

SOLUTION 1

- a) The law of demand states that, all other things being equal, an increase in the **relative price** of a commodity induces a decrease in the quantity demanded per period. In the same vein, a decrease in the **relative price** of a commodity causes an increase in the quantity demanded per period.
- b) A utility-maximising consumer chooses the consumption bundle of goods (*X and Y*) for which each good has the same ratio of marginal utility to price: in other words, the extra utility per cedi spent is the same for all goods. That is

$$\frac{MU_x}{P_x} = \frac{MU_Y}{P_Y} \quad \text{Subject to the consumer's limited income}$$

If, from the original equilibrium bundle, the price of one good X (a normal good) falls, the consumer will want to change the consumption bundle because

$$\frac{MU_x}{P_x} > \frac{MU_Y}{P_Y}.$$

The reason for this is that the extra utility associated with an additional cedi's worth of good X has risen (price has fallen but marginal utility hasn't changed). The consumer will consume more of good X.

Assuming separable utility i.e. utility of X does not depend on utility of Y; the consumer consumes more of good X leading to a fall in the marginal utility of X because the consumer experiences diminishing marginal utility.

This will continue to the point where the equality of marginal utility/price ratios is restored for the two goods - $\frac{MU_x}{P_x} = \frac{MU_Y}{P_Y}$ Subject again to the consumer's limited income.

In conclusion as the price of good X falls, the utility maximizing increases quantity demanded of good X.

SOLUTION 2

- (a) **FALSE.** An expected price increase will result in an **increase in demand** for the good which will **shift the demand curve to the right or outward**. An increase in the current price of the good will **reduce quantity demanded**. This will be shown as an upward movement along the demand curve for the good.
- (b) **TRUE.** The substitution effect of a price change measures the impact on quantity demanded of the good, keeping other things constant, including utility and real income. The substitution effect is always negative i.e., an increase in the price of a good, keeping real income constant, will make substitute goods relatively more attractive, reducing the quantity demanded for the good whose price has risen.
- (c) **FALSE.** Marginal cost is the addition to total cost from a unit increase in output. Average cost is total cost divided by the number of units of output produced. If marginal cost is greater than average cost, then the extra unit will cost more than the average unit, raising, not decreasing, the average cost.
- (d) **TRUE.** In perfect competition, the firms are unable to influence price: they are price-takers. Therefore, however many units of output they produce the market price remains the same (the cost conditions of perfect competition mean that the firm is very small in relation to the overall size of the market). Average revenue (demand) is equal to marginal revenue and hence the demand curve is horizontal at the market price.

SOLUTION 3

(a)

(i) Fixed Cost (FC): This is the total spending for engaging the services of fixed factors. This is the aggregate of all explicit and implicit costs relating to the firm's fixed inputs. Since the level of fixed factors employed does not change with output in the short-run, fixed cost tends to be constant over time.

(ii) Average Variable Cost (AVC) represents the amount of TVC borne by each unit of output produced.

(iii) The Marginal Cost schedule is a table that records the change in Total Cost (TC) or change in Total Variable Cost (TVC) as a result of a unit change in output.

(b)

Output	Total Cost (TC) <i>in cedis</i>	Total Variable Cost (TVC) <i>in cedis</i>	Average Variable Cost (AVC) <i>in cedis</i>	Marginal Cost (MC) <i>in cedis</i>	Total Revenue (TR) <i>in cedis</i>
0	800	0	0	-	0
1	1000	200	200	200	1200
2	1400	600	300	400	2400
3	2100	1300	433.3	700	3600
4	2800	2000	500	700	4800
5	4000	3200	640	1200	6000
6	6000	5200	866.7	2000	7200

- (i) The solutions are the shaded area
- (ii) Karen Roses is operating in a perfectly competitive market.

(c)

- (i) In perfect competition, profit maximizing level of output is determined at a point where $MC = MR (P)$ and if output should be increased beyond that level MC must begin to rise. Given the $P = \text{¢}1200$, the profit maximizing level of is 5.
- (iii) Maximum achievable profit occurs at a point where where $MC = MR (P)$ and if output should be increased beyond that level MC must begin to rise. But Profit is the $TR - TC$. Therefore, the maximum achievable profit is $\text{¢}2000$. Because $TR (\text{¢}1200 \times 5)$ and $TC = \text{¢}4000$

SOLUTION 4

- a)
 - (i) The cross elasticity of demand (*CED*) measures the degree of responsiveness of demand for one good (*X*) to a given change in the price of a second (another) good (*Y*).
 - (ii) Income elasticity of demand (*IED*) measures the degree of responsiveness of demand to a given change in income (*Y*).

- b) (i) In equilibrium $Q_d = Q_s$. Therefore to determine the equilibrium price we equate the two function and solve for price (P)

$$20 - 2P = 10 + 3P$$

$$20 - 10 = 3P + 2P$$

$$10 = 5P$$

$$P = \frac{10}{5}$$

$$P = 2$$

The equilibrium quantity is determined by substituting $P = 2$ into the demand or supply function and solving for Q.

$$Q_d = 20 - 2(2)$$

$$Q_d = 16$$

OR

$$Q_s = 10 + 3(2)$$

$$Q_s = 16$$

The equilibrium price is ₦2 and the equilibrium quantity is 16 kilos

- (ii) Own price elasticity of demand is given as

$$E_d = \frac{\Delta Q_d}{\Delta P} \times \frac{P}{Q_d}$$

$$E_d = -2 \times \frac{2}{16}$$

$$E_d = -0.25$$

- (iii) Price elasticity of supply is given as

$$E_s = \frac{\Delta Q_s}{\Delta P} \times \frac{P}{Q_s}$$

$$E_s = 3 \times \frac{2}{16}$$

$$E_s = 0.375$$

c)

1. The strength of substitution: The major influence on own price elasticity of demand is whether there are close substitutes for the commodity. The more close substitutes a commodity has the more elastic is the demand for the commodity. It must, however, be noted that the substitutes must be within the same price range. If no close substitutes exist for a commodity the demand for it is less own price elastic. The number of substitute a good has is affected by several factors:
 - a. The larger the time interval considered, or the longer the run, the more elastic is the demand for the goods
 - b. The less a good is considered a necessity, the more elastic is its demand.
 - c. The more specifically a good is defined; the more elastic is its demand.
2. Consumers' income: Own price elasticity of demand is affected by the strength of income effect. This depends on the percentage of consumers' income spent on the commodity. The larger the percentage of income spent on the commodity, the greater the degree of its own price elasticity. For example, salt accounts for a very small part of many households' total expenditure, and a relatively large percentage increase (or fall) in its price would be expected to have little effect on quantity bought.
3. The number of possible uses of the commodity: When a commodity has several possible uses, it will have a high own price elasticity. When the price of the commodity falls because of the many uses, the quantity demanded of the commodity responds more to price changes and vice versa. The fewer the number of uses a commodity has, the lower its own price elasticity.
4. Time: In the short period, a fall in price may have little effect on demand, as it may take time for a change to take effect because of the following reasons:
 - i. Consumers need time to adjust their purchases. If they think that the price is likely to fall further, they will not increase their purchases.
 - ii. Some goods are durable and consumers will obviously not replace them until they are worn out, even if their prices fall.

For these reasons, the longer the time period, the more elastic is own price elasticity.

SOLUTION 5

a)

- (i) It helps to organize economic data and activities;
- (ii) It helps to classify economic activities into various segments or sectors.
- (iii) It helps to keep track of total production within the macro economy,
- (iv) It helps to determine the economic performance of a country,
- (v) It helps in policy formulation and implementation.

a) (i) Two sector closed economy

(ii) The marginal propensity to consume is 0.75

(iii) 100m

(iv) The complementary is saving function is

$$\begin{aligned}
 S &= Y - C \\
 S &= Y - \{100m + 0.75Y\} \\
 S &= Y - 100m - 0.75Y \\
 S &= -100m + Y - 0.75Y \\
 S &= -100m + (1 - 0.75)Y \\
 S &= -100 + 0.25Y
 \end{aligned}$$

(v) 1) The equilibrium aggregate national income is

$$\begin{aligned}
 Y &= C + I \\
 Y &= 100m + 0.75Y + 80m \\
 Y - 0.75Y &= 180m \\
 0.25Y &= 180m \\
 Y &= \frac{180m}{0.25} \\
 Y &= 720m
 \end{aligned}$$

2) The equilibrium consumption expenditure is

$$\begin{aligned}
 C &= 100m + 0.75\{720m\} \\
 C &= 640m
 \end{aligned}$$

3) The multiplier is given as

$$\begin{aligned}
 K &= \frac{1}{1 - MPC} \\
 K &= \frac{1}{1 - 0.75} \\
 K &= 4
 \end{aligned}$$

(vi) In equilibrium $Y = C + I$ and $Y = C + S$. Therefore, $C + I = C + S$ hence in equilibrium $I = S$. In the question, $I = 80$.

$$\text{But } S = -100m + 0.25\{740m\} = 80m.$$

From the calculation $S = 80m$ and $I = 80m$. In equilibrium $I = S$.

SOLUTION 6

- a) (i) Direct Taxes are taxes imposed on the incomes or the earnings of a person or a corporate body and are paid directly to the government through public authorities such as the Internal Revenue Service or the local authority. Usually each individual's tax liability is assessed separately. People who pay direct taxes cannot shift the incidence or burden of payment to some other individuals.

Indirect taxes are taxes imposed on goods and services and are paid only when these goods and services are bought. A tax is indirect if the incidence or the burden of payment can be passed to others to pay.

(ii) Equity implies that taxes should relate to the taxpayers' incomes. This means that the tax should be levied on each person according to his ability to pay. It should not be a proportional or flat rate but progressive. Equity in taxation does not mean that everyone should pay the same amount of tax.

Economy implies that collection cost of the tax should not be equal to or greater than the yield from the tax. This means that the cost of collection should be kept at the barest minimum so that it does not wipe out the tax revenue collected. Additionally, the tax should not be disincentive to work else there would be a decline in output.

b)

- (i) Revenue: One of the oldest and the most obvious aims of taxation is to raise revenue so as to pay for government expenditure in the form of education, construction of roads, pipe-borne water, etc.
- (ii) Redistribution of Income: The government may impose taxes to redistribute income and bridge the gap between the higher income earners and the lower income earners. This may be achieved through a progressive tax system.
- (iii) Discouraging the consumption of certain commodities: Taxes may be used to prevent and reduce the production and consumption of some commodities in an economy. Heavy indirect taxes are levied on goods whose production and consumption the government wants to discourage.
- (iv) Protection of infant industries: Infant industries are newly established industries to produce goods that were formally imported. As new industries their cost of production will be high and their prices high rendering their products non-competitive with the imported ones. To protect them the government imposes taxes on imported substitutes that the infant industries produce so as to discourage their consumption and importation. These tariffs increase the domestic prices of imports rendering them price non-competitive when compared with the locally produced products.

- (v) To stabilize the economy: Taxes can be imposed or cut to stabilize the economy and achieve internal or external balances. During inflation taxes are imposed on income. This has the effect of reducing disposable income, aggregate demand may fall and pressure on price may decrease. Also when a country experiences balance of payments deficit taxes can be used to correct this.
- (vi) To control resource movement: The government tax policy can be used to control and direct resource movement. For example, if the Government of Ghana wants investment to flow into agriculture, taxes on agricultural inputs may be reduced, tax holidays may be granted farmers, etc.

SOLUTION 7

- a) Inflation is a persistent and an appreciable increase in the general price level.
- b) (i)

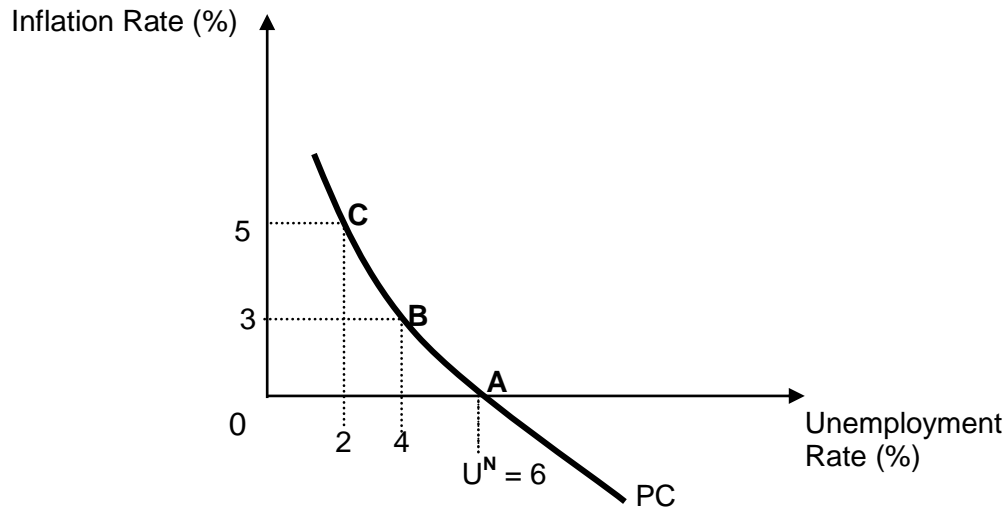
Year	CPI	Rate of Inflation
2006	139	20%
2007	163	17.3%
2008	187	14.7%
2009	192	2.6%

The rate of inflation (π) is
$$\pi = \frac{CPI_t - CPI_{t-1}}{CPI_{t-1}} \times 100$$

- (i) From the calculations in the table, the fall in the rate of inflation means in 2007 on the average, price rose by 17.3%, in 2008 by 14.7% and in 2009 by 2.6%. Note: A fall in the rate of inflation does not mean average prices have fallen.
- c) The Phillips Curve shows an inverse relationship between the rate of unemployment and the rate of inflation. The higher the rate of unemployment the lower is inflation. In other words, there is a trade off between inflation and unemployment.

d)

Figure 7: The Phillips Curve



In Figure 7 the Phillips Curve (PC) suggests a trade off between inflation. If the actual rate of unemployment equals the natural rate of unemployment, the rate of inflation would be zero.

Suppose that unemployment is at 2%, lower than $U^N = 6\%$, the rate of inflation would be 5%. If the economy wants a lower inflation rate of 3% this must be achieved at a price. This price is increasing unemployment from 2% to 4% moving from point C to point B. This also means that less unemployment can always be obtained by incurring more inflation.