S6 Economics Practice Paper: Basic Economic Concepts, Demand and Supply, Market Structures and Firm Behaviour, National Income and Macroeconomic Policy, Money and Banking, International Trade and Globalisation

S6 | Economics | Time: 75 minutes | Total: 100 marks | 24 questions

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Part 1 Basic Economic Concepts

Show your working and state the unit of each answer.

1. A farmer has 1 hectare. Growing only rice gives 800 kg and growing only vegetables gives 1200 kg. If the farmer moves to 0.5 hectare of rice and 0.5 hectare of vegetables, find the gain in rice, the loss in vegetables and the opportunity cost of 1 kg of rice. [4]

Answer: Rice gained = 800 x 0.5 = 400 kg; vegetables lost = 1200 x 0.5 = 600 kg; opportunity cost of 1 kg of rice = 600 / 400 = 1.5 kg of vegetables.

2. The weekly production possibility curve of an economy gives cloth of 300, 280, 240 and 160 units when rice is 0, 100, 200 and 300 units. Find the opportunity cost of raising rice from 200 to 300 units and the average marginal opportunity cost per unit of rice. [4]

Answer: Cloth given up = 240 - 160 = 80 units; average marginal opportunity cost = 80 / 100 = 0.8 units of cloth. The curve bends away from the origin because marginal opportunity cost rises.

3. A city reservoir supplies 80 million cubic metres a year while demand is 96 million cubic metres. Find the shortage and the shortage as a percentage of demand (to one decimal place), and explain whether water is a free good. [4]

Answer: Shortage = 96 - 80 = 16 million cubic metres; as a share of demand = 16 / 96 x 100% = 16.7%. Water is an economic good, not a free good, because a cost is needed to obtain it.

4. A student considers extra tutorial lessons costing 150 dollars each. The marginal benefits of lessons 1 to 4 are 300, 250, 180 and 120 dollars. Find the optimal number of lessons and the total net benefit, and explain why no more lessons are taken. [5]

Answer: Marginal benefit exceeds marginal cost for lessons 1 to 3 (300, 250, 180 are all above 150); lesson 4 gives only 120, below cost. Optimal number = 3 lessons; total net benefit = (300 + 250 + 180) - 150 x 3 = 280 dollars.

Part 2 Demand and Supply

State the unit of price and quantity, and show the elasticity formula.

5. Demand for a good is Qd = 500 - 2P and supply is Qs = 100 + 2P, with price in dollars. Find the equilibrium price, equilibrium quantity and total expenditure at equilibrium. [4]

Answer: Set Qd = Qs: 500 - 2P = 100 + 2P, so 4P = 400 and P = 100 dollars; Q = 500 - 2 x 100 = 300 units; total expenditure = 100 x 300 = 30000 dollars.

6. Demand for a good is Qd = 200 - 4P. (a) At a price of 25 dollars, find the quantity demanded and the price elasticity of demand (point elasticity). (b) If price rises to 30 dollars, find total revenue and state the type of elasticity. [4]

Answer: (a) Q = 200 - 4 x 25 = 100; Ed = (dQ/dP)(P/Q) = 4 x 25 / 100 = 1.0, unit elastic. (b) Q = 200 - 4 x 30 = 80, total revenue = 30 x 80 = 2400 dollars, below 2500 dollars, so demand is elastic at 30 dollars (Ed > 1).

7. In a housing market Qd = 18 000 - 2P and Qs = 6 000 + 2P, with rent in dollars. Find the free-market rent and quantity; if a rent ceiling of 2400 dollars is imposed, find quantity demanded, quantity supplied and the shortage. [4]

Answer: Free market: 18 000 - 2P = 6 000 + 2P gives P = 3 000 dollars and Q = 12 000 units. With a ceiling of 2400 dollars: Qd = 18 000 - 4 800 = 13200 units; Qs = 6 000 + 4 800 = 10800 units; shortage = 13200 - 10800 = 2400 units.

8. Demand is Qd = 800 - 2P and supply is Qs = 200 + 3P. A per-unit tax of 25 dollars is imposed. Find price and quantity before and after the tax, the tax borne by consumers and producers, and government tax revenue. [5]

Answer: Before tax: 800 - 2P = 200 + 3P gives P = 120 dollars and Q = 560 units. After tax supply is Qs = 200 + 3(P - 25), giving P = 135 dollars and Q = 530 units; consumers bear 15 dollars (60%) and producers 10 dollars (40%); revenue = 25 x 530 = 13250.0 dollars.

Part 3 Market Structures and Firm Behaviour

Show the cost and profit formulas and state the unit.

9. A firm has total cost TC = 5 000 + 20Q + 0.5Q^2. (a) Find total cost, average cost and marginal cost at Q = 100 units. (b) Explain why average cost is at its minimum there. [4]

Answer: (a) TC = 5 000 + 2 000 + 5 000 = 12000 dollars; AC = 12000 / 100 = 120 dollars; MC = 20 + Q = 120 dollars. (b) MC cuts AC at its minimum, and MC = AC = 120 dollars, so AC is lowest at this output.

10. A perfectly competitive firm has TC = 2 000 + 40Q + 2Q^2 and the market price is 200 dollars. Find the profit-maximising output, total revenue, total cost and profit. [4]

Answer: MC = 40 + 4Q; setting MC = P gives 40 + 4Q = 200, so Q = 40 units. TR = 200 x 40 = 8000 dollars; TC = 2 000 + 1 600 + 3 200 = 6800 dollars; profit = 8000 - 6800 = 1200 dollars.

11. A monopolist faces demand P = 500 - 2Q and has TC = 2 000 + 100Q. Find the profit-maximising output, price and profit, and compare output with perfect competition. [4]

Answer: MR = 500 - 4Q; setting MR = MC = 100 gives 500 - 4Q = 100, so Q = 100 units; P = 500 - 200 = 300 dollars; TR = 30000 dollars, TC = 2 000 + 10 000 = 12000 dollars, profit = 18000 dollars. Under perfect competition P = MC = 100 gives Q = 200 units, so the monopolist produces 100 units less.

12. In market A the four largest firms hold 40%, 25%, 20% and 15%; in market B they hold 30%, 30%, 20% and 20%. Compute the Herfindahl index (HHI) and the four-firm concentration ratio for each market, and say which is more concentrated. [5]

Answer: A: HHI = 40^2 + 25^2 + 20^2 + 15^2 = 1 600 + 625 + 400 + 225 = 2850; B: HHI = 30^2 + 30^2 + 20^2 + 20^2 = 900 + 900 + 400 + 400 = 2600. Both have CR4 of 100%, but A has the higher HHI (2850 > 2600), so market A is more concentrated.

Part 4 National Income and Macroeconomic Policy

Amounts are in millions of dollars; show the formula used.

13. An economy has private consumption 6000, investment 1500, government spending 1800, exports 2200 and imports 2000 (all in millions), with population 5,000,000. Use the expenditure approach to find GDP and GDP per capita. [4]

Answer: GDP = C + I + G + X - M = 6000 + 1500 + 1800 + 2200 - 2000 = 9500 million dollars; GDP per capita = 9500 million / 5,000,000 = 1,900 dollars.

14. An economy has a marginal propensity to consume of 0.8. Find the simple expenditure multiplier; if government spending rises by 200 hundred million, find the change in national income; if taxes are cut by the same amount instead, find the change. [4]

Answer: Multiplier = 1 / (1 - 0.8) = 5.0; a rise of 200 hundred million in government spending changes Y by 5.0 x 200 = 1000 hundred million. The tax multiplier is -0.8 / (1 - 0.8) = -4, so a tax cut of 200 hundred million raises Y by 800 hundred million.

15. Nominal GDP rises from 9500 to 10260 million dollars while real GDP rises from 9500 to 9800. Find the nominal growth rate, the real growth rate and the inflation rate shown by the GDP deflator. [4]

Answer: Nominal growth = (10260 / 9500 - 1) x 100% = 8.0%; real growth = (9800 / 9500 - 1) x 100% = 3.16%; deflator = 10260 / 9800 x 100 = 104.69, so inflation is about 4.69%.

16. Potential output is 12000 hundred million while actual real output is 11400 hundred million; the multiplier is 4. Find the deflationary gap and the rise in government spending needed to reach full employment. [5]

Answer: Deflationary gap = 12000 - 11400 = 600 hundred million; required rise in government spending = 600 / 4 = 150 hundred million, since 150 x 4 = 600 hundred million.

Part 5 Money and Banking

Show the formula and give amounts in hundred million.

17. The required reserve ratio is 20% and the public deposits 500 hundred million in new cash. Find the deposit multiplier, the final total deposits and the total new loans created. [4]

Answer: Deposit multiplier = 1 / 0.20 = 5; total deposits = 500 x 5 = 2500 hundred million; new loans = 2500 - 500 = 2000 hundred million.

18. An economy has 800 hundred million in notes and coins, 1200 hundred million in demand deposits and 6000 hundred million in savings and time deposits. Find M1 and M3 and explain the difference. [4]

Answer: M1 = notes and coins + demand deposits = 800 + 1200 = 2000 hundred million; M3 = M1 + savings and time deposits = 2000 + 6000 = 8000 hundred million. M1 covers money for transactions, while M3 adds savings and time deposits.

19. The consumer price index rises from 1850 to 1942.5. Find the inflation rate; if nominal wages rise by 6%, find the change in real wages (to two decimal places). [4]

Answer: Inflation = (1942.5 / 1850 - 1) x 100% = 5.0%; change in real wages = (1.06 / 1.05 - 1) x 100% = 0.95%, so purchasing power rises only slightly.

20. An economy has money supply 400 hundred million, velocity 5 and real output 500 units. Use the equation of exchange to find the price level; if money supply rises by 10% with velocity and output unchanged, find the new price level. [4]

Answer: MV = PY: 400 x 5 = 2000 = P x 500, so P = 4.0. A 10% rise in money supply raises P by 10%, giving a new price level of 4.0 x 1.10 = 4.4.

Part 6 International Trade and Globalisation

Show the opportunity cost calculation and state the unit.

21. Country A can produce 10 units of rice or 5 units of cloth in one hour; country B can produce 6 units of rice or 2 units of cloth. Find the opportunity cost of cloth and rice in each country and state their comparative advantage. [4]

Answer: Opportunity cost of cloth: A = 10 / 5 = 2.0 units of rice, B = 6 / 2 = 3.0 units of rice; of rice: A = 5 / 10 = 0.5 units of cloth, B = 2 / 6 = 0.33 units of cloth. A has a comparative advantage in cloth and B in rice.

22. Country A can produce 12 units of rice or 4 units of cloth per hour; country B can produce 8 units of rice or 4 units of cloth. Find the opportunity cost of cloth in each country and how much rice A saves if 1 unit of cloth trades for 2.5 units of rice. [4]

Answer: Opportunity cost of cloth: A = 12 / 4 = 3.0 units of rice, B = 8 / 4 = 2.0 units of rice, so B has a comparative advantage in cloth. A needs 6 units of rice to make 2 units of cloth itself; at 2.5 units of rice per cloth, 2 units cost 5 units of rice, saving 1 unit of rice.

23. The exchange rate moves from 7.80 Hong Kong dollars per US dollar to 7.50. Find the appreciation of the Hong Kong dollar; a Hong Kong good priced at 780 dollars changes to what US dollar price, and by what percentage? [4]

Answer: Hong Kong dollar appreciation = (7.80 - 7.50) / 7.80 x 100% = 3.85%; the US dollar price rises from 780 / 7.80 = US$100 to 780 / 7.50 = US$104, a rise of 4.0%, so export competitiveness falls.

24. An economy exports 4800 hundred million and imports 5400 hundred million. Find the trade balance and say whether it is a surplus or deficit; if a 15% ad valorem tariff is put on an imported good priced at 200 dollars, find the duty and the new price. [4]

Answer: Trade balance = 4800 - 5400 = -600 hundred million, a deficit of 600. The ad valorem duty = 200 x 15% = 30 dollars; the new price = 200 + 30 = 230 dollars, 15% higher, protecting local producers at consumers expense.
