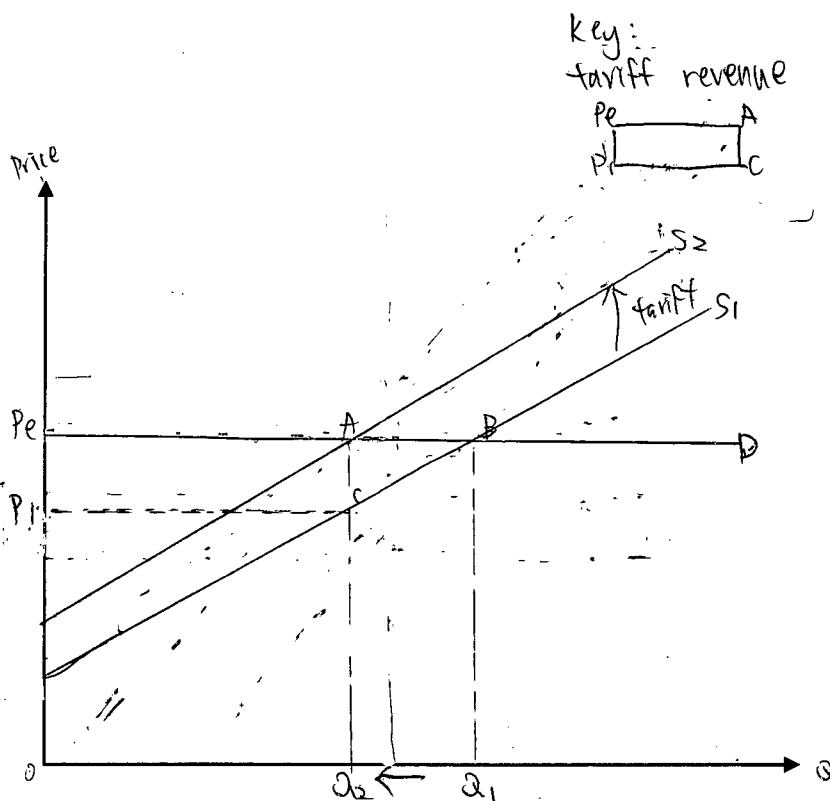
10. The following source shows the current account data of the US in 2017 and 2018.



- (a) (i) Describe the changes of current account data of the US in the above source. (2 marks)
- (ii) 'Based on the above source, we can conclude that the current account deficit of the US in 2018 necessarily increased.' Do you agree? Explain. (2 marks)

Donald Trump, the US president, once said that imposing tariffs would only increase the revenue of the US government and the US consumers did not have to pay more for the imported goods.

- (b) (i) With the aid of a supply-demand diagram, explain under **ONE** extreme condition that the consumers would bear **NO** tariff burden after the imposition of tariff. (4 marks)
(For simplicity, the tariff is assumed to be per-unit.)
- (ii) Indicate the tariff revenue (i.e. sellers' burden) in the same diagram. (1 mark)

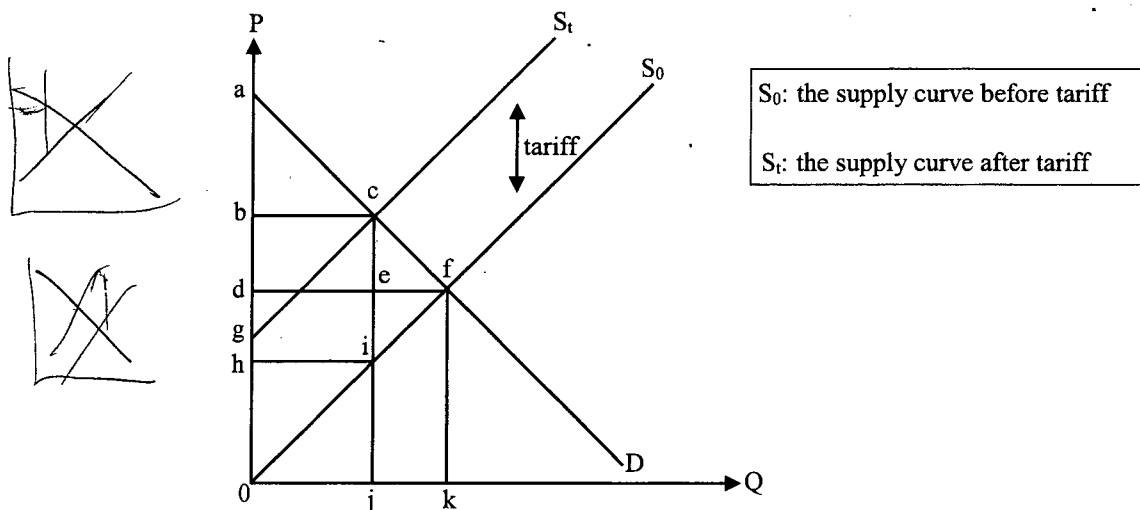


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(c) Economists argue that tariff may harm both the consumers and producers.



With reference to the above supply-demand diagram, complete the table below. (3 marks)

	Before tariff	After tariff
Consumers' surplus	Area adf	Area adc
Producers' surplus	Area dfo	Area hio

(d) The US government could impose quota to restrict imports. From the viewpoint of the US government, state **ONE** advantage and **ONE** disadvantage of using tariff instead of quota to restrict imports. (2 marks)

i) ~~The current account = balance on goods + balance on services.~~

~~The current account decreases from $(-808 + 255) = -\$553$ billion to $(-891 + 269) = -\$622$ billion.~~ The balance on goods decreases from -808 ^{in 2017} to -891 ^{in 2018} by \$83 billion while the balance on services increases from 255 ^{in 2017} to 269 ^{in 2018} by \$14 billion.

ii) No. The current account also includes net income from abroad and transfer payment which are not shown in the source. Thus, we cannot make this conclusion.

bi) When the demand is perfectly elastic, an increase in tariff will only decrease the supply. The supply curve shifts from S_1 to S_2 . The quantity decreases from Q_1 to Q_2 while the price remains at P_e .

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The consumer will not be affected by the imposing of tariff and bare no tariff burden.

d) Imposing tariff can increase government revenue while quota may not since the quota may not be held by the government. Yet, quality of imports may not be enhanced by tariff but can be enhanced by imposing quota.

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11. Traffic congestion in the cross harbour tunnels during peak hours is a serious problem in Hong Kong. For simplicity, the discussions below only focus on two cross harbour tunnels in Hong Kong, namely the Cross-Harbour Tunnel (CHT 紅隧) and the Western Harbour Crossing (WHC 西隧).

Source A: Existing tunnel tolls for private cars

CHT (owned by the government)	\$20
WHC (owned by a private firm)	\$75

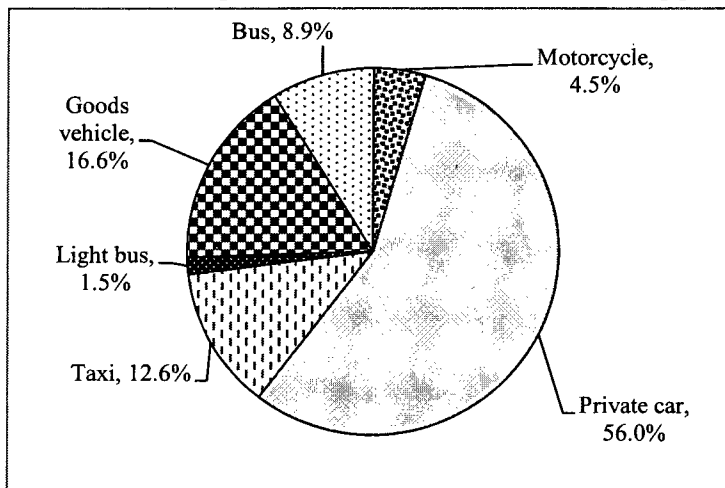
Source B: Traffic information during peak hours of the two tunnels

	Designed capacity per hour	Actual number per hour	Queue
CHT	2 600 (cars)	4 400-4 600 (cars)	1 500-3 000 (metres)
WHC	4 200 (cars)	3 600-3 800 (cars)	0 (metres)

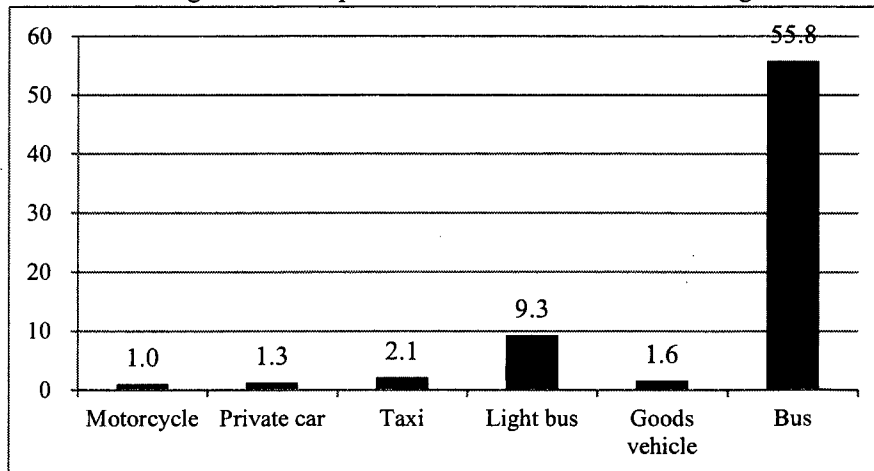
Source C: An extract of a report on traffic congestion

Traffic congestion not only affects individual drivers, but also results in inconvenience to society as a whole. Apart from the time wasted during congestion, people also need to allow extra time for the journey to cater for the uncertainty in travelling time. The stop-and-go traffic pattern during congestion increases the total operating costs of vehicles as more fuel would be consumed.

Source D: Percentage of vehicles crossing the harbour during peak hours (by types of vehicles)



Source E: Average number of persons in each vehicle when crossing the harbour during peak hours



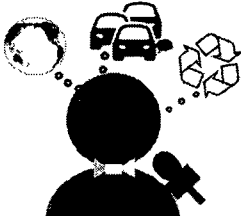



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Source F: Views on cross-harbour traffic in Hong Kong

<p>A politician</p> 	<p>Every citizen needs to travel across the harbour. An increase in tunnel tolls affects everyone, especially the low-income group.</p>
<p>A government official</p> 	<p>We cannot underestimate the difficulty in negotiating any adjustment in tunnel toll of WHC. The government has no right to object to the tolls set by WHC.</p>
<p>An environmentalist</p> 	<p>Reducing traffic congestion in cross harbour tunnels is only one tiny step. The root of the problem is that there are too many cars in Hong Kong.</p>
<p>A taxi driver</p> 	<p>Channeling traffic to the under-utilised WHC benefits every road user and this allows taxi drivers to have more businesses.</p>

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- (a) Refer to Source A. State **ONE** advantage and **ONE** disadvantage of providing cross harbour services by a private firm instead of the government. (2 marks)
- (b) Refer to Source B. With the aid of a supply-demand diagram, explain the phenomenon in the CHT (紅隧) during peak hours. (4 marks)
- (c) Refer to Source C.
- (i) Explain, with **ONE** example, why there may be a divergence between private and social costs during traffic congestion. (3 marks)
- (ii) Explain why the situation in part (i) may result in inefficiency. (2 marks)
- (d) According to Sources D and E, explain why private cars may be regarded as one of the major sources of traffic congestion in the cross harbour tunnels. (2 marks)
(Assume that the number of persons using the cross harbour tunnels per day during peak hours is constant.)

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For part (e), candidates are required to present their answers in an essay form. Criteria for marking will include the use of sources and economic theories, relevant content, logical presentation and clarity of expression.

(e) Suppose there are two cross-harbour-tunnel-toll adjustment proposals to relieve the problem of congestion:

Proposal I	The government raises the toll of the CHT (紅隧) for private cars to \$75.
Proposal II	The toll of the WHC (西隧) for private cars is reduced to \$20.

With reference to the above sources and your own knowledge in Economics, discuss which proposal, proposal I or II, each of the following groups of stakeholders would prefer:

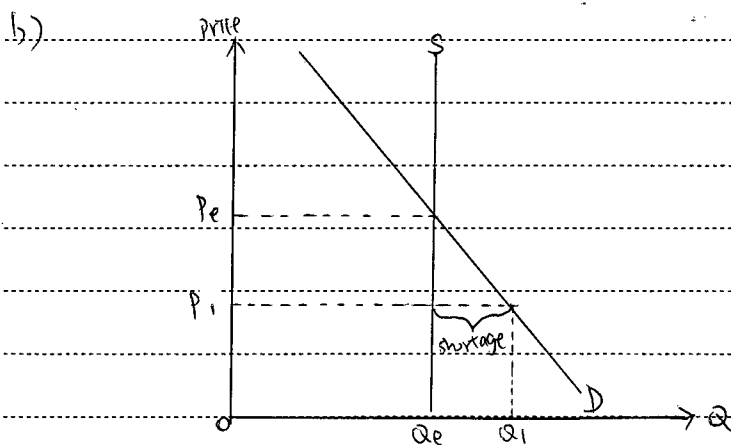
- the owners of the WHC company
- the politicians who are concerned about the income inequality in Hong Kong
- the government economists who are concerned about government revenue and/or expenditure
- **ONE** other group of stakeholders

(Hint: You may discuss the reasons why one group of stakeholders would prefer a certain proposal **OR** why that group would not prefer the other proposal.)

(14 marks)

(f) Suggest **ONE** proposal, other than tunnel-toll adjustment, for relieving the traffic congestion problem. Briefly explain how your proposal works. (2 marks)

a) The higher price for tunnel tolls owned by private firm will reduce the quantity demanded for cross harbour services. Thus, the no. of private cars decreases and the problem of traffic congestion is relieved. Yet, it increases the transportation cost of citizens.



The capacity of the tunnels is fixed. The supply of the services is perfectly inelastic. The price is set at P_1 which is below the equilibrium price P_e . At P_1 , the quantity demanded Q_1 is greater than the quantity supplied Q_e . There is a shortage.

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of cross-harbour services. Thus, there is a long queue in the CHT.

(i) During traffic congestion, an extra unit of car using the tunnel will increase the time cost for other car drivers in the queue without compensating them. Besides, the other drivers have to pay a higher operating cost since more fuel is consumed as shown in source C. They are not compensated either. Thus, there is a divergence between private and social cost.

(ii) When the social cost is greater than private cost, there is an overproduction. At this output level, the marginal cost is greater than the marginal benefit. There will be deadweight loss and inefficiency.

d) According to source D, private car takes up 56.0% of the vehicles crossing the harbour during peak hours. It is the majority. However, the average number of persons in private car is only 1.3 as shown in source E. It shows that private cars are the most majority of vehicles crossing the harbour and carrying very few number of persons. Thus, it is the major source of traffic congestion.

e) The owner of the WTC Company would prefer proposal I. The services of CHT and WTC are substitutes. When the toll of CHT increases to \$75, the demand for WTC will increase. Thus, the total revenue of the WTC company will increase. For proposal II, it will reduce the total revenue of WTC company if the toll decreases from to \$20.

The politicians would prefer proposal I. Since most private cars are owned by the rich. Increasing the toll of CHT to \$75 will increase the travel cost of the rich without affecting the poor who take public transportation mostly. The income of rich decreases and the income gap is narrowed. Thus, the income equality is improved.

The government economists will prefer proposal I. The original toll is set at \$25 which is far below the equilibrium price. Thus, there is serious traffic congestion and shortage of the CMT services. Increasing the toll ~~at~~ to \$75 which is closer to the equilibrium price may result in a greater percentage increase in price and a smaller percentage decrease in quantity since the demand is inelastic. Thus, the government revenue will increase.

Last but not least, the environmentalist may prefer proposal I. Since the toll of CMT increases to \$75 which is equal to that of WTC, the ^{average} travelling cost of private car owner is higher. This can provide incentive for owners of private car to take more public transportation to save the cost. The public transportation emits fewer greenhouse gases and carries more people each time. Thus, it is more environmentally friendly compared to ~~the~~ driving private cars.

f.) Constructing more tunnels. This increases the supply of cross harbour services and diversify the massive demand over more options ~~of tunnels~~. Then, the shortage of service can be relieved and so as the ~~the~~ problem of traffic congestion.

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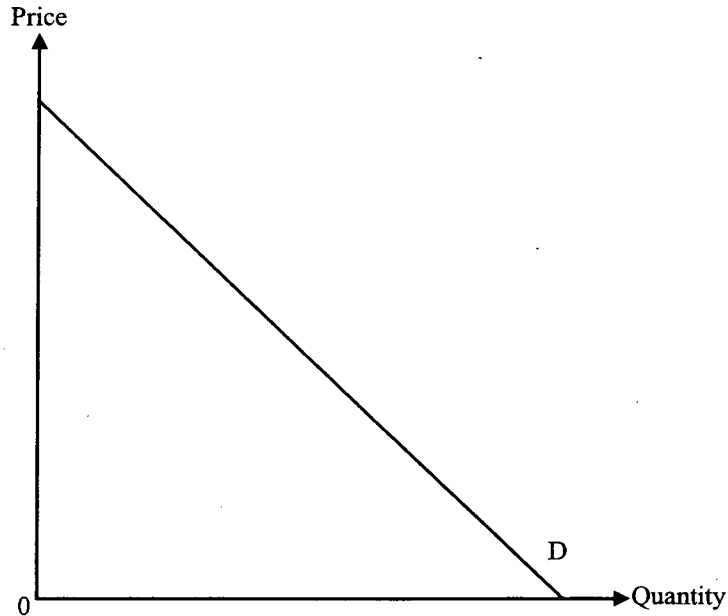
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Section C (16 marks) Answer any ONE question.

12. ABC Electricity Limited, the sole supplier of electricity in Country A, adopts uniform pricing.

- (a) If the marginal cost is constant, explain how the profit-maximising output of ABC Electricity Limited will be determined. Indicate the output (Q_M), the price (P_M) and the deadweight loss in Figure 2. (5 marks)

Figure 2



- (b) Suppose the government imposes a lump sum tax, which is a fixed amount regardless of the quantity produced, on ABC Electricity Limited. (Assume that the tax amount is smaller than the profit.)
- (i) Indicate the after tax profit-maximising output (Q_t) and price (P_t) in Figure 2. (2 marks)
- (ii) Explain whether economic efficiency would worsen as a result of the tax. (2 marks)
- (c) ABC Electricity Limited charges users in the urban area \$1 per unit of power consumed and users in the rural area \$1.5 per unit of power consumed. Define price discrimination and explain why this price arrangement may **NOT** constitute price discrimination. (3 marks)

ABC Electricity Limited planned to install new equipment for electricity supply in the rural area and asked the equipment providers to bid for the contracts. It was found that the two equipment providers in a region agreed to take turns being the bid winner.

- (d) (i) Which anti-competitive behaviour would the above case constitute? If the above case happened in Hong Kong, which conduct rule of Competition Ordinance would be violated? (2 marks)
- (ii) State **TWO** ways the above behaviour would harm ABC Electricity Limited. (2 marks)

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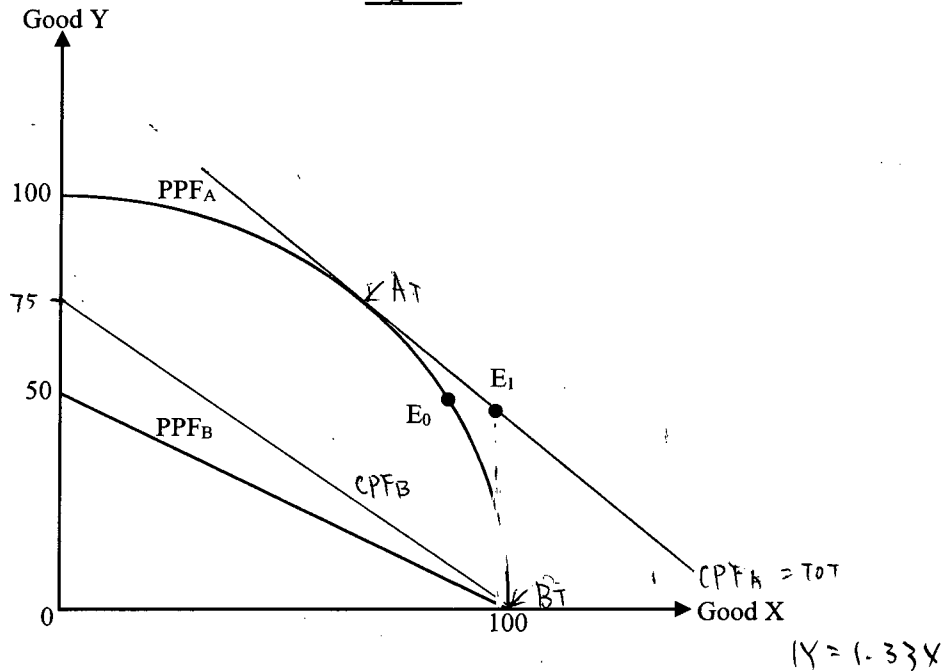
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13. Refer to Figure 3. PPF_A and PPF_B are the production possibility frontiers of Country A and Country B respectively. E_0 is the consumption point of Country A without trade.

Figure 3



Assume the domestic cost of production of 1 unit of Good X in Country A is 1.5 units of Y at E_0 .

$$1X = 1.5Y \quad 1X \Rightarrow 1Y$$

$$1X = 0.5Y$$

- (a) With reference to the domestic production costs of Country A and Country B, explain which country will specialise in producing Good X. (3 marks)
- (b) After Country A engages in trade with Country B, the consumption point of Country A is E_1 .

$$0.5Y < 1X < 1.5Y$$

Indicate in Figure 3,

- (i) the consumption possibility frontier (CPF_A) of Country A (Hint: CPF_A should pass through E_1),
- (ii) the production point (A_T) of Country A after trade and explain your answer in terms of terms of trade, and
- (iii) the consumption possibility frontier (CPF_B) and the production point (B_T) of Country B after trade. (5 marks)
- (c) Suppose Country B adopts artificial intelligence technologies in the production of Good Y, which doubles her productivity of the good.
- (i) Explain whether your answer in part (a) would be affected by the above change. (2 marks)
- (ii) Give **TWO** reasons to explain why the adoption of artificial intelligence technologies may boost economic development of Country B. (4 marks)
- (iii) Apart from adopting artificial intelligence technologies, list **TWO** factors that may boost economic growth. (2 marks)

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a) The opportunity cost for country A to produce 1 X is 1.5 Y.
The opportunity cost for country B to produce 1 X is $\frac{50}{100} = 0.5 Y$
Since $0.5 Y < 1.5 Y$, country B has lower opportunity cost in producing good X. Thus, country B will specialise in the production of good X.

7
i) The new opportunity cost for country B to produce 1 X = $\frac{100}{100} = 1 Y$
which is still ~~same~~ lower than 1.5 Y of country A. Thus, there would be no effect and country B remains to export good X.

ii) The productivity of country B increases and the quality of goods improved which can be sold in better price.

iii) Subsidising tertiary education and importing of medical technology.

5ii) The production point will be the point on the slope of terms of trade where it is tangent to the PPF_A.

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Sources of materials used in this paper will be acknowledged in the *HKDSE Question Papers* booklet published by the Hong Kong Examinations and Assessment Authority at a later stage.

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