1. Identify the economic relationships between these goods.

|  |  |
| --- | --- |
| **Goods** | **Economic relationships** |
| Biofuels and corn | Derived demand |
| Cars and fuel | Complements |
| Public transport and cars | Substitutes |
| Crude oil and petrol | Derived demand |
| Petrol and kerosene | Joint supply |

1. Which of the following will most likely cause the demand curve for holiday packages to Germany to shift to the right?
2. Removal of sales tax on hotel accommodation coupled with an increase in the wages of chambermaids in the German hotel industry
3. An increase in fuel surcharge of German airlines
4. **A fall in the foreign exchange value of German Deutschmark\***
5. Relaxation in the planning controls on hotel construction in Germany

|  |
| --- |
|  |

1. Using appropriate and clearly explained illustrations, analyse the effects the four statements would have on the market (price and quantity) for:
2. **condominiums**

1. an increase in wages of construction workers.

|  |
| --- |
| Increase in wage will lead to an increase in cost of production 🡪 leftward shift in the supply curve, with demand for condominium remaining unchanged (movement up along the dd curve), 🡪 **an increase** **in price and a fall in quantity**. Diagram. |

1. a substantial decrease in price of public housing.

|  |
| --- |
| Substantial decrease in price of public housing will lead to a rise in quantity demanded for public housing 🡪 a decrease in demand for condominium as both are substitutes, with supply remaining unchanged (movement down along the ss curve), **price and quantity will fall.** Diagram. |

1. the country is in economic recession.

|  |
| --- |
| Economic recession 🡪 fall in income 🡪 fall in purchasing power 🡪 fall in demand for condominium [normal good], with supply remaining unchanged (movement down along the ss curve), **price and quantity will fall**. Diagram. |

1. government eases rules on foreign ownership of condominiums.

|  |
| --- |
| Population of consumers having preference for condominiums rise 🡪 rise in demand for condominiums, with supply remaining unchanged (movement up along the ss curve), **price and quantity will rise.** Diagram. |

1. **crude oil**
2. At the beginning of the Persian Gulf War, both Iraqi and Kuwaiti oil was removed from the market.

|  |
| --- |
| The Gulf War lead to a fall in the number of oil producers in the mkt 🡪 assuming no ss increase of the remaining producing countries, leftward shift in the supply curve, with demand for oil remaining unchanged (movement up along the demand curve) 🡪 **increase** **in price and fall in quantity**. Diagram. |

1. Later, OPEC members especially Saudi Arabia and Venezuela increased their oil production.

|  |
| --- |
| Increase production by OPEC members 🡪 rightward shift in the supply curve, with demand for oil remaining unchanged (movement down along the demand curve), 🡪 **a decrease** **in price and a rise in quantity**. Diagram. |

1. Infrastructural development and growth of Emerging Economies (like Brazil, Russia, India and China) is rising at a rapid pace.

|  |
| --- |
| Population of consumers requiring oil as its energy resource rise 🡪 rise in demand for oil, with supply remaining unchanged (movement up along the ss curve), **price and quantity will rise**. Diagram. |

1. Many of the wells in the US have been tapped out with vertical drilling. Producers have had to use more expensive horizontal drilling equipment. As a result, the costs of production are higher in the US than in Saudi Arabia. (Show US and Saudi oil markets)

|  |
| --- |
| * Increase in equipment cost in the US will lead to an increase in cost of production 🡪 leftward shift in the supply curve, with demand for US oil remaining unchanged (movement up along the demand curve), 🡪 **an increase** **in price and a fall in quantity of US oil**. * Shift in preference for Saudi Arabian oil 🡪 rise in demand for Saudi Arabian oil, with supply remaining unchanged (movement up along the ss curve), **price and quantity will rise for Saudi Arabian oil**. Diagrams |

1. How will the price of a good change when both demand and supply for the good increase at the same time?

Price

Quantity

D1

D2

S2

S1

P1

P2

Q1

Q2

|  |
| --- |
| When the demand (D1 to D2) and supply of the good (S1 to S2) increase at the same time, price will rise in this case.  The price of the good would be uncertain depending on the extent of the shift of demand and supply. |

1. Explain why prices rise when there are shortages and fall when there are surpluses.

S

Price

Surplus

P2

P

P1

0

Shortage

D

Quantity

Q

|  |
| --- |
| At price OP1, there is a shortage. Adjustment process will take place whereby price will increase leading to an increase in quantity supplied and a fall in quantity demanded. This process continues until equilibrium price OP is attained.  At price OP2, there is a surplus. This will exert a downward pressure on price leading to a fall in quantity supplied and a rise in quantity demanded. This process will continue until equilibrium price OP is attained. |

1. Are prices determined by the market or the firms in a competitive market? Explain your answer.

|  |
| --- |
| Prices are determined by the market instead of the firms in a competitive market. Although firms in reality have the influence to determine the prices of goods and services, the prices are constrained by both the market forces of supply and demand in a competitive market. |

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1. *What determines price in the market?*
2. *How do economic agents use the decision making model to achieve the market equilibrium?*
3. *How does the price mechanism address the central problem of economics?*
4. *Other than the price mechanism, what are the other ways to allocate goods and resources?*
5. *Does the allocation of goods and resources via the price mechanism bring about maximum welfare for all economic agents?*

**SECTION 2 – Case Studies**

**Mini Case Study**

##### CSQ 1: The Price of Palladium

Palladium is an essential metal in the production of mobile telephones and computers. It is also used in anti-pollution systems for car exhausts and the chemical industry. In April 1998, it reached a then record price of $417 an ounce. This made it more expensive than platinum, to which it is closely related, and gold. While either palladium or platinum can be used in car exhaust systems, platinum is important in jewellery production, while palladium is not. The following information highlights some aspects of the market for palladium in 1996 and 1997.

**Diagram 1**



**Table 1: Palladium Supply and Demand (‘000 ounces)**

|  |  |  |
| --- | --- | --- |
|  | 1996 | 1997 |
| Supply | 7,840 | 7,250 |
| Demand | 6,150 | 7,460 |
| **Movements in stocks** | **+1,690** | **-210** |

**Table 2: Palladium Demand by Application (‘000 ounces)**

|  |  |  |
| --- | --- | --- |
|  | 1996 | 1997 |
| Car Exhaust Systems | 2,215 | 2,955 |
| Dental | 1,320 | 1,350 |
| Electrical | 2,020 | 2,510 |
| Other | 595 | 645 |
| **Total Demand** | **6,150** | **7,460** |

**Table 3: Palladium Supply (‘000 ounces)**

|  |  |  |
| --- | --- | --- |
|  | 1996 | 1997 |
| South Africa | 1,690 | 1,810 |
| Russia | 5,600 | 4,800 |
| North America | 455 | 545 |
| Others | 95 | 95 |
| **Total Supply** | **7,840** | **7,250** |

**Questions:**

|  |  |  |
| --- | --- | --- |
| (a) | 1. Describe the main trends in the price of palladium during 1996 and 1997. | [2] |
|  | 1. With the aid of a diagram, use the information in Table 1 to show how  changes in supply and demand for the metal have influenced its price between 1996 and 1997. | [4] |
| (b) | Using Tables 2 and 3, identify the main causes of change on the demand side and on the supply side and give a possible explanation in each case. | [4] |
| (c) | Using economic concepts, analyse the relationship between palladium  and platinum in their use in (i) car exhaust systems and (ii) jewellery. | [4] |
| (d) | Discuss how you would expect buyers and sellers to react to the higher price of palladium. | [6] |

**Suggested Answers**

(a) (i) 1996 – decreasing average prices. 1997 – increasing average prices. [2]

(ii) Demand rise, supply falls, driving prices up and decreasing stocks. Diagram. [4]

(b) Demand side – Overall rise in demand for palladium in production of anti-pollution systems for car exhaust systems, dental, electrical and other uses.

Largest rise in demand for anti-pollution systems (car exhaust systems) of approximately 33.4%. Could be due to rise in incomes because of economic growth. [2]

Supply side - Supply fell because of large fall in supply from Russia (approximately 14.3%). Could be due to political crisis or disasters in Russia that disrupted supplies there. The supply from other suppliers rose in fact or remained the same. [2]

(c) For car exhaust systems – Palladium and platinum are substitutes, so both metals can be used. Relationship between price of palladium and dd of platinum is positive. [2]

For jewellery – Palladium and platinum are not related at all.

Only platinum is used to make jewellery.

OR

For jewellery – Palladium and platinum are weak substitutes. Platinum may be important in jewellery production but palladium could also be used in the production of jewellery. An increase in the price of platinum leads to a less than proportionate rise in demand for palladium. [2]

(d) Question asks for method and effectiveness of method adopted by buyers and sellers.

Buyers – Method is to decrease Qd in response to a price rise. Effectiveness depends on availability of substitutes (price elasticity of demand).

For producers of mobile phones and computers, palladium is an essential fop, and there are no substitutes (demand is price inelastic). QD falls less than proportionate to price rise. Not so effective.

Producers of car exhaust will look for cheaper substitutes like platinum.

So QD falls more than proportionate when price rise. Demand is elastic.

Effective method.

Sellers – Price rise, QS rises to earn more profits. Producers take advantage of the higher prices and the possibility of earning more profits to increase qty.

Effectiveness depends on time period (price elasticity of supply).

In short run, Qs cannot rise easily, hence method not so effective compared to long run. [6]

**Suggested Answers**

**a) (i) Describe the main trends in the price of palladium during 1996 and 1997. [2]**

In 1996, the average price of palladium was decreasing but it was relatively stable on a monthly basis. In 1997, the average price of palladium was increasing.

**(ii) With the aid of a diagram, use the information in Table 1 to show how changes in supply and demand for the metal have influenced its price between 1996 and 1997. [4]**

In table 1, it shows that the demand for metal has risen from 6,150,000 ounces to 7,460,000 ounces whereas supply for metal has fallen from 7,840,000 ounces to 7,250,000 ounces between 1996 and 1997. Since demand has risen greater than the fall in supply, there is a greater shift in the demand curve to the right as seen in Figure A below from D0 to D1 while there is a smaller shift in supply curve to the left from S0 to S1. The combined effect of a rise in demand and a fall in supply has led to a shortage resulting in an upward pressure in price. There will thus be an increase in equilibrium price and quantity for the metal from P0 to P1 and Q0 to Q1 respectively.

Price of

palladium

Quantity of palladium

S0

0

D1

D0

Q0

P0

P1

**Figure A**

E0

E1

S1

Q1

**(b) Using Tables 2 and 3, identify the main causes of change on the demand side and on the supply side and give a possible explanation in each case. [4]**

The increase in demand for palladium is due to the increased production of car exhaust systems, dental, electrical and others which require palladium in its production. Table 2 has shown that the largest rise in demand in palladium is in the production of car exhaust system which rose by approximately 33.4%. Since palladium is a material used as an input in manufacturing various items, its demand is a derived demand where the demand for palladium is not demanded for its own sake but for its contribution to the manufacture of other products. With economic growth, incomes will rise. A rise in income will increase the demand for cars. This results in an increase in demand for palladium as palladium is required in the manufacture of car exhaust systems.

There is an overall fall in supply for palladium. In Table 3, it shows that the supply for palladium only fell in Russia by approximately by14.3%. This could be due to the closure of mines due to a political crisis or disaster in Russia which disrupted the supply of palladium. The supply of palladium in the other countries either rose or remained the same.

**(c) Using economic concepts, analyse the relationship between palladium   
 and platinum in their use in (i) car exhaust systems and (ii) jewellery. [4]**

1. Palladium and platinum are substitute materials in producing car exhaust systems as it was mentioned in the extract that “either palladium or platinum can be used in car exhaust systems.” A substitute material is an alternative material that can replace another material because it satisfies the same want. In this case, palladium and platinum can replace one another as it satisfies the same want which is to be able to use palladium or platinum to produce car exhaust systems. This would mean that an increase in the price of palladium will lead to a more than proportionate increase in demand for platinum although the price of platinum has not changed. Similarly, when the price of palladium decreases, it will lead to a decrease in the demand for platinum.
2. Palladium and platinum are not related as only platinum is used to produce jewellery while palladium is not as mentioned in the extract that “platinum is important in jewellery production, while palladium is not”. An increase in the price of platinum will not change the demand for palladium in producing jewellery.

OR

Palladium and platinum are weak substitute materials in producing jewellery. Although it was mentioned in the extract that “platinum is important in jewellery production, while palladium is not,” palladium could also be used in the production of jewellery. This would mean that an increase in the price of platinum leads to a less than proportionate rise in demand for palladium.

**(d) Discuss how you would expect buyers and sellers to react to the higher price of palladium. [6]**

Buyers and sellers will react differently to the higher price of palladium and they will be adopting different methods too. Some of the methods adopted by the buyers and sellers are effective while others are not.

In response to the higher price of palladium, buyers will reduce the quantity demanded due to the law of demand which states that in a given time period, the quantity demanded of a product is inversely related to its price, ceteris paribus. The extent of the fall in quantity demanded will then depend on price elasticity of demand which measures the responsiveness of quantity demanded of palladium due to a change in its price. The effectiveness of this method will depend on the factors affecting price elasticity of demand such as the number and closeness of substitutes. For example would be the producers of car exhaust systems who can look for cheaper substitutes such as platinum. Demand of palladium from such buyers will be relatively elastic thus quantity demanded will fall more than proportionate to the rise in the price of palladium. Being able to look for other substitutes proves the effectiveness of this method as they manage to counter the price increase in palladium.

On the other hand, demand for palladium could be price inelastic which means that buyers of palladium are not so responsive and reactive to a price change. For example will be the producers of mobile phones and computers who needs palladium as it is the essential input for the production of such products and there are no close substitutes. In this instance, the quantity demanded will fall less than proportionate to the rise in price of palladium. For this instance, the method adopted by the buyer of palladium is ineffective since there are no substitutes available to counter the rise in price.

In response to the higher price of palladium, sellers will increase the quantity supplied due to the law of supply which states that in a given time period, the quantity supplied of a product is directly related to its price, ceteris paribus. As quantity supplied increases, sellers will be able to earn more profits. Producers will take advantage of the higher prices and the possibility of earning more profits by increasing the quantity supplied. The extent of the increase in quantity supplied will depend on the price elasticity of supply which measures the responsiveness of quantity supplied of a good due to a change in its price. The effectiveness of this method will depend on the factors affecting price elasticity of supply such as the time period. In the short run, supply is price inelastic which means that the rise in price of palladium results in a less than proportionate change in quantity supplied. This happens because producers are only able to adjust some and not all of its factors of production. It is difficult to hire more miners or make the existing labor to work harder at the mines to produce greater quantity of palladium and it is also difficult to find new mines. This is shown in Figure B below where in in the short run, a price increase from P0 to P1 will result in an increase in quantity by only Q0QSR. Since the quantity supplied cannot increase easily, this method is ineffective in the short run.

Price of palladium

Quantity

of palladium

SSR

0

Q0

P0

P1

**Figure B**

SLR

QSR

QLR

In the long run, supply for palladium will be relatively price elastic which means that the rise in price of palladium results in a more than proportionate change in quantity supplied. This makes it more effective than in the short run as quantity supplied can be changed more easily. This is evident in Figure B above where an increase in the price of palladium from P0 to P1 will result in an increase in quantity by Q0QLR.. This is much more than in the short run where quantity could only be increased by Q0QSR. This happens because all factor inputs can be adjusted in response to price increase in the long run and thus there is sufficient time for all inputs and productive capacity to be increased such as being able to find more miners or that more efficient mining methods can be developed to expand the production of palladium.

However, reactions of buyers and sellers could be a respond to another’s actions. If a significant number of buyers expect the price of palladium to increase further in the future and if they see palladium as a commodity for investment, these buyers will demand for more palladium now so that they do not lose out from having to pay for a higher price in the future purchasing the same good. On the other hand, sellers will instead decrease the supply of palladium now knowing the reactions of buyers as selling palladium in the future with a higher price will be more beneficial for them due to their higher profits they can reap.