Rational decision making involves the consideration of the marginal costs and marginal benefits of the choices available.

(a) Using demand and supply analysis, explain how consumers and firms make rational decisions in the free market. [10]

(b) Discuss the view that the free market inevitable fails and government intervention always leads to an improvement in resource allocation. [15]

Suggested answer for part (a)

In economics, the rational decision-making is a process based on the marginalist principle. That is, it is based on a comparison of the marginal benefits and marginal costs of a particular activity, which in this case, refers to the consumption and production.

Consumers decide how much to consume by comparing the private benefits which they derive with the opportunity cost for each unit of the good. The private benefits can be depicted by the demand curve as the curve shows the maximum price that consumers are willing and able to pay. In Figure 1 below, the private benefit is P_1 for the Q_1^{th} unit.

The opportunity cost is the benefits of the next best alternative forgone which can be depicted by the price that he has to pay, which is P_e based on Figure 1.

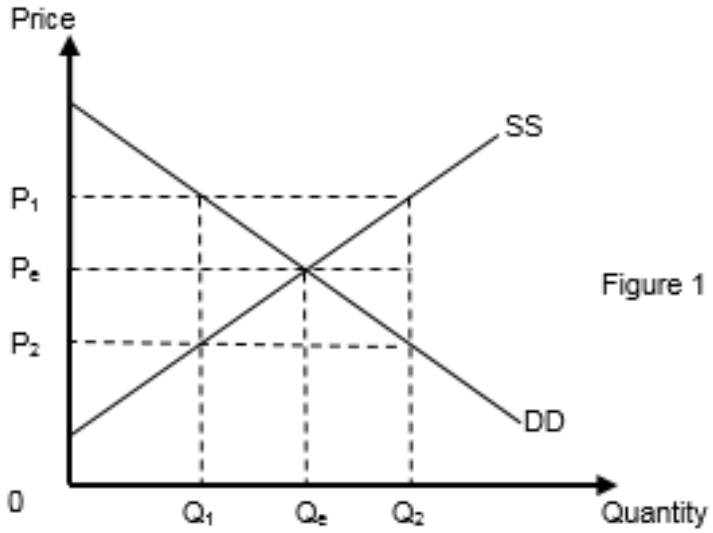


Figure 1

Rational consumers will buy the unit as long as the marginal benefits surpass the marginal costs. Since P_1 surpasses P_e, consumers will buy this unit, Q_1. In fact, consumers will buy up to the point Q_e since for all units before Q_e, the additional benefits surpass the additional costs. However, it is irrational to consume beyond this unit as the additional costs surpass the additional benefits. For example, for the Q_2^{th} unit, the costs, P_e, will surpass the benefit, P_2, thus it is better for the consumers to forgo this unit. As such, the quantity that consumers eventually buy is given by the equilibrium quantity, Q_e.

Likewise for producers, they decide how much to produce by comparing the private benefits which they can derive with the opportunity costs for each unit of the good they produce, so as

to maximise their profits. With reference to Figure 1, the private benefits can be depicted by P_e, which is the payment they would receive for each unit produced. For Q_1^{th} unit, the private benefits is P_e. The opportunity costs for the producers are given by the supply curve.

Like the consumers, rational producers will produce the unit so long as the additional benefits surpass the additional costs. Using Figure 1, for Q_1^{th} unit, the opportunity costs to producers is P_2. Since P_e surpasses P_2, producers will produce this unit. In fact, the producers will produce up to Q_e since for all units before Q_e, the additional benefits surpass the additional costs. However, it is to be noted that it is irrational to produce beyond Q_e as the additional costs surpass the additional benefits. For example, for the Q_2^{th} unit, the costs, P_1, will surpass the benefit, P_e, thus it is better for the producers to forgo this unit. As such, the quantity that suppliers eventually produce is given by the equilibrium quantity, Q_e.

In conclusion, the use of marginalist principle does help consumers and firms make rational decisions.

Level of Response Marking Scheme (LORMS)		
L3	**Developed** explanation of how consumers and firms use marginalist principle to make rational decisions. Graphs are properly drawn and explained.	8 – 10m
L2	**Undeveloped** explanation of why consumers and firms make rational decisions. OR **Developed** explanation of why consumers or firms make rational decisions (cap at 6m)	5 – 7m
L1	Smattering of valid points	1 – 4m

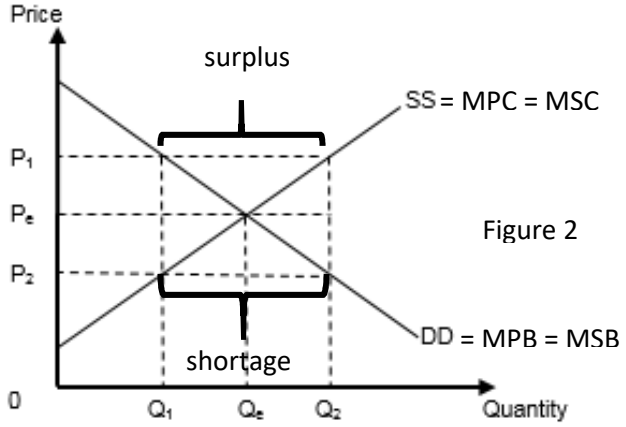
Suggested answer for part (b)

Allocative efficiency is achieved when the current combination of goods and services produced and consumed maximizes societal welfare. It occurs at the point where marginal social benefit (MSB) = marginal social cost (MSC) at Q_e as shown in Figure 2.

The free market will be able to achieve allocative efficiency if the following criteria are satisfied. Firstly, there is the absence of externalities. Secondly, there is perfect information present and thirdly the good is not a public good. Assuming in a free market where the 3 criteria are satisfied, the equilibrium price and quantity is determined by the intersection between demand and supply.

With reference to figure 2, at a price above P_e e.g. P_1, quantity supplied is more than quantity demanded. This creates a surplus in the free market. Producers will respond to the surplus by reducing price. When price decreases, quantity supplied falls while quantity demanded increases. This continues until the equilibrium price P_e and equilibrium quantity Q_e where the surplus is eliminated.

Similarly at a price below P_e e.g. P_2, quantity demanded is more than quantity supplied. This creates a shortage in the free market. Consumers will respond to the shortage by offering a higher price. When price increases, quantity demanded falls while quantity supplied increases. This continues until the equilibrium price P_e and equilibrium quantity Q_e where the shortage is eliminated.



Thus when the 3 criteria are satisfied, the free market will adjust itself to achieve allocative efficiency at Q_e through the price mechanism and that government intervention is not necessary. However, if any of these criteria is not satisfied, the free market will fail to achieve allocative efficiency and this necessitates government intervention.

Using merit good as an example. A merit good is a good that is deemed socially desirable by the government and yet perceived by the government to be under-consumed. This under-consumption can be attributed to individuals disregarding positive externalities and/ or under-estimating their private benefits of consuming the good. One example of a merit good is immunization. Some consumers may ignore the external benefits of immunization. External benefits are beneficial side-effects of producing / consuming a good on third parties who are not involved in the production / consumption of the good. Third parties like the family members and the co-workers enjoy the external benefits of immunization even though are not immunised. They are less likely to catch contagious disease from the person who was inoculated. When external benefits are ignored by consumers, under-consumption results.

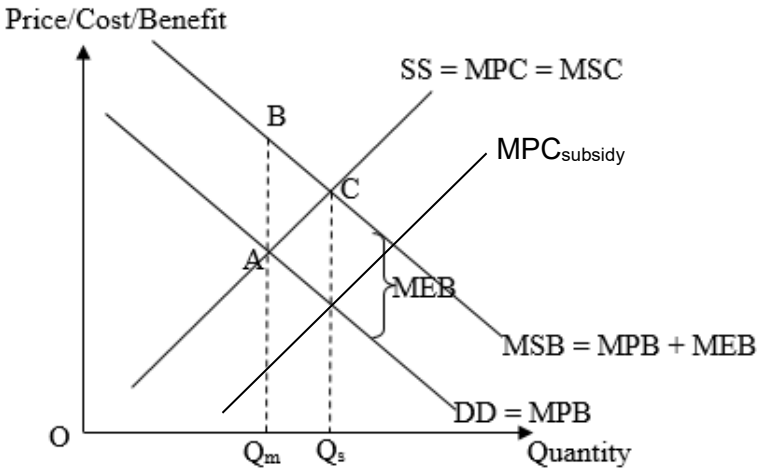


Figure 3

With reference to Figure 3. The existence of external benefits cause the marginal social benefit (MSB) to be higher than the marginal private benefit (MPB). The market output of the merit

good is Qm, given by the intersection of demand and supply (or marginal private benefit MPB, and marginal private cost MPC). The external benefits on third parties (i.e., marginal external benefits, MEB) are not considered when consumers decide how much of the good to consume. However, the socially optimal level of the good is Qs, given by the intersection of marginal social benefit (MSB) and marginal social cost (MSC), since society's welfare is maximised when MSB=MSC. Since Qm < Qs, there is under-consumption of the good. The welfare loss to society (i.e. deadweight loss) is given by Area ABC. Society's welfare can be increased by increasing Qm towards Qs.

One method to move towards a position of greater economic welfare is for government to provide subsidies to producers of healthcare like subsidizing doctors' training costs or hospitals operation cost. This will lower MPC to $MPC_{subsidy}$ in Figure 3, making healthcare available at a lower price and thereby encouraging consumption. This increase the consumption of healthcare and move equilibrium quantity of healthcare consumed towards the social equilibrium level of healthcare in Figure 3. If the subsidy per unit is equal to the MEB at the social equilibrium output of Qs, then the welfare of the society will be maximized. This shows that government intervention can lead to an improvement in the allocation of resources in an economy.

However, it is hard to determine the required size of subsidy as it is difficult to calculate the MEB derived from consumption of healthcare by the society as government have information failure. If the amount of MEB is under-estimated, subsidies may not be adequate to push equilibrium quantity to the social optimum level as some individuals are still unable to afford healthcare. If the amount of MEB is over-estimated, it will lead to over-consumption and substantial wastage of resources, which can result in an even greater welfare loss than without government intervention.

***Also*, the opportunity costs for providing subsidies needs to be considered too as these funds can be channelled to other purposes like building new infrastructure or enhancing education. Hence, the government needs to conduct the cost-benefit analysis of subsidizing healthcare and should only proceed if the benefits outweigh the costs of doing so.**

In conclusion, whether the free market inevitably cause market failure depends on whether the 3 criteria are satisfied. Should any of it is not satisfied, government intervention is required and the degree of government intervention depends on the degree of market failure present in the free market.

Level of Response Marking Scheme (LORMS)		
L3	Developed discussion on the view that the free market inevitable fails AND how government intervention can lead to improvement in resource allocation. Relevant diagrams are drawn to support analysis.	9 – 11m
L2	Undeveloped discussion on the view that the free market inevitable fails AND developed discussion on government intervention can lead to improvement in resource allocation. Or	5 – 8m

	Developed discussion on the view that the free market inevitable fails AND undeveloped discussion on how government intervention can lead to improvement in resource allocation. Relevant diagrams are drawn to support analysis.	
L1	Smattering of valid points	1 – 4m

Evaluation		
E2	Insightful evaluation which considers the limitation and implication of government intervention which is well justified.	3 - 4m
E1	For an evaluative statement without justification.	1 - 2m