

Five short-answer questions and a consultancy case

From the pack: five questions in the style of the GES assessment centre's short-answer exercise, with model answers and the marking points the AI marks against, and the outline of one economic-consultancy case. In the real exercise you have about three minutes a question.

Short-answer questions

Each question is marked out of 4, one mark per marking point. In the pack, your answers to the timed papers are marked by AI against these points: marks and comments only, never a rewrite.

QUESTION 1 · MICROECONOMICS

Using a diagram described in words, explain how a per-unit tax on cigarettes affects consumers, producers and the government, and who bears most of the burden.

Draw demand and supply with price on the vertical axis. A per-unit tax shifts supply up vertically by the amount of the tax. Quantity falls; the price consumers pay rises and the price producers keep falls, the gap being the tax. Consumer surplus and producer surplus both shrink; part of the loss becomes tax revenue (the rectangle of tax times new quantity) and the rest is a deadweight loss triangle. Because demand for cigarettes is price inelastic relative to supply, the consumer price rises by most of the tax, so smokers bear most of the burden. The deadweight loss is small, which is why such taxes raise revenue efficiently, though the reduction in smoking is also modest.

Marking points

1. Supply shifts up vertically by the tax; quantity falls, consumer price rises and producer price falls
2. Tax revenue identified as tax per unit times the new quantity, with a deadweight loss triangle
3. Incidence falls mainly on the more inelastic side: demand for cigarettes is inelastic, so consumers bear most
4. Judgement: inelastic demand means high revenue and small deadweight loss but only a modest fall in smoking

QUESTION 2 · MICROECONOMICS

In a market, demand is $Q_d = 100 - 2P$ and supply is $Q_s = 20 + 2P$. Calculate the equilibrium, then the effect of a £4 per-unit tax on sellers: prices paid and received, tax revenue and deadweight loss.

Equilibrium: $100 - 2P = 20 + 2P$, so $4P = 80$, $P = 20$ and $Q = 60$. With the tax, sellers receive $P - 4$, so supply becomes $Q_s = 20 + 2(P - 4) = 12 + 2P$. Setting $100 - 2P = 12 + 2P$ gives $4P = 88$, so consumers pay $P = 22$ and $Q = 56$. Producers receive $22 - 4 = 18$. The burden is shared equally (£2 each) because the slopes are equal. Revenue = $4 \times 56 = £224$. Deadweight loss = $0.5 \times 4 \times (60 - 56) = £8$.

Marking points

1. Pre-tax equilibrium $P = 20$, $Q = 60$
2. Post-tax: consumers pay 22, producers receive 18, $Q = 56$
3. Tax revenue = £224
4. Deadweight loss = £8, with the equal split of incidence explained by equal slopes

QUESTION 3 · MACROECONOMICS

Explain how a rise in Bank Rate is expected to reduce inflation.

A rise in Bank Rate feeds through to market interest rates, raising borrowing costs for households and firms and the return on saving. This reduces consumption, especially of durables and through higher mortgage payments, and reduces business investment. Higher rates also lower asset prices, cutting wealth, and tend to appreciate the exchange rate, making imports cheaper and exports less competitive. Lower aggregate demand opens a negative output gap, which reduces pressure on wages and prices, and a credible central bank also lowers inflation expectations. The effect works with long and variable lags, often estimated at one to two years, and its strength depends on how many borrowers have fixed-rate loans.

Marking points

1. Higher market rates raise borrowing costs and reward saving: consumption and investment fall
2. Asset price or wealth channel, or exchange rate appreciation
3. Lower aggregate demand reduces pressure on wages and prices; expectations channel
4. Caveat: lags or dependence on fixed-rate borrowing, so effect timing uncertain

QUESTION 4 · ECONOMETRICS AND DATA

A regression on fictional survey data gives: $\ln(\text{hourly wage}) = 1.50 + 0.08 \times \text{years of education}$, with a standard error of 0.02 on the education coefficient. Interpret the coefficient, test whether it is statistically significant, and explain why it may not be the causal return to education.

Because the dependent variable is in logs, each extra year of education is associated with approximately 8% higher hourly wages (exactly $100 \times (e^{0.08} - 1)$, about 8.3%). The t-statistic is $0.08/0.02 = 4$, above 1.96, so the coefficient is significantly different from zero at the 5% level. It may not be causal because of omitted variable bias: ability and family background are likely to raise both education and wages, so the estimate partly captures them and is probably biased upwards. Other concerns include measurement error in education and selection. Identifying a causal effect would require, for example, a natural experiment such as a change in the school-leaving age.

Marking points

1. Interpretation: about 8% higher wage per extra year (log-level)
2. $t = 4$, significant at 5%
3. Omitted variable bias: ability or background, likely upward bias
4. Identification strategy, for example natural experiment or instrument

QUESTION 5 · INTERNATIONAL TRADE

Using a diagram described in words, explain the welfare effects of a tariff on imported steel for a small open economy such as the UK.

Draw domestic demand and supply, with a horizontal world supply line at the world price, below the domestic equilibrium. Under free trade, consumers buy at the world price, domestic firms supply a small quantity and the rest is imported. A tariff raises the domestic price by the tariff. Domestic production rises, consumption falls and imports shrink. Consumer surplus falls by the area between the two prices up to consumption. Of this loss, part goes to domestic producers as extra producer surplus, part to government as tariff revenue (tariff times remaining imports), and two triangles are deadweight losses: one from inefficient domestic production, one from lost consumption. Net welfare falls, although steel jobs may be protected; downstream users of steel also face higher costs.

Marking points

1. World price line below domestic equilibrium; tariff raises domestic price
2. Production rises, consumption and imports fall
3. Consumer surplus loss split into producer gain, revenue and two deadweight loss triangles
4. Judgement: net welfare loss for a small economy; downstream users or jobs argument

Oat bars: is there a market?

Two of the larger makers of oat-based breakfast bars, Hearthfield and Brightmorrow, want to merge. Their advisers say the relevant market is all breakfast snacks, so their combined share is small. The authority suspects oat bars alone might be a market. You have a few minutes. How would you test whether oat bars are a relevant market, and what would you need to know?

How a strong candidate works through it

1. Frame the test: would a hypothetical monopolist of all oat bars profitably impose a small but significant non-transitory increase in price (5%)? If yes, oat bars are a market; if no, widen the candidate market to the closest substitutes and repeat.
2. Margin: $M = (2.00 - 1.20) / 2.00 = 0.40$, or 40% of price.
3. Critical loss for a price rise X and margin M is $X / (X + M) = 0.05 / (0.05 + 0.40) = 0.05 / 0.45 = 11.1\%$. If the monopolist loses more than 11.1% of volume, the rise is unprofitable.
4. Check by profit per 100 packs: before, $100 \times £0.80 = £80$. After the rise, margin is $£2.10 - £1.20 = £0.90$, so break-even volume is $80 / 0.90 = 88.9$ packs, a loss of 11.1%. The formula agrees.
5. Predicted actual loss: with aggregate elasticity -1.8 , a 5% rise cuts volume by about $1.8 \times 5\% = 9\%$. That is below the 11.1% critical loss.
6. Profit check: $91 \text{ packs} \times £0.90 = £81.90$, above $£80$, so the 5% rise is profitable and oat bars pass the test as a candidate market.
7. Consistency check: the single-brand elasticity of 2.5 equals $1 / 0.40$, which fits a brand pricing where its own Lerner condition holds. The aggregate elasticity (1.8) is lower than the brand elasticity (2.5) because much of what one brand loses goes to other oat bars, which the hypothetical monopolist recaptures. High margins therefore do not by themselves imply a wide market.
8. Sensitivity: the conclusion flips if the aggregate elasticity exceeds $0.111 / 0.05 = 2.22$ (with a linear approximation). An estimate of 1.8 leaves some room, but the confidence interval matters.

Where it lands

On these numbers a hypothetical monopolist of oat bars would find a 5% rise profitable (predicted loss about 9% against a critical loss of 11.1%), so oat bars look like a relevant market and the parties' wider breakfast-snacks market is not supported. The answer depends on the elasticity estimate and its precision, on whether the linear approximation holds, and on whether a 10% SSNIP or a different price benchmark changes the picture.

In the pack the AI case interviewer reveals the data only when you ask for it, and pushes back on each step.

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