Essay Q1

| 1	Due to scarcity, resources have to be allocated between competing uses. For instance, farmers in India are increasingly allocating more land to growing cotton instead of tea leaves. Such decisions may be influenced by fast-changing clothing trends.	
	(a) Explain how the price mechanism can allocate scarce resources efficiently with increasing demand for a product.	[10]
	(b) Given these farmers' decision on the use of their land, assess the relevance of elasticity concepts in explaining the impact on consumers' expenditure on tea and other beverages.	[15]

Part (a): Explain how the price mechanism can allocate scarce resources efficiently with increasing demand for a product. [10]

Intro

The central economic problem of scarcity arises due to limited resources and unlimited wants. As society cannot have all the output it desires, choices have to be made by consumers and producers. The price mechanism is the process in a market economy where consumers and producers interact to determine the allocation of these resources among competing uses.

Development: Roles of the price mechanism

Prices perform two key roles which are the **signalling** function and **rationing** function.
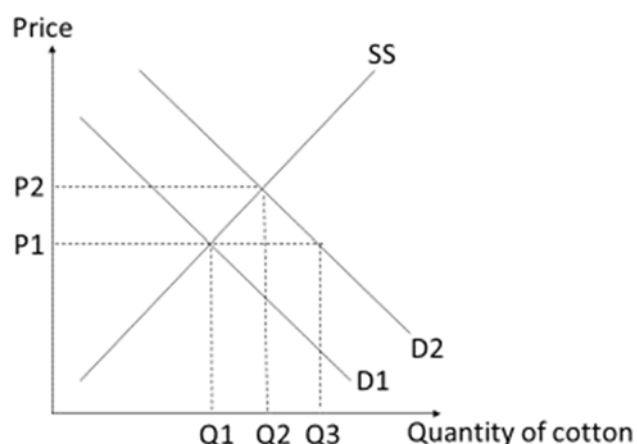
[Signalling Function]

Consumers use prices to signal to producers their changing preferences and ability to buy goods and services. Price is the value consumers place on for each unit of good consumed. Producers use prices to signal to consumers their ability and willingness to produce each unit of good. Producers are profit motivated and will charge prices which maximize their profits.

Adjustment process

Assume that there is perfect competition and there are no externalities. Referring to the figure above, the initial equilibrium is where demand (D1) = Supply (SS) and price will be at P1 and quantity will be at Q1. Given that there is now an increase in demand for cotton, it means that there are more dollar votes cast for cotton. Demand will increase from D1 to D2. At initial price P1, a shortage of Q1Q3 is created. This causes an upward pressure on price.

This will signal to producers to allocate more resources to increase production to Q2 due to possibility of earning greater profits, thus quantity supplied increases from Q1 to Q2.

In the long run, the increase in price may lead to increase in producers entering the market, resulting in an increase in supply and even more resources like land allocated into the market for cotton.

What to produce

Hence, higher prices signal to producers what they need to produce and lower prices signal what need not be produced. Producers allocate more resources to the market of cotton. Resources like land used to produce tea leaves are reallocated to produce cotton. Hence, price mechanism determines what to produce in the market.

How to produce

In the market for cotton, producers are in competition with each other for the dollar votes of the consumers. Consumers will buy from producers which offer the lowest price. So producers must produce at lowest cost if they are to survive in the market in the long run, creating incentive for firms to adopt the least cost method of production. This thus determines how goods are produced. Changes in the goods market will then be reflected in the factor markets. Demand for resources in cotton industry like land and labour will rise. There will thus be a transfer of resources from other industries like tea leaves into the cotton industry.

[Rationing]

Prices also serve to ration goods and services to consumers who are willing and able to pay. The amount of goods purchased depends on their income, prices and preferences. Producers will only supply goods and services to those who are willing and able to pay while those who are unable or unwilling to pay will be driven out of the market.

For whom to produce

With reference to the diagram, as price of cotton increases, there is a decrease in quantity demanded from Q3 to Q2. Consumers who are unwilling or unable to purchase cotton will be rationed out of the market. Hence, price also determines for whom to produce.

Conclusion/Synthesis

In a market economy, prices have a signalling and rationing function, which helps to allocate resources efficiently. However, in reality, price mechanism may fail to allocate resources efficiently due to imperfect competition or presence of externalities.

Mark scheme:

	Knowledge, Understanding, Application, Analysis	
L3	For an answer that gives a clear economic analysis on the functions of the price mechanism in terms of resource allocation between goods and factor markets for cotton.	8-10
L2	Underdeveloped answer or an inadequate attempt to explain the functions of the price mechanism in terms of resource allocation between goods and factor markets. OR Only explains in detail either function of the price mechanism.	5-7
L1	For an answer that demonstrates some relevant knowledge or brief description on the functions of the price mechanism.	1-4

Part (b): Given these farmers' decision on the use of their land, assess the relevance of elasticity concepts in explaining the impact on consumers' expenditure on tea and other beverages. [15]

<u>Intro</u>
From part (a), farmers are likely to allocate more land to the production of cotton rather than tea leaves. Since these two goods are in competitive supply, less tea leaves will be produced at every price, resulting in a fall in supply and increase in price of tea leaves.

<u>**Development 1: Relevance of PED in the market for tea**</u>
Since tea leaves are a factor of production for tea, unit cost of production for tea increases. Potential profits per unit falls, and profit motivated producers will cut down on production of tea at every price. As SS for tea decreases, equilibrium price increases and equilibrium quantity decreases. The change in consumers' expenditure is dependent on the relative changes in price and quantity. This can be determined by the price elasticity of demand.

Price elasticity of demand (PED) measures the degree of responsiveness of quantity demanded of a good to a change in the price of the good itself, ceteris paribus.
Price elasticity of demand for tea = % change in quantity demanded of tea/ % change in the price of tea
The numerical sign of the price elasticity of demand for normal goods is necessarily negative due to the inverse relationship between the price and quantity demanded of the good.

Assuming PED>1: the demand for tea is **price elastic** i.e. for a given **increase in the price** of tea, there will be a **more than proportionate fall** in the quantity demanded, ceteris paribus. This is possible in the case whereby tea is deemed to have many close substitutes available such as caffeinated beverages like coffee and coke. Consumers are very responsive to price increase as they can easily switch to purchasing other readily available substitutes. Thus, the increase in consumers' expenditure due to increase in price is less than the decrease in consumers' expenditure due to the fall in quantity demanded. Overall, consumers' expenditure will decrease.
Assuming PED<1: the demand for tea is price inelastic i.e. for a given **increase in the price** of tea, there will be a **less than proportionate fall** in the quantity demanded, ceteris paribus. This could be a case of heavy tea-drinkers who deem tea to have no close substitutes. In this case, consumers' expenditure increases.

Hence, PED is very relevant in determining changes in consumers' expenditure in the market for tea.

<u>**Development 2: Relevance of XED & PES in the market for other beverages**</u>
As price of tea increases, consumers may switch to relatively cheaper substitutes like coffee and other beverages, increasing the demand for these beverages. As demand increases, equilibrium price and quantity increases.

Price elasticity of supply (PES) measures the degree of responsiveness of quantity supplied to a change in the price of good, ceteris paribus.

Price elasticity of supply for good A = % change in quantity supplied of beverage/ % change in the price of beverage
The PES value is positive because of the direct relationship between price of the good and the quantity supplied of the good itself.

Assuming PES>1: the supply for the beverage is **price elastic** i.e. for a given **increase in the price** of the good, there will be a **more than proportionate increase** in the quantity supplied of the good, ceteris paribus. This could be in the case of beverages such as caffeinated can drinks with preservatives such as coffee and soft drinks which have a longer shelf-life and can be stored cheaply with minimum loss of quality. Given the availability of stocks, firms can easily increase their output to the market by drawing down on their inventories when price goes up.
Assuming PES<1: the supply for the beverage is **price inelastic** i.e. for a given **increase in the price** of the good, there will be a **less than proportionate increase** in the quantity supplied of the good, ceteris paribus. This would be applicable for substitutes like fresh fruit juice that have short shelf life and cannot be stored for long.

While PES tells us the relative changes in price and quantity, regardless of PES value, consumers' expenditure will increase in this case as price increases and quantity increases. The increase in consumers' expenditure, is also highly dependent on the extent of the shift in demand for other beverages, hence XED may be more relevant than PES.

Cross elasticity of demand (XED) of other beverages *with respect to the price of tea* measures the **degree of responsiveness of demand of another beverage** to a **change in the price of tea**, ceteris paribus.
Cross elasticity of demand of another beverage with respect to the price of tea
= % change in demand of another beverage/ % change in the price of tea
The numerical value of cross elasticity of demand may be positive or negative. In the case of other beverages in relation to tea, the XED value is **positive** as they are **substitutes.**
The magnitude of the value of the cross elasticity of demand indicates the extent of the relationship.

Assuming XED>1: the cross elasticity of demand for the beverage is elastic i.e. a **given increase in price of tea** leads to a **more than proportionate increase in demand for the substitute**. This is possible for close substitutes such as coffee which also contains caffeine and can be deemed to achieve similar level of satisfaction for consumers. Demand increases by a large extent, resulting in a large increase in equilibrium price and quantity for coffee, hence consumers' expenditure increases by a large extent.
Assuming 0<XED <1: the cross elasticity of demand for the beverage is inelastic i.e. a **given increase in price of tea** leads to a **less than proportionate increase in demand for the substitute**. Such substitutes could include decaffeinated beverages like fresh fruit juice and bottled water. Hence, consumers' expenditure is likely to increase by a small extent.

Therefore, XED is a key determinant of the change in consumers' expenditure for other beverages.

Development 3: Relevance of YED in the market for tea and other beverages

Income elasticity of demand (YED) measures the degree of responsiveness of demand of a good to a change in income, ceteris paribus.

Income elasticity of demand = % change in demand of a good/ % change in income

The numerical value of income elasticity of demand may be positive or negative. Inferior goods have negative income elasticity of demand i.e. as income increases the demand for the good falls, ceteris paribus.

On the other hand, beverages like tea are considered as normal goods with positive income elasticity of demand i.e. as income increases the demand for the good increases, ceteris paribus. If deemed as a luxury good, **YED>1** and demand is income elastic i.e. for a given **increase in income**, there will be a **more than proportionate** increase in the demand of the good. The demand for luxury goods is **income elastic**. If deemed as a **necessity**, **YED<1** and demand is income inelastic i.e. for a given **increase in income** there will be a **less than proportionate** increase in the demand of the good.

In this context, as there is assumed to be no change in income, YED is least relevant in determining changes in consumers' expenditure in the markets for tea and other beverages.

Conclusion/Synthesis:

*Theoretically, the **PED of tea is most relevant in showing the effects a decrease in supply on consumers' expenditure on tea**. The increase in demand for alternative beverages suggests that **XED is most relevant in determining the extent of increase in consumers' expenditure for different substitutes**. However, **in reality, elasticity data may not be accurately computed.** In addition, internal changes (e.g., firm learns more cost-effective methods of production) or changes to the firm's external environment (e.g., more substitutes to the firm's products appear in the market) may occur. Therefore, **such data may also change from time to time**, making it harder to rely upon and therefore less relevant to determine the changes in consumers' expenditure.*

Mark scheme:

Level	Knowledge, Understanding, Application , Analysis	Marks
L3	Well-developed analysis of the changes in the markets for tea and other beverages, with application of different elasticity concepts to clearly demonstrate relevance.	8-10
L2	An underdeveloped analysis of the relevance of various elasticity concepts. OR Limited scope of elasticity concepts/markets considered in analysis.	5-7
L1	For an answer that shows some knowledge of changes in the market and/or elasticity concepts. Mere listing of points and definitions.	1-4
E3	*Provides analytically well-reasoned judgement on the relative relevance of elasticity concepts in determining changes in consumers' expenditure on different beverages.*	*4-5*
E2	*Makes some attempt at a judgement on the relative relevance of elasticity concepts in determining changes in consumers' expenditure on different beverages.*	*2-3*
E1	*Gives an unsupported statement on the relative relevance of elasticity concepts.*	*1*