INTRODUCTION TO MICROECONOMICS
WORKSHEET 1 ANSWERS

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Question 1

a) shits DD left
b) causes a rightward movement *along* the curve to raise quantity demanded but does not shift curve (price is endogenous)
c) shifts supply curve right
d) a fall in the price of a complement increases quantity demanded for that good and demand for this good at all prices – **correct answer**
e) no, because d) is correct

Question 2

$$|\varepsilon| = \frac{\%\Delta q}{\%\Delta \mathrm{p}} = \frac{\Delta q/q}{\Delta p/p} \left\{ = \frac{\partial q/q}{\partial p/p} = \frac{\partial q.p}{\partial p.q} = \frac{\partial \log q}{\partial \log p} \right\}$$

If elasticity >1, defined as elastic; means change in q is bigger than the change in p; **Answer is d**

Question 3

X<1 means change in p > change in q. Revenue = p.q, so gain from raising price exceeds loss from lower sales, so should raise price and sell less. (Can't raise price and sell more even if you wanted to!) **So answer is d.**

Question 4

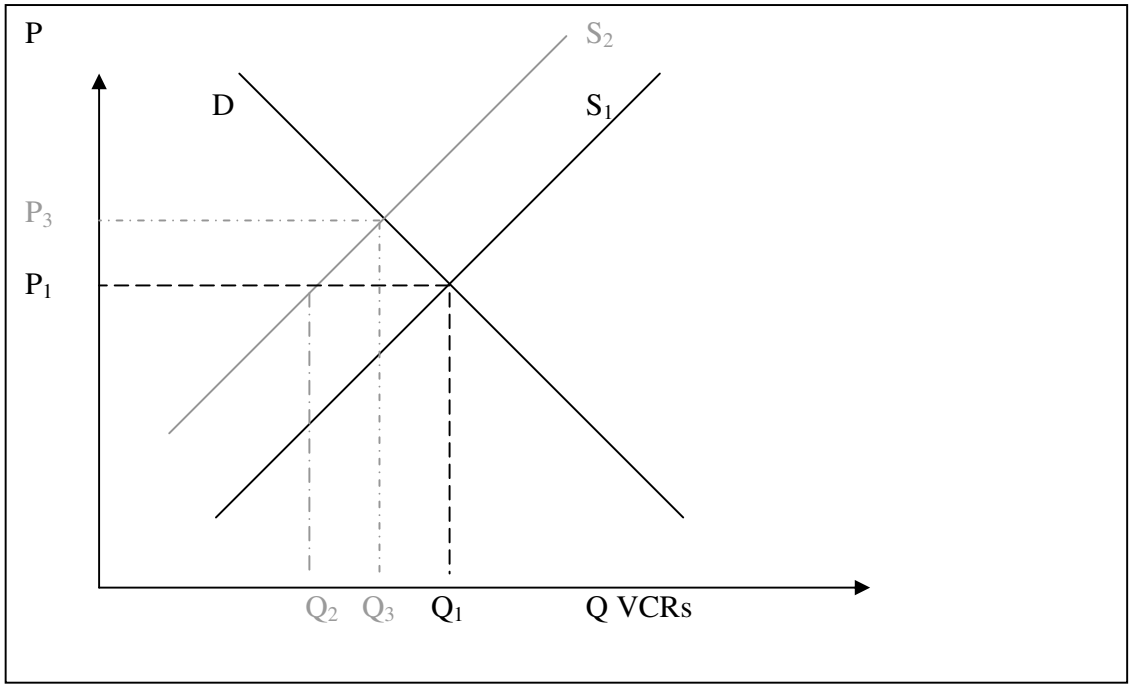
I) Correct
II) Incorrect
III) Correct
IV) Correct ($\frac{\Delta q}{\Delta \mathrm{p}}.\frac{p}{q} = 0 \Rightarrow \frac{\Delta q}{\Delta \mathrm{p}} = 0$, but we have q on x-axis and p on y –axis ie want $\frac{\Delta p}{\Delta q} = \frac{1}{0} = \infty$

So answer is d.

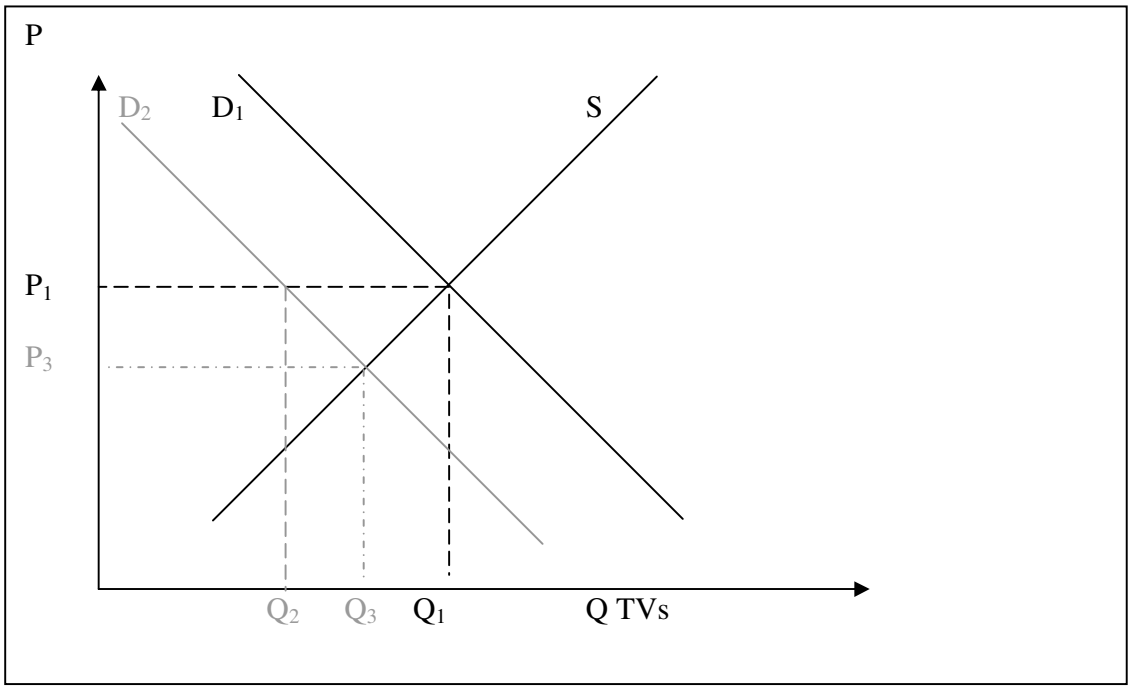
Question 5b

Outline answer (this is *not* enough detail; see 5a): DVD players and VCRs are substitutes, so the introduction of DVDs reduces demand for VCRs (at all prices) [It also reduces the price elasticity of demand for VCRs.]. This shifts the demand curve for VCRs left and results in lower prices and quantities.

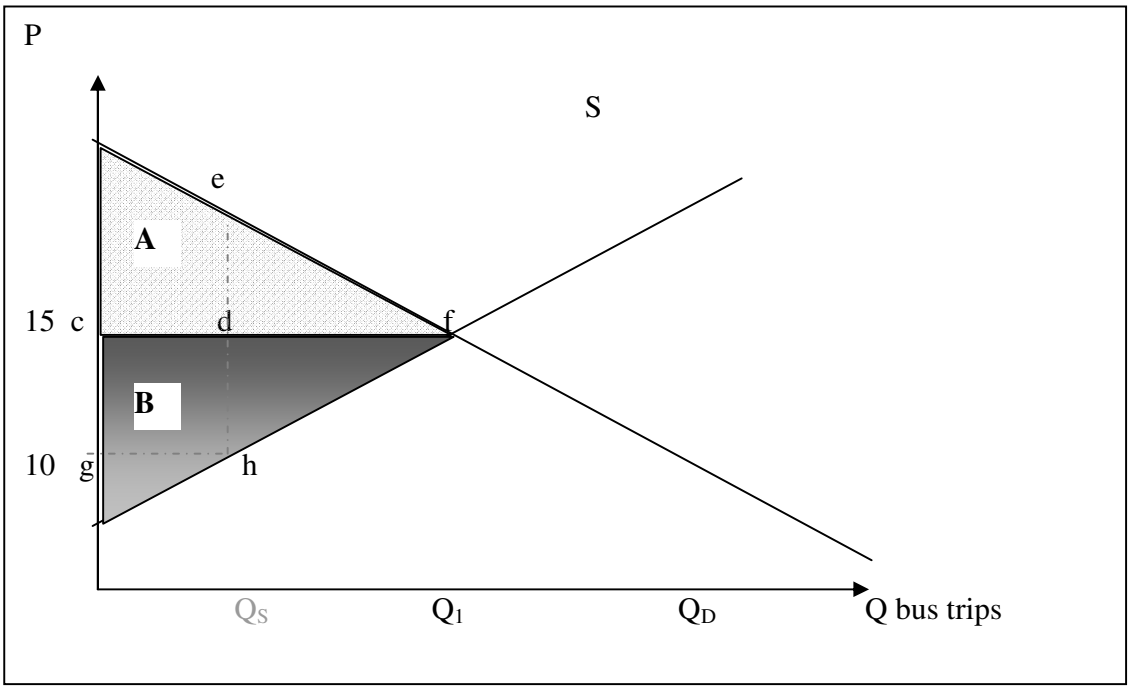
Question 5a



- Initial equilibrium at (p_1,q_1)
- Oil is an input in VCR production, so the rise in the oil price raises the cost of making VCRs
- Increased costs make suppliers willing to supply less at every price, so the supply curve shifts left to S_2.
- **At the original price, there is excess demand equal to q1-q2.**
- **Prices are bid up, so**
    - **Quantity demanded falls**
    - **Quantity supplied rises**
- **This occurs until DD = SS, which happens at a new equilibrium of (p_3,q_3);** the result is higher P and lower Q.
- PTO for effect on televisions…



- Initial equilibrium
- TVs and VCRs are complements
- The price of VCRs has risen
- Therefore people demand fewer TVs at all prices (the DD curve shifts left)
- There **is excess supply equal to q1-q2**
- **Producers reduce prices; as prices fall**
  - **Quantity demanded rises**
  - **Quantity supplied falls**
- **The new equilibrium is at (p_3,q_3) with lower prices and quantities**



Demand equals supply at P =15.

The consumer' surplus is the area above the price and below the demand curve, measuring the sum (integral) of the differences between what consumers are willing to pay for each good (marginal utility) and what they actually pay (equilibrium price). It is denoted by the shaded triangle A.

The producers' surplus is the area above the supply curve and below the equilibrium price, measuring the sum of the differences between what producers would be willing to sell that unit at (marginal cost) and what they receive (the market price). This is denoted by shaded triangle B.

If the government imposes a price ceiling at £10, this is below the equilibrium price so it will have an effect. At this lower price, quantity demanded rises to Q_D but quantity supplied falls to Q_S. $Q_S < Q_D$ so **there is excess quantity demanded for bus trips** (there will be long queues and some people won't be able to take the bus in time).

Those **consumers who are still getting bus tickets benefit from cheaper prices** for each unit they but, gaining area **cdgh**. **Producers lose this exact amount** because they receive less for the tickets, so cdgh is a direct **welfare transfer** from producers to consumers.

However, the lower quantity supplied means **consumers would have been willing to pay more than £15 for Q_1-Q_S units but are unable to; this loss is denoted by def**. Similarly, **producers would have been willing to provide the same quantity of**

units for less than £15 but are prevented from doing so by the lower price; this welfare loss is denoted by dfh.

Consumers overall gain cdgh – def, which can be positive or negative (often positive). Producers lose cdgh + dfh, making the overall loss the two triangles def+dfh. This is known as the **deadweight loss to society**.

Note: This deadweight loss can also be thought of as there being some goods that cost less than £15 to make and are valued at more than £15, but are still not produced and consumed.

If everybody's welfare is weighted equally, then this is a bad move, however, if we weight the welfare of consumers more than producers and cdgh>def, one may argue this is "good move"; similarly if the people who most value the bus are the poor and we value the poor's welfare more, we can make a case that it could be a good move.

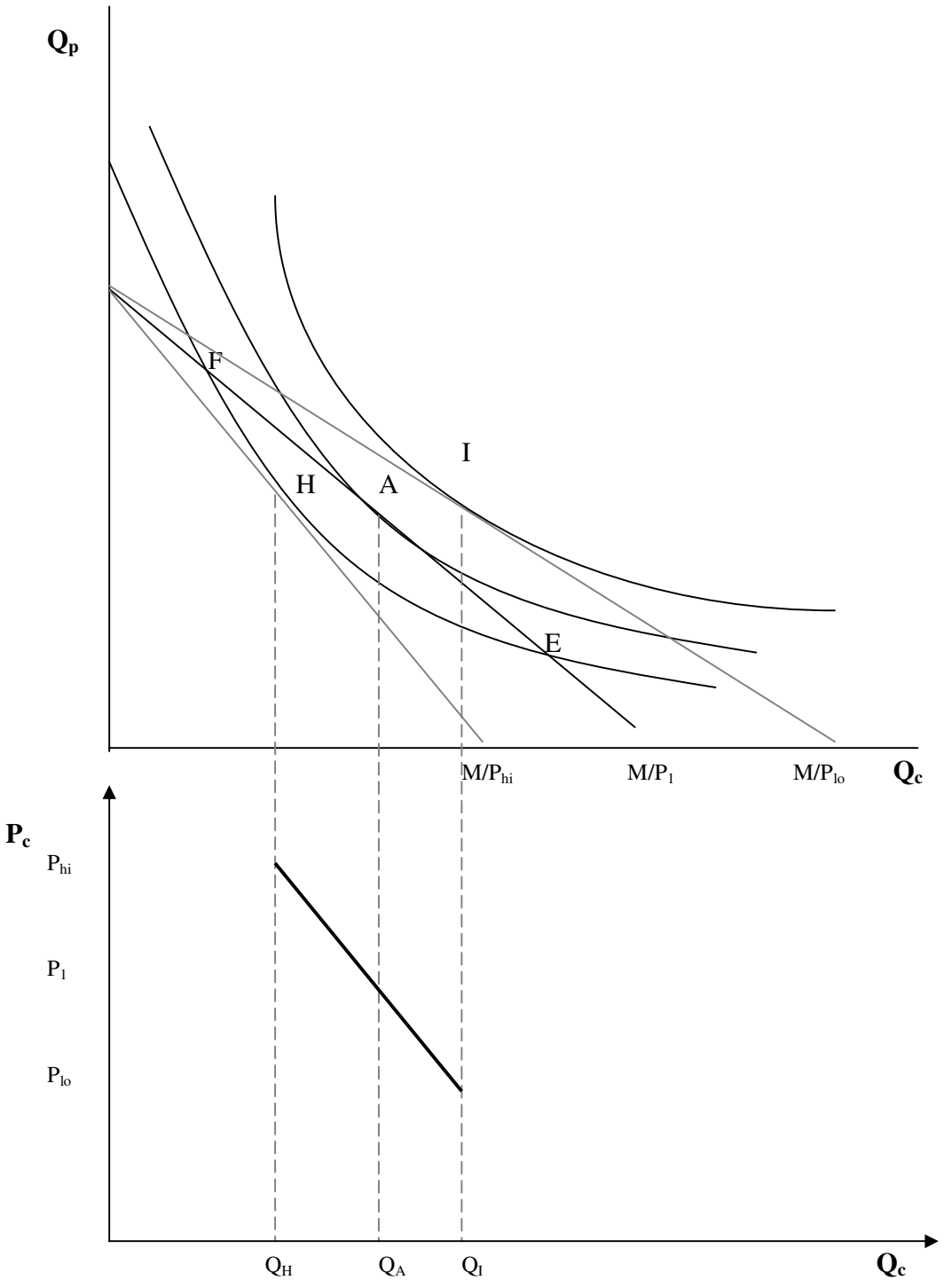
Question 7

a) Point A: MRS=P_X/P_Y
b) **At E, David is willing to forego 4 cokes for 1 pizza (MRS – indifference curve) but needs only give up 2 cokes (budget line). He can be better off by buying 2 cokes fewer and 1 pizza more**. If David is still to the right of A, he is still willing to give up more cokes than he has to per pizza. He should do this until, at A, the amount he is willing to give up is exactly equal to the amount he has to give up. We can also see that this puts him on higher (the highest) indifference curve than at E. At F, he is willing to give up 1 pizza for a coke but he needs only give up half a pizza (he only wants 1 coke for a pizza but he can get 2). He should therefore buy 1 pizza fewer and 2 cokes more (etc…)
c)

Note: $MRS_{XY} \equiv \frac{MU_X}{MU_Y}$; by definition; Question should read "If $MRS_{XY} > \frac{P_X}{P_Y}$..."

The indifference curve is steeper than the budget line so we are at F so he should buy more Cokes and less pizza. Alternatively,

$\frac{MU_X}{MU_Y} > \frac{P_X}{P_Y}$; therefore reduce MU_X and raise MU_Y, which is accomplished by consuming more of X and less of Y.


Q_p
F
I
H
A
E
M/P_{hi}
M/P_1
M/P_{lo}
Q_c
P_c
P_{hi}
P_1
P_{lo}
Q_H
Q_A
Q_I
Q_c