3 (a) Using appropriate examples, explain why the existence of negative externalities and public good causes market failure. [10]

(b) Discuss the various policies which the Singapore government adopts in correcting the market failures above. [15]

Suggested answer:

Part (A)

Intro

1. **Define market failure**
    - Less than desirable outcome where resources are **not** used in the most efficient way. Hence, there is allocative and productive inefficiencies.
    - Partial market failure: where there is over or under production/consumption which leads to inefficient allocation of scarce resources. This arises when there are externalities.
    - Define externalities
        1. 3rd party effects on someone not directly involved in the production &/or consumption of a gd.
        2. may be negative(external cost or 3rd party cost) or positive (ext. benefit or 3rd party benefit)

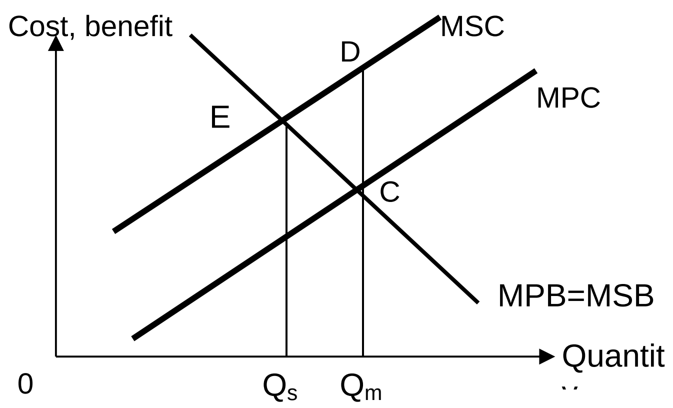
Body

1. State that traffic congestion is a form of partial market failure where there is negative externality

- Define negative externalities (by making reference to any e.g.: road congestion, smoking): external cost to 3rd parties who are not directly involved in the production and/or consumption of the good. For example, road congestion generates noise and air pollution that affect the quality of living for residents living near the congested roads or road congestion leads to a delay in arrival time for work for other road users such as passengers on public buses. This could lead to a fall in the revenue for firms when the workers report late for work./ Smoking generates second hand smokers which can cause other non-smokers to have health problems like breathing difficulties.
- Because of the presence of negative externalities, there is a divergence between private costs and social costs by the extent of the external costs.

2. Explain how road congestion/second hand smoke results in negative externalities and hence, market failure.

- Diagram showing socially optimal level of consumption (MSC=MSB) and the equilibrium level of consumption without government intervention (MPC=MPB).
- Show that there is overconsumption of cars/smoking and hence, welfare loss to society.



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- Assuming that there is no external benefit, marginal private benefit (MPB) is equal to marginal social benefit (MSB). In this case, marginal private cost could include cost of petrol and the depreciation cost of the car for the additional trip, and the time lost when the driver is caught in traffic congestion/ cost of cigarettes, personal health problems. Marginal private benefit could be in terms of the convenience one gets from driving a car/satisfaction from smoking. The private equilibrium occurs at MPC equals to MPB, i.e. 0Qm level of traffic flow/smoking in a not crowded place.
  The social equilibrium occurs at MSC, which is the summation of marginal private cost and marginal external cost, equals to MSB, i.e. 0Qs level of traffic flow. If left alone, the price mechanism will bring about a level of traffic flow that is higher than what is deemed to be socially desirable.
- As a result, there is a deadweight or welfare loss to society of area EDC. There is welfare loss because the MSC exceeds the MSB for each additional trip taken beyond 0Qs. Hence, the government should deal with traffic congestion.
- When the number of cars exceeds the road capacity, traffic congestion arises, which is a form of market failure. As resources are allocated inefficiently by the market mechanism, the government has to intervene.

How Public Goods cause markets to fail:

- Private sector will not be willing to provide such public goods as the free rider problem make it difficult to charge people.
- Important to highlight the non-excludable and non-rival nature of public goods with the use of appropriate examples
- It is impossible for the producer to know where, when, how much and who to charge and hence no profits can be made.
- But public goods are vital or essential to the nation Eg: ***National Defence, Policing for***
- ***keeping law and order*** ….etc
- Provision of public goods results in positive externalities (MSB>MPB),
- No resources will be allocated to the production of public goods in the private sector.
- Market fails as there is no provision of public goods at all (absence of market).

Mark Scheme

L3	**7-10**	Good analysis of welfare loss using relevant marginal cost and benefit concepts, with help of appropriate diagram. Competent explanation with good description of terms and a clear understanding of the concepts involved..
L2	**5-6**	• Shows understanding the market failure which results in welfare loss and/or with little explanation • Diagram is drawn but with errors • Examples are missing but may show some inaccuries; if they are included, concept of external cost is not clearly explained.
L1	**1-4**	Showed little/ some basic concepts. May contain inaccuracies and/or irrelevant information

Part b

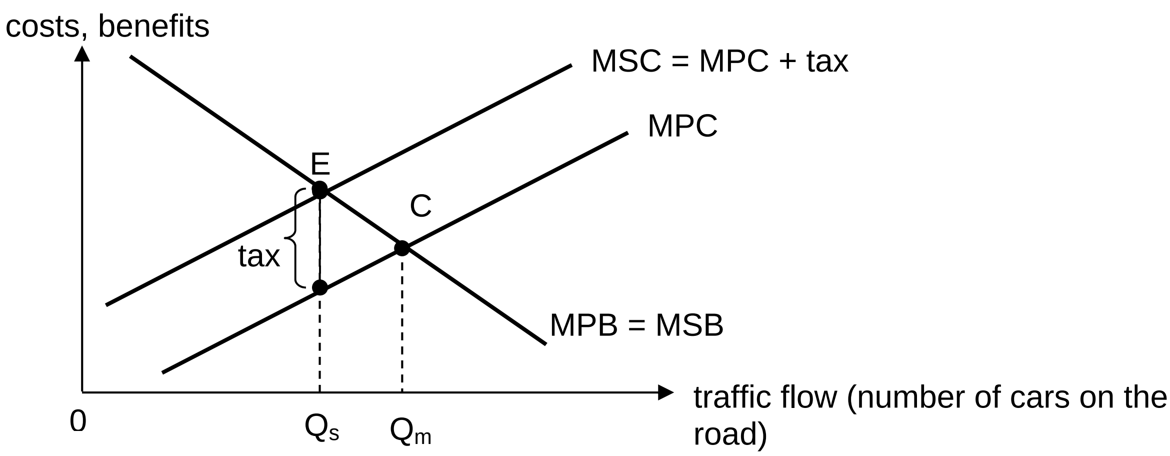
Introduction

- Negative externalities like smoking occurs when there is over consumption of the use of cigarettes. It is again necessary to implement policies to reduce the market failure./ Traffic congestion occurs when there are too many cars on the road, given the road capacity. Therefore, it is necessary to note that policies implemented to reduce the problem of traffic congestion must tackle the problem of car ownership and car usage.
- The Singapore government has implemented a range of policies to tackle the problem of smoking. These policies include taxation, moral suasion and education. / The Singapore government has implemented a range of policies to tackle the problem of traffic congestion. These policies include COE, ERP system and improvement of the public transport system. It is important to note that main cause of Singapore's current traffic congestion problem arises primarily due to excessive car ownership.

Body

1. Taxation

- Singapore has implemented various forms of taxes to curb the problem of congestion.
  - **(a) Motor Vehicle Taxes & Road Tax and tax on complementary good i.e. petrol**
    - Explain how the traffic congestion leads to market failure or deadweight loss using relevant examples and the aid of a diagram (see below).
    - Taxation is done with the purpose to internalise the external cost to reduce the road usage. This can be achieved by imposing taxes that is equal to marginal external cost.
    - This policy has been implemented by the Singapore government and can be seen from the taxes on petrol and the imposition of motor vehicles taxes and road taxes.
    - When the tax is imposed, the MPC curve shifts up by the amount of the tax to the MPC+tax curve. As a result, traffic flow is reduced from 0Qm to the socially optimal level of 0Qs.



Evaluation (for both Taxation and ERP, unless otherwise stated)

- This policy of taxation is suitable if the country is able to obtain accurate estimates of the level of external cost and hence, the amount of tax or ERP charge. This is because overtaxing or overcharging may result in underutilising of roads while under-taxing or undercharging may *still* result in congestion. Therefore, for a developing country that has problems in data collection, the amount of tax imposed may not be optimal.

- Unit tax on cigarettes to discourage smoking. In Singapore, the total tax as a % of retail price is 69%. The high tax is to reduce the consumption of cigarettes in order to reduce the negative externality. (Theoretical explanation as above).

Evaluation
- Hard to determine how much to tax
- Over- correction may also result in market failure.

2. Direct controls through quotas
- In Singapore, the government also uses tradable permits to reduce the problem of congestion.
- Essentially, the government limits the number of cars that can be bought or sold. This is done through Certificate of Entitlement (COE), which are essentially tradable permits. The number of COEs determines the number of cars on the roads. And this number depends on the annual rate of car growth and the number of vehicles deregistered in the previous period.

Evaluation
- COE is effective in controlling car ownership. However, because it controls car ownership but not car usage, this means that current car owners are not affected by the fall in the number of COEs issued. As a result, traffic congestion may not be reduced if car usage does not fall.

3. Improve public transport system and road system
- With the above policies in place to reduce car ownership and car usage, it is therefore necessary for the government to improve public transport so as to make demand for private transport price elastic.
- Build more roads and expressways**,** widen existing roads to ease traffic flow, underground tunnels, etc.
- Improve the existing infrastructure through building a more efficient public transport system. E.g.: The Circle Line in the Mass Rapid Transit system.
- Subsidies for public transport to keep travelling by public transport affordable

Evaluation
- The difficulty in implementing this policy is to balance between providing quality public transport and keeping costs low and hence, affordable for users.

4. Moral Suasion/ Education
   Through the use of imageries and advertisement messages, persuade and discourage the consumption of cigarettes.

Public goods

- Government adopts appropriate policies in correcting non-provision of public goods
- E.g. National defence/ street lighting
- As a result of the lack of market, government provision is needed.

Evaluate appropriateness of policies

- Economic analysis of how the non-provision is being addressed
- Evaluation: Can analyse amount of deadweight loss before and after government intervention
- Defence takes up the largest proportion of government budget in Singapore. Could be a case of government failure, over- consumption. However, situation has been improved from a case of non-provision. In view of the increasing threat of terrorism (Changing situations)
- Requires government to constantly review their policies e.g. Cyber security – are we spending sufficiently on that?

Conclusion

As far as dealing with road congestion is concerned, the Singapore government has implemented a package of policies that seek to reduce traffic congestion by addressing car ownership, car usage and quality of public transport.

Answer Scheme

L3	For an analytical discussion referring to policies employed by the Singapore government with well developed evaluative comments.	9 – 11
L2	Under-developed answer with insufficient depth in economic analysis	6 – 8
L1	Sputtering of points	1 – 5
E1	For unexplained assessment	1 – 2
E2	For evaluative assessment based on economic analysis on most appropriate policies.	3 – 4

4 (a) Explain the causes of a current account deficit. [10]

(b) Assess the effectiveness of the policies that a government can implement when faced with a current account deficit. [15]

Introduction:
Define: The current account records payments for imports and exports of goods and services. The causes of current account deficit are relatively high domestic Inflation, relatively high economic growth rate, overvalued domestic currency, loss in comparative advantage and ambitious development programme.

Body:

✓ Relatively high domestic Inflation

When inflation in Singapore (domestic economy) is relatively high, Singapore produced goods will become more expensive. Exports of Singapore goods will be relatively more expensive, thus Malaysian will reduce the quantity demanded of Singapore exports. Malaysian imports become relatively cheaper, thus Singaporeans will substitute Malaysian imports for Singapore goods and increase the quantity demanded of Malaysian imports. Receipts from Singapore exports will fall while the payments for Malaysian imports will increase, assuming that the demand for exports and imports is elastic. This will cause the current account for Singapore economy to worsen.

✓ Relatively high economic growth rate,

A high rate of economic growth indicates that real national income of a country has risen relative to other countries. Residents of Singapore, whose economy has registered a high rate of economic growth will have greater purchasing power. There will be increased consumption of both domestically produced goods as well as imported goods. Import expenditure rises. This will cause current account to worsen.

✓ Overvalued domestic currency,

An overvalued Chinese domestic currency will lead to high export prices in foreign currency terms and low import prices in local currency terms. The quantity demanded of exports will be low while that for imports will be high. Receipts from exports will be low while payments for imports will be high assuming that the demand for exports and imports is elastic. This will cause the current account of the country to worsen.

✓ Loss in comparative advantage

Over time, patterns of trade are likely to change as costs of production change. If other countries have been able to gain comparative advantage in the production of a good which used to be exported by the domestic country, this will mean that the similar product produced by foreign countries is now cheaper than that produced by the domestic country. The domestic country will experience a fall in export demand and a rise in import demand. A loss in comparative advantage will thus cause the current account of a country to worsen.

✓ Ambitious development programme

This mainly applies to developing countries as they embark on an ambitious industrialization programme. Large-scale imports of factors of production, e.g. machinery, equipment, raw materials and technology are required for industrialization to take place. This will lead to a drastic increase in payments for imports. This will cause the current account of the country to worsen.

Mark Scheme

L3	At least 3 well elaborated and developed causes of current account deficit with relevant examples	7 - 10
L2	At least 2 reasons for current account deficit was developed and explained with relevant examples.	5 - 6
L1	Little or no elaboration of the causes of current account deficit.	1 - 4

Part b

Introduction:
The various policies used to rectify a current account deficit are expenditure reducing and expenditure switching policies. Expenditure reducing policy includes contractionary fiscal and monetary policies while expenditure switching policies are protectionism, supply- side policy and depreciation of the currency. The various policies are effective in different context. The following discussion will assess its varying effectiveness under various contexts.

Body:
The expenditure-reducing policy aims to <u>reduce the expenditure on imports through the use of contractionary monetary and/or fiscal policies</u>.

Expenditure reducing- Contractionary fiscal policy

Contractionary fiscal policy is to reduce government spending and increasing tax in the economy. Decreasing government spending will reduce AD directly. The reduction in taxation can be done through reduction of income tax or corporate tax. This will result in the fall in consumption and investment in the economy respectively. The fall in AD will lead to lower national income equilibrium. As such, the purchasing power of consumers will fall, leading to lower import expenditure. This helps to improve the BOP via current account.

Expenditure reducing- Contractionary monetary policy
Contractionary monetary policy can also be used to explain as well.

Evaluation: The success of the contractionary monetary and/or fiscal policies depends on the income elasticity of demand for imports. If the demand for imports is income inelastic, then for a given decrease in income, there will be a less than proportionate decrease in the quantity demanded for imports. Thus, total import expenditure will only reduce to a limited extent, limiting the effectiveness of the policies to rectify the problem of BOP deficit. Also, the policies have their own limitations. Higher unemployment will result due to the contractionary fiscal policy adopted. Thus, if the country is already experiencing depressed economy, the problem of demand-deficient unemployment would be further aggravated.

Expenditure switching

The expenditure-switching policy aims to increase the price of imports by making domestic goods/exports cheaper and/or making foreign goods/imports more expensive. This is to switch the expenditure of domestic households from foreign to domestic goods to reduce imports and/or switch the expenditure of foreign households to goods produced by the country to increase its exports.

Protectionism (any protectionistic measure can be used to explain):

Tariffs, also known as import duties, are taxes levied by the government on imported goods. A tariff can be specific tax (i.e. a fixed amount imposed per unit of imported good) or ad-valorem tax (i.e. a fixed percentage of the unit price of the imported good). Many agriculture-based countries protect their domestic agriculture sector by imposing tariffs on imports. Figure 4 below illustrates the effects of the imposition of tariff in an economy.

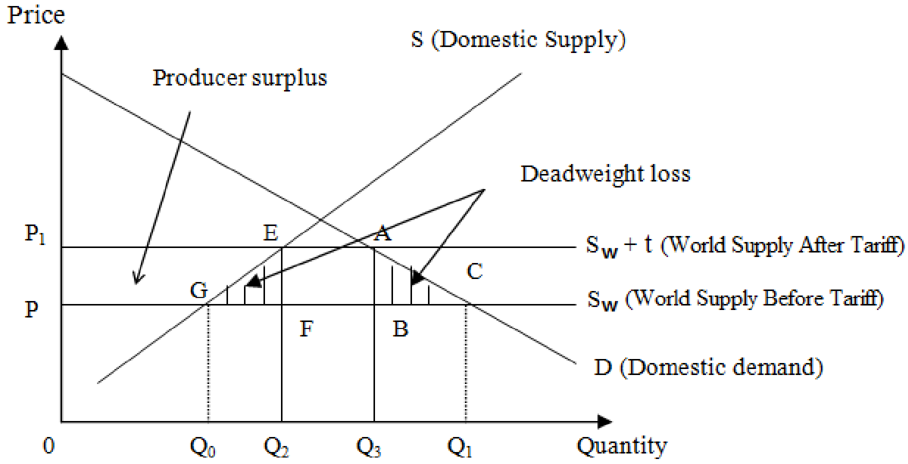


Figure 4: Imposition of Tariffs

Assume country is too small to influence world price: it is a price taker. Note that the world supply curve is horizontal because supply is perfectly price elastic due to perfect substitutes available in the world. Before the imposition of tariffs, consumption is at Q_1 at world price P as shown in figure 4. However, domestic quantity supplied is at Q_0. As such, the shortage of Q_0Q_1 is being imported from the world. However, with the imposition of tariffs, the world price increases to P_1. At this new price level, consumption reduces to Q_3 and domestic production increases to Q_2. As a result, imports reduce to Q_2Q_3.

This imposition of tariffs creates both gains and losses to the country. Domestic producers in the country gain as its production increases from Q_0 to Q_2. Thus, the producers enjoy an increase in the producer surplus as shown in figure 4. Also, the government also gains as it collects revenue from the imposition of tariffs. The area ABFE in figure 4 shows the revenue collected by the government. But part of this tax revenue needs to be spent on administration such as extra custom officials to enforce and administer the tariff, causing unproductive use of resources.

Evaluation:

- ✓ Tax policy and subsidies should not be long-term policies as they can result in complacency and cause inefficiency in the industries concerned.

- ✓ Such policies will deplete the country's reserves.
- ✓ The success of the tax policy and subsidies also depends on the price elasticity of demand for exports. If the demand for exports is price inelastic, a decrease in the price of exports will lead to a less than proportionate increase in the quantity demanded of exports. As such, export earnings will decrease instead and worsen the BOP via the capital account, ceteris paribus.
- ✓ these trade policies have their own limitations (Beggar-thy-neighbour, retaliation).
- ✓ The removal foreign competitors may mean that the local firms have no incentives to improve efficiency. As such, these policies did little or nothing about the underlying causes of the BOP deficit.
- ✓ In the long-run, the root of the problem is still unresolved and retaliation by foreign countries may take place, worsening the BOP position in the country. Further, the success of these policies also depends on the price elasticity of demand for imports. If the demand for exports is price inelastic, an increase in the price of imports will lead to a less than proportionate decrease in the quantity demanded of exports. As such, import expenditure will increase instead and worsen the BOP via the capital account, ceteris paribus.

Supply-side Policies:

The long-term answer to the problem of a balance of payments deficit is to adopt supply side policies. The government can embark on a long term policy which aims to increase domestic productivity through research and development and improvement of technology. This will lead to a reduction in unit costs of production and improve the competitiveness of exports. It will not only eventually bring about an improvement in the current account and hence, balance of payments but also economic growth.

Evaluation:

- ✓ This is a long-term policy and cannot cure a balance of payments deficit in the short-term.

Depreciation/ Devaluation of its Currency:

Depreciation of currency involves reducing the external value of a country's currency. This will make exports relatively cheaper because foreigners now need lesser of their foreign currency to exchange for the local currency and imports relatively more expensive because the locals need more of their local currency in exchange for foreign currency.

As a result, the quantity demanded of exports will increase while that of imports will fall more than proportionately. Receipts from exports will rise while payments for imports will fall assuming that the demand for exports and imports is price elastic. The current account and hence the balance of payments will improve.

Thus, depreciation of currency will improve the current account and hence balance of payment, if the sum of price elasticities of demand for imports and exports is more than one, i.e. Marshall-Lerner condition holds ($PED_x + PED_M > 1$).

Evaluation:

- ✓ Marshall-Lerner condition does not hold. In the short run, the price elasticity of demand for a country's imports and exports tends to be highly inelastic, thus the Marshall-Lerner condition may not hold, i.e. ($PED_x + PED_M < 1$). This could be due to both domestic and foreign consumers requiring some time to respond to the price changes. For example, it may take time to change import and export contracts signed before the devaluation. Hence, devaluation may initially cause the current account to worsen in the short run, but will eventually lead to an improvement in the current account in the long run

Mark Scheme

L3	Well developed and contextualised explanation of the policies which can solve current account deficit. At least one expenditure-reducing and one expenditure switching policy is well elaborated.	9 – 11
L2	At least 2 policies were elaborated but not well developed. Only explained EITHER expenditure reducing OR expenditure switching policies were explained. Some answers are contextualized.	6 – 8
L1	An undeveloped assessment of the policies which can help to resolve current account deficit. Little theoretical explanation with some inaccuracies in elaboration.	1 – 5
E1	For unexplained assessment	1 – 2
E2	For evaluative assessment based on economic analysis on most appropriate policies.	3 – 4