3 Medical drugs have been marketed at such extraordinarily high prices that many people will simply not be able to afford them.

(a) Explain the possible sources of market failure present in the medical drugs market. [10]

(b) Discuss how policies to address these sources of market failure may result in unintended consequences. [15]

Suggested Answer for Part a

Question analysis

Approach	**Command Word**	Explain
	Question Type	Causes of Market Failure
	End Point	Sources of Market Failure present in medical drugs market
Content and Context	**Content**	• Market Dominance • Imperfect information • Inequity
	Context	Medical Drugs Market

The sources of market failure in the medical drugs market are market dominance, imperfect information and inequity.

Source 1: Market Dominance

The market for medical drugs are dominated by a few major pharmaceutical firms such as GlaxoSmithKline, Amgen, and Novartis. This results in a situation where monopoly power exists in the market, and each firm in the market faces a downward sloping demand curve. With reference to Figure 1, the firm chooses to produce at output Qe, where MC =MR so as to maximize profits. However, at Qe, the equilibrium price is higher than its marginal cost i.e. **P > MC** In other words, society values medical drugs more than what it costs the monopolist (society) to produce it in terms of the opportunity costs of the resources required. The allocative efficient output is achieved at Q_s where P=MC. Hence, there is underproduction by the amount Q_s - Q_e. **Too few resources are being allocated to the production of medical drugs**, resulting in deadweight loss (area ABC). This leads to market failure.

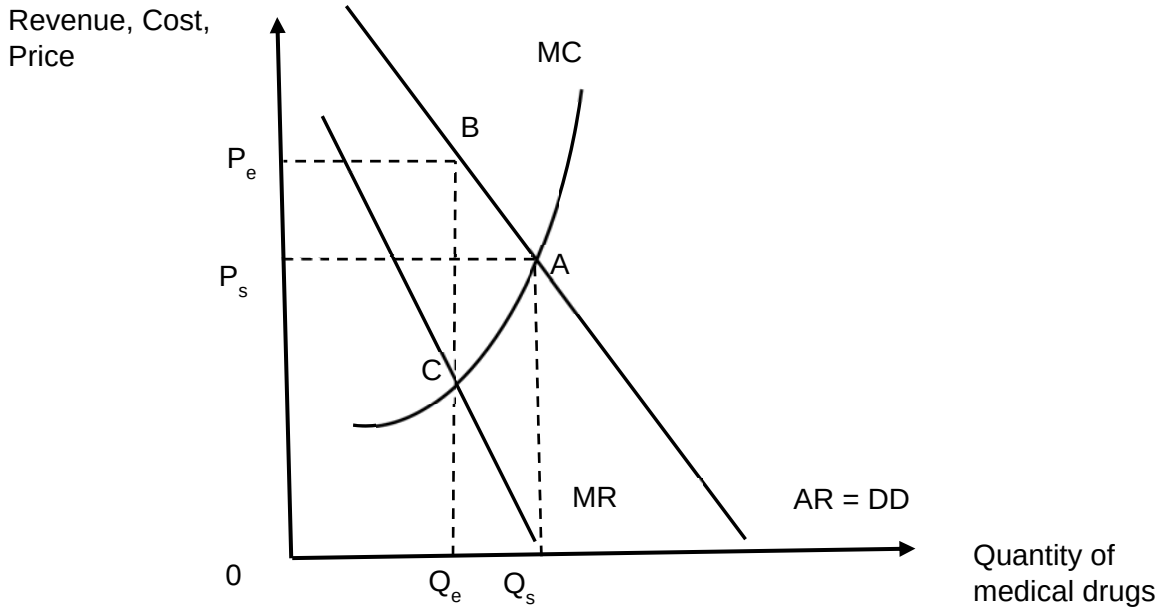

Figure 1: Market Failure due to market dominance

Source 2: Inequity

Since the market is only dominated by a few large firms, the demand curve facing each pharmaceutical firm is relatively price inelastic. Thus, the profit maximising price will occur at a relatively high level, and as stated in the preamble, this will result in high prices for medical drugs, some of which may be essential medication. Due to the high prices, such **essential medication are not made available to low income families**, resulting in market failure.

Source 3: Imperfect information

Consumers who consume medical drugs may underestimate the benefit of the medical drugs, as they may not have complete knowledge. Consumers may not be aware of how consumption of certain medical drugs (such as vaccinations) can increase chances of survival significantly. In many places around the world, some consumers (known as Anti-vaxxers) have questioned the effectiveness of vaccinations due to dubious research (which has been discredited), and go as far as to refuse being vaccinated. In these situations, **consumers' perceived private benefit of consuming vaccinations is lower than the actual private benefit of consuming vaccinations ($MPB_{Perceived} < MPB_{Actual}$).**

Source 4: Positive Externalities in Consumption

There are positive externalities accrued to those who are not involved in the consumption of medical drugs. An example of this is the benefit that family members and colleagues (who don't consume the medical drugs) are also less likely to suffer from illnesses. Due to the presence of the positive externality, the Marginal Social Benefit (MSB) is greater than the Marginal Private Benefit (MPB_{Actual}).

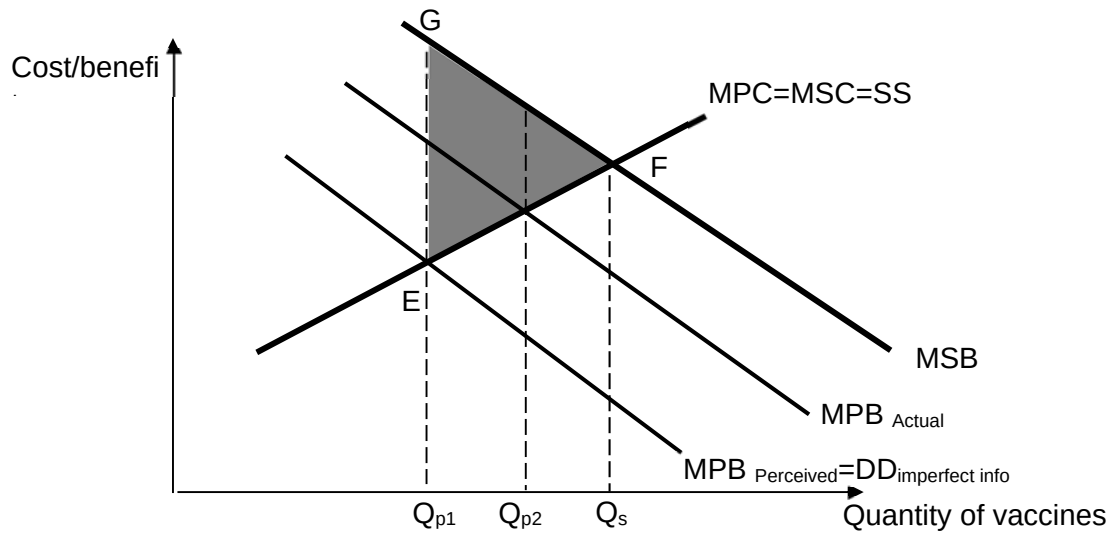

Figure 2: Imperfect information and Positive externality in consumption in vaccines

(Combining Sources 3 and 4)

In the free market, the market equilibrium is Q_{P1}, determined by the fact that consumers and firms consider only its private benefits and private costs respectively (MPB=MPC). However, the socially-optimal amount is Q_S where MSB=MSC. Since $Q_{P1} < Q_S$, there will be an under-consumption of vaccines in the free market. At quantity Q_P, marginal benefit to society is greater than marginal cost to society. This means that societal welfare could have be gained by increasing quantity up to the socially optimal output of vaccines Q_S. This forgone societal welfare is the deadweight loss (shaded area). Hence, the free market causes under-consumption of vaccines, leading to allocative inefficiency and hence market failure.

Level descriptors

Level	Out of 10 marks	Descriptors
Level 3	8-10	Displays full slew of skills across AO1, AO2 and AO3: • Thorough knowledge displayed by explaining the sources of market failure • Clear and coherent analysis, grounded by economic concepts, frameworks and principles • Good use of relevant examples • Considers at least 2 sources of market failure
Level 2	5-7	Displays AO1 and AO2 skills: • Answers are relevant to question but undeveloped explanation of sources of market failure • Limited use of examples (Pure theoretical answer will be capped at 5m) • 1 source of market failure (Capped at 5m) • No diagrams (capped at 7m)

Level 1	1-4	Uneven display of AO1 and AO2 skills: • Smattering of points • Many conceptual errors • Fails to address question requirement

(b) Discuss how policies to address these sources of market failure may result in unintended consequences. [15]

Approach	**Command Word**	Discuss how: Balanced answer + EV
	Question Type	Consequences
	End Point	Unintended consequence of policies to address market failure
Content and Context	**Content**	• Policy to address market dominance and its unintended consequences (limitations) • Policy to address inequity and its unintended consequences (limitations) • Policy to address imperfect information and its unintended consequences (limitations)
	Context	Medical Drugs Market

Introduction

With reference to part (a), government intervention can help to address market failure due to various sources but these policies often bring about unintended consequences.

Body

<u>Policy to address market dominance and inequity: Price controls (Marginal cost pricing)</u>

How it works: With reference to figure 1, governments can **impose a price ceiling = Ps**. Producers will no longer be able to charge their original profit maximizing price (Pe), but instead the price ceiling will induce pharmaceutical companies to increase production to Qs. This **addresses the allocative inefficiency** in the production of medical drugs. At the same time, setting a price ceiling also reduces the price from Pe → Ps and this will increase the affordability of essential medical drugs to low income families, thereby **reducing the inequity** present in the market for medical drugs.

Unintended consequence 1: The imposition of a price ceiling will lower the supernormal profits made by these pharmaceutical companies to become sub-normal profits. Medical drugs are developed through a rigorous and long drawn process of research and development. These R&D processes are often costly, with no certain of success. The reduction in supernormal profits will reduce both the ability and willingness of pharmaceutical companies to undertake such R&D. In the long run, the quality of medical drugs may not improve to as large as an extent as it could have been, **worsening consumer welfare.**

Unintended consequence 2: In the extreme case, the imposition of such price ceilings will cause pharmaceutical firms to shut down if the price ceiling is set below the average cost of the firms in the long run (also if P < AVC in the short run). This will **create even greater deadweight loss to society**, since production levels will now fall to zero. In order to cut costs so as to maintain supernormal profits, pharmaceutical firms may also engage in fewer safety tests for their medical drugs and this will have further repercussions on consumer health and welfare in the long run.

Policy to address imperfect information/positive externalities: Indirect subsidies

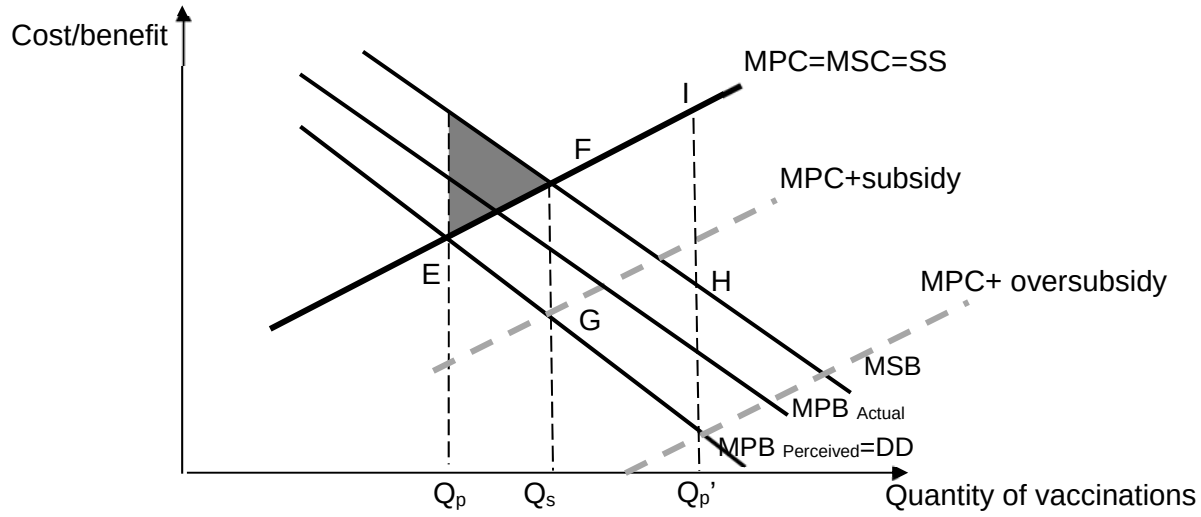

Figure 3: Imperfect information as a source of market failure

How it works: If the government gives the producer a subsidy per unit that is equal to GF, the supply curve (**MPC to MPC+subsidy)** will shift to the right or vertically downwards by the full amount of the subsidy (GF). Since firms have increased the supply of health screening, the market price will fall, ceteris paribus. The lower price of health screening will induce consumers to increase the quantity demanded from Q_P to Q_S, the level of output that is allocative efficient and the deadweight loss has been eliminated.

Unintended Consequence 1: Indirect subsidies on medical drugs (such as vaccinations) may also incur opportunity costs and strain on the government budget. In the case of a country such as Singapore, which is facing an ageing population, there could be more pressing needs in other areas such as housing. If the imposition of the subsidies in the medical drugs market requires subsidies to be reduced in other markets, the **allocative inefficiency may just be transferred from one market to another**.

Unintended Consequence 2: Due to imperfect information, it may be hard to have an accurate valuation of the level of imperfect information. Hence, the government may not know the optimal amount of subsidy to give to attain the socially efficient output and may over-subsidize leading to over consumption. As shown in the diagram above, if too high a subsidy is given (MPC + subsidy'), this will result in an even greater deadweight loss (Area FHI), worsening the market failure instead.

Policy to address imperfect information: Education Campaigns

How it works: Public education campaigns increases the public's awareness of the positive benefits of consuming medical drugs such as vaccinations. One of the ways is providing information in the form of pamphlets or advertisements on the benefits of vaccinations. If successful, such public education campaigns reduce the level of imperfect information, and reduce the divergence between $MPB_{perceived}$ and MPB_{actual}. As such, the market will respond by increasing the quantity consumed towards the socially-optimal amount Qs.

Unintended Consequence 1: Such education campaigns may be long drawn as it will take a significant amount of time to change consumers' mindsets. Thus, significant costs can be incurred by the government, which could have been used to address inefficiency and inequity in other markets. Again, a trade off will be incurred.

Evaluation

- It is inevitable that every policy has unintended consequences due to the presence of trade-offs in every choice made by the government on how to enact policies to allocate resources. This is fundamentally due to the problem of unlimited wants and limited resources.
- To minimize such unintended consequences, governments will have to expand the amount of resources available so that less trade-offs need to be made. These will not only involve microeconomic policy choice, but also macroeconomic ones to grow the economy.

(Other possible EV points: Which unintended consequence is most severe etc)

Note: there are many other policies that students can possibly use for these answers. As long as they reasonably address the sources of market failure explained in part (a), these answers should be credited.

Level	Out of 10 marks	Descriptors
Level 3	8-10	Displays full slew of skills across AO1, AO2 and AO3: • Balanced answer on the unintended consequences of policies to deal with market failure • Considers at least 2 policies and a total of 3 unintended consequences • Clear and coherent analysis, grounded by economic concepts, frameworks and principles • Good use of examples related to medical drugs
Level 2	5-7	Displays AO1 and AO2 skills: • Balanced but under developed answer • There is clarification of question and application of economic concepts, frameworks and principles to relevant contexts • Limited use of examples Answers that do not explain how the policy works will be capped at 6m 1 policy with at least 2 unintended consequences : 5m
Level 1	1-4	Uneven display of AO1 and AO2 skills: • Does not address the question • Smattering of points or conceptual errors