# S5 Economics Practice Paper: Elasticity and Market Equilibrium, Per-Unit Tax and Tax Incidence, Short-Run Production and Costs, Market Structure, National Income, Unemployment and Inflation, Money and Fiscal Policy (100 marks)

Level: S5 | Subject: Economics | 75 minutes | 100 marks | 24 questions | answer key

## Part 1 Demand, Supply and Elasticity (17 marks)

**Give elasticities, percentages and ratios to 1 d.p.; state the unit of price and revenue.**

| # | Question | Answer | Marks |
|---|---|---|---|
| 1 | The price of a good falls from $20 to $16 and quantity demanded rises from 200 to 260 units. Using the original-value method, calculate the price elasticity of demand (PED) and state the type of elasticity. | PED = (60/200) / (-4/20) = 30.0% / (-20.0%) = -1.5; \|PED\| = 1.5 > 1, so demand is elastic. | 4 |
| 2 | In a market, supply is Qs = -10 + 5P and demand is Qd = 110 - 3P. Find the equilibrium price and quantity. | Set Qs = Qd: -10 + 5P = 110 - 3P, so 8P = 120 and P = $15; Q = -10 + 5(15) = 65 units. | 4 |
| 3 | Using the figures above (price falls from $20 to $16, quantity rises from 200 to 260), how does total revenue (TR) change? Give the percentage change and link it to elasticity. | TR was $20 x 200 = $4,000 and becomes $16 x 260 = $4,160, a rise of 4.0%; with elastic demand a price cut raises total revenue. | 4 |
| 4 | A per-unit tax of $8 is imposed, so supply becomes Qs = -10 + 5(P - 8) = -50 + 5P while demand stays Qd = 110 - 3P. Find the new equilibrium price and quantity, and the share of the tax borne by consumers and producers. | -50 + 5P = 110 - 3P, so 8P = 160, P = $20 and Q = 50 units; consumers bear (20 - 15)/8 = 62.5% and producers 37.5% (sellers keep $12). | 5 |

## Part 2 Short-Run Production and Costs (17 marks)

**Show the working for marginal product and costs; express costs in dollars.**

| # | Question | Answer | Marks |
|---|---|---|---|
| 5 | A firm has short-run total product of 10, 26, 45, 60 and 70 units for 1 to 5 units of labour. Find the marginal product of each unit of labour and state from which unit diminishing marginal returns set in. | Marginal products are 10, 16, 19, 15 and 10 units; MP falls from 19 to 15 at the 4th unit, so diminishing marginal returns start there. | 4 |
| 6 | A firm has total cost TC = 200 + 6Q + 0.5Q^2. Find total cost, average total cost and marginal cost at Q = 20. | TC = 200 + 120 + 200 = $520; ATC = 520/20 = $26; MC = dTC/dQ = 6 + Q = $26. | 4 |
| 7 | A firm has fixed cost of $200 and average variable cost of $8 when Q = 10. Find total variable cost, total cost, average total cost and average fixed cost. | TVC = 8 x 10 = $80; TC = 200 + 80 = $280; ATC = 280/10 = $28; AFC = 200/10 = $20. | 4 |
| 8 | A perfectly competitive price-taking firm faces a market price of $40 and has TC = 200 + 6Q + 0.5Q^2. Find the profit-maximising output and | MR = P = $40 = MC = 6 + Q, so Q = 34; TR = 40 x 34 = $1,360, TC = 200 + 204 + 578 = $982 and profit = $378; AVC = | 5 |

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|---|---|---|---|
| | total profit, and say whether the firm should shut down in the short run. | 782/34 = $23 < $40, so the firm should keep producing. | |

## Part 3 Market Structure and Concentration (16 marks)

**Give output as whole numbers; show total revenue and total cost separately.**

| # | Question | Answer | Marks |
|---|---|---|---|
| 9 | State three features of long-run equilibrium in perfect competition and explain why P = MC = minimum average total cost in the long run. | Features: firms are price takers, entry and exit are free, and economic profit is zero. If P exceeds minimum ATC, positive profit attracts entry, supply rises and price falls to minimum ATC; if P is below ATC firms exit and price rises, so P = MC = minimum ATC. | 4 |
| 10 | A monopolist faces demand P = 100 - 2Q, has constant marginal cost of $20 and fixed cost of $500. Find the profit-maximising output, price and profit. | MR = 100 - 4Q = MC = 20, so Q = 20; P = 100 - 40 = $60; TR = $1,200, TVC = 400, TC = $900 and profit = $300. | 4 |
| 11 | Using the same market, if it were perfectly competitive (P = MC), find the output and the deadweight loss relative to the monopoly outcome. | Under competition: 100 - 2Q = 20, so Q = 40; deadweight loss = 0.5 x (60 - 20) x (40 - 20) = $400. | 4 |
| 12 | Five firms in an industry have market shares of 40%, 25%, 15%, 10% and 10%. Calculate the Herfindahl-Hirschman Index (HHI) and judge the degree of concentration, using 2,500 as the high-concentration threshold. | HHI = 40^2 + 25^2 + 15^2 + 10^2 + 10^2 = 1,600 + 625 + 225 + 100 + 100 = 2,650; above 2,500, so the market is highly concentrated. | 4 |

## Part 4 National Income and Growth (17 marks)

**Work in billions of dollars; express indices with base year = 100.**

| # | Question | Answer | Marks |
|---|---|---|---|
| 13 | An economy (in billions of dollars) has private consumption 500, gross investment 120, government spending 150, exports 400 and imports 380. Use the expenditure approach to find GDP. | GDP = C + I + G + X - M = 500 + 120 + 150 + 400 - 380 = 790 (billion dollars). | 4 |
| 14 | With GDP from the previous question and net factor income from abroad of -30 (billion dollars), find GNP and briefly explain how GDP differs from GNP. | GNP = GDP + net factor income from abroad = 790 + (-30) = 760 (billion dollars); GDP is territorial (output produced within the economy) while GNP is residence-based (output by residents anywhere). | 4 |
| 15 | A region's nominal GDP index rises from 100 in the base year to 132, while its price index rises from 100 to 120. Find the real GDP index and the real growth rate over the period. | Real GDP index = 132 / 120 x 100 = 110; real growth rate = 110 - 100 = 10.0%. | 4 |
| 16 | Real GDP grows by 10% while population rises from 7.00 million to 7.10 million. Find the growth rate of real GDP per capita to 1 d.p. | Per-capita index = 110 / (7.10/7.00) = 108.45, so the growth rate is 8.5%: population growth of 1.4% offsets part of the output gain. | 5 |

## Part 5 Unemployment and Inflation (16 marks)

**Give rates to 1 d.p.; show the working for price indices and interest rates.**

| # | Question | Answer | Marks |
|---|---|---|---|
| 17 | In a region, employment is 3.60 million and unemployment is 0.15 million; the rest are outside the labour force. Find the labour force and the unemployment rate. | Labour force = 3.60 + 0.15 = 3.75 million; unemployment rate = 0.15 / 3.75 x 100% = 4.0%. | 4 |
| 18 | A consumption basket contains 2 units of good A and 3 units of good B. Base-period prices are $10 for A and $20 for B; current prices are $12 for A and $22 for B. Using base-period quantities as weights, find the CPI and the inflation rate. | Base-period cost = 2(10) + 3(20) = $80; current cost = 2(12) + 3(22) = $90; CPI = 90 / 80 x 100 = 112.5 and inflation = 12.5%. | 4 |
| 19 | The one-year nominal interest rate is 5.0% and inflation is 3.2%. Use the exact Fisher equation to find the real interest rate to 1 d.p., and give the approximation. | Real rate = (1.05 / 1.032) - 1 = 1.7%; the approximation is 5.0% - 3.2% = 1.8%, the gap coming from the cross term. | 4 |
| 20 | In a year the CPI rises by 2.5% while the GDP deflator rises by only 1.8%. Give two reasons for the difference between the two price indices. | First, the CPI basket includes imported consumer goods, whose prices raise the CPI but not the deflator for domestic output. Second, the weights differ: the CPI uses fixed base-period quantities while the deflator uses current output weights and covers investment and government spending but excludes imports. | 4 |

## Part 6 Money, Banking and Policy (17 marks)

**State the multiplier formula; state the direction of any change in money supply.**

| # | Question | Answer | Marks |
|---|---|---|---|
| 21 | The required reserve ratio is 20%, banks hold no excess reserves and the public holds no cash. Find the money multiplier and the increase in money supply when base money rises by $1,000. | Money multiplier = 1 / 0.20 = 5; money supply rises by 5 x $1,000 = $5,000. | 4 |
| 22 | A bank takes in deposits of $1,000 with a 20% required reserve ratio and actually holds $250 of reserves. Find required reserves, excess reserves and the excess reserve ratio. | Required reserves = 1,000 x 20% = $200; excess reserves = 250 - 200 = $50; excess reserve ratio = 50 / 1,000 = 5.0%. | 4 |
| 23 | Marginal propensity to consume is 0.8 and government spending rises by $2 billion. Find the simple expenditure multiplier and the change in equilibrium national income. | Multiplier = 1 / (1 - 0.8) = 5; change in income = 5 x $2 billion = +$10 billion. | 4 |
| 24 | Nominal GDP is $80 billion and the velocity of money is 4. Use the equation of exchange to find money demand; if velocity rises to 5, by how much does money demand change, in amount and in percentage? | MV = PY, so M = 800 / 4 = $20 billion; at V = 5, M = 800 / 5 = $16 billion, a fall of $4 billion (-20.0%). | 5 |