Form 5 Economics Practice Paper (Set 2): Elasticities, Costs, Market Structure, Factor Markets, Externalities and Tax Incidence

Form 5 Economics | Practice Paper 2

Form 5 Economics set 2: elasticities, costs, market structure, factor markets, externalities, tax incidence. 24 questions, 100 marks, 75 minutes, answers included.

Part 1: Demand, Supply and Elasticity Calculations (17 marks)

Study the data and answer all parts.

#	Question	Answer and marking notes
1	The price of a good rises from $20 to $22 and quantity demanded falls from 1000 to 900 units. Calculate the price elasticity of demand and state its type.	Price rises 10% and quantity falls 10%, so elasticity = 1.0: unit elastic.
2	Household income rises from $20000 to $22000 and quantity demanded rises from 500 to 575 units. Calculate the income elasticity and classify the good.	Income rises 10% and quantity rises 15%, so income elasticity = 1.5 > 1: a normal good, a luxury.
3	The price of good Y rises 5% and quantity demanded of good X falls 8%. Calculate the cross elasticity and state the relationship.	Cross elasticity = -1.6, negative, so the two goods are complements.
4	In a market Qd = 500 - 30P and Qs = -100 + 50P. Find the equilibrium price and quantity, showing steps.	Set Qd = Qs: 500 - 30P = -100 + 50P gives 80P = 600, so P = $7.5 and Q = 275 units.

Part 2: Production Costs and Economies of Scale (17 marks)

A firm has fixed cost $120000 and variable cost $60 per unit.

#	Question	Answer and marking notes
5	At output 2000 units, find total cost, average fixed cost, average variable cost and average cost.	TVC = 120000 and TC = 240000; AFC = $60, AVC = $60 and AC = $120.
6	Output rises from 2000 to 3000 units and total variable cost from $120000 to $168000. Find marginal cost and the new average cost.	MC = (168000 - 120000) / 1000 = $48; TC = $288000 and AC = $96.
7	By how much does average cost fall between the two outputs, and what does this show?	AC falls from $120 to $96, a drop of 20%: internal economies of scale.
8	Labour rises from 2 to 3 workers and output from 100 to 130 units; a fourth worker raises output to 150 units. Find both marginal products and state the law shown.	Marginal product falls from 30 to 20 units: the law of diminishing marginal returns.

Part 3: Market Structure and Profit Maximisation (17 marks)

Compare a perfectly competitive market with a monopoly.

#	Question	Answer and marking notes
9	In perfect competition P = $40, MC = 4Q and TC = 200 + 2Q squared. Find the profit-maximising output, average cost and economic profit.	P = MC gives 4Q = 40, so Q = 10; TC = $400 and AC = $40 = P, so economic profit is zero (normal profit).
10	A monopolist faces P = 240 - 2Q with MC = $40 and fixed cost $3000. Find the profit-maximising output, price and profit.	MR = 240 - 4Q = 40 gives Q = 50 and P = $140; TR = $7000, TC = $5000, so profit = $2000.
11	Four firms hold 40%, 30%, 20% and 10% market share. Calculate the Herfindahl index.	HHI = 40 squared + 30 squared + 20 squared + 10 squared = 3000: highly concentrated.
12	Find consumer surplus under monopoly and, under perfect competition with P = MC, the output and consumer surplus; explain the difference.	Monopoly CS = 0.5 x (240 - 140) x 50 = $2500; competitive output 100 with CS = $10000, so monopoly causes deadweight loss.

Part 4: Factor Markets and Wages (17 marks)

The following questions concern the labour market.

#	Question	Answer and marking notes
13	A worker has marginal product 8 units, output price $50 and the market wage is $320. Find the marginal revenue product, decide whether to hire, and find the marginal product at which hiring stops.	MRP = 8 x $50 = $400, above the wage of $320, so hire more until marginal product = 320 / 50 = 6.4 units.
14	When the wage rises from $400 to $500, labour supplied rises from 120 to 135 hours. Calculate the elasticity of labour supply.	Wages rise 25% and hours rise 12.5%, so elasticity = 0.5: supply is relatively inelastic.
15	In a competitive labour market the wage is $60 with 200 employed; under monopsony the wage is $45 with 160 employed. By what percentage are the wage and employment lower?	The wage is 25% lower and employment 20% lower: monopsony suppresses both.
16	A risky job pays $120 per hour and a comparable safe job pays $100. Calculate the wage gap and name the type of wage difference.	The gap is (120 - 100) / 100 = 20%: a compensating wage differential.

Part 5: Externalities and Public Goods (16 marks)

A factory pollutes: private marginal cost is $30, marginal external cost $10, and demand is P = 90 - 2Q.

#	Question	Answer and marking notes
17	Find the free-market output, the socially optimal output and the deadweight loss.	Free market P = MPC gives Q = 30; the social optimum P = MSC = $40 gives Q = 25; DWL = 0.5 x 5 x 10 = $25.

#	Question	Answer and marking notes
18	If the government imposes a Pigouvian tax of $10 per unit, find the tax revenue and its effect on output.	The tax equals MEC = $10, output falls to the optimal 25 and revenue = 10 x 25 = $250.
19	A public good gives MB1 = 100 - 2Q and MB2 = 60 - Q, with marginal cost $40. Find the socially optimal quantity and the quantity privately provided, and explain the gap.	MSB = 160 - 3Q, so MSB = MC gives Q = 40; private provision follows MB1 only, Q = 30, a shortfall of 10 units (free-rider problem).
20	Education creates marginal external benefit $20, with MPB = 80 - Q and MC = $30. Find the market output, the socially optimal output and the optimal per-unit subsidy.	MPB = MC gives market output 50; MSB = MC gives the optimum 70; the subsidy equals MEB = $20, correcting under-provision.

Part 6: Tax Incidence and Subsidies (16 marks)

Analyse how a per-unit tax and a subsidy are shared between buyers and sellers.

#	Question	Answer and marking notes
21	Demand elasticity is 1.2 and supply elasticity 0.8; the government levies a per-unit tax of $10. Find the shares and amounts borne by consumers and producers.	Consumers bear 0.8 / (1.2 + 0.8) = 40%, i.e. $4; producers bear 60%, i.e. $6.
22	If demand elasticity were 0.4 and supply elasticity 1.6, what would the consumers' share become? Explain the rule.	Consumers bear 1.6 / (0.4 + 1.6) = 80%: the less elastic the demand, the larger the consumer share.
23	A per-unit subsidy of $12 applies with demand elasticity 0.6 and supply elasticity 0.4. Find the consumer benefit per unit.	Consumer benefit = $12 x 0.4 / (0.6 + 0.4) = $4.8.
24	A tax cuts quantity traded from 1000 to 800 units at $10 per unit. Find the tax revenue and the deadweight loss.	Tax revenue = $10 x 800 = $8000; DWL = 0.5 x $10 x (1000 - 800) = $1000.