S3 Citizenship, Economics and Society Practice Paper: Personal Finance, Demand Elasticity, Public Finance, GDP, Trade, Sustainability and Civic Participation

Level: S3 | Subject: Citizenship, Economics and Society | 60 minutes | 100 marks | 24 questions | answer key

Part A - Personal Finance and Compound Interest (18 marks)

Study the data, show your working and answer.

#	Question	Answer	Marks
1	Chi-ming earns $16000 a month and saves 25%. How much does he save monthly, how much does he spend, and how many months are needed to build an emergency fund equal to six months of spending?	Saving = 16000 x 25% = $4000; spending = 16000 - 4000 = $12000; emergency fund = 12000 x 6 = $72000; time needed = 72000 / 4000 = 18 months. The higher the saving rate, the sooner the target is reached, so a clear saving goal is the first step in money management.	5
2	Chi-ming deposits $20000 for three years at 4% a year. Find the interest under simple interest and under annual compounding, and the difference.	Simple interest = 20000 x 4% x 3 = $2400; compound amount = 20000 x 1.04^3 = $22,497.28, so compound interest = $2,497.28; difference = $2,497.28 - $2400 = $97.28. Compounding earns interest on interest, so the gap widens with time.	4
3	Chi-ming borrows $12000 on a credit card at 2.5% interest per month and makes no further purchases. What does he owe after a year, and what is the effective annual rate? Why is it above 2.5% x 12?	Amount owed = 12000 x 1.025^12 = $16,138.67; effective annual rate = (1.025^12 - 1) x 100% = 34.49%. It exceeds the simple 2.5% x 12 = 30% because each month interest is added to the principal and itself earns interest. The lesson is to clear card debt quickly so compounding does not work against the borrower.	5
4	Chi-ming considers leaving a job paying $16000 a month to study full time for a year, with tuition of $20000. What does the opportunity cost include? Explain in dollar terms.	Opportunity cost is the value of the best alternative forgone. Here it includes the salary given up, 16000 x 12 = $192000, plus the tuition actually paid, $20000, a total of about $212000. If the course raises future earnings, the long-run return can exceed that cost.	4

Part B - Demand, Supply and Price (17 marks)

For a good, demand is Qd = 400 - 20P and supply is Qs = 20P (P is price, Q is quantity).

#	Question	Answer	Marks
5	Find the equilibrium price and quantity.	At equilibrium Qd = Qs: 400 - 20P = 20P, so 40P = 400, P = $10 and Q = 20 x 10 = 200 units. The price is set by demand and supply together; below it a shortage appears, above it a surplus.	5
6	When price rises from $10 to $12, calculate the price elasticity of demand by the mid-point method and state the type of elasticity.	Equilibrium: 400 - 20P = 20P, so 400 = 40P, P = $10 and Q = 200 units. From $10 to $12, Qd falls from 200 to 160: quantity changes by 20% and price by 20%, so elasticity = 20 / 20 = 1.00, which is unit elastic (equal to one).	4

7	If the government sets a price ceiling of $8, what happens in the market and by how much?	The ceiling of $8 is below the equilibrium price of $10, so it binds. Qd = 400 - 20 x 8 = 240 units while Qs = 20 x 8 = 160 units, giving a shortage of 240 - 160 = 80 units. Shortages typically produce queues, rationing or black-market trading.	4
8	Compare total revenue (P x Q) at $10 and at $12, and explain the change using elasticity.	At $10, TR = 10 x 200 = $2000; at $12, TR = 12 x 160 = $1920, a fall of $80. With unit elasticity price and quantity move by the same percentage in opposite directions, so revenue should stay constant; the small fall here comes from rounding to whole units, and it shows that a price rise need not raise revenue.	4

Part C - Public Finance and Macro Indicators (17 marks)

Use the data below, showing your working and adding a comment.

#	Question	Answer	Marks
9	The highest price consumers will pay is $20. What is consumer surplus at a price of $10?	Consumer surplus = 1/2 x (maximum willingness to pay - market price) x quantity = 1/2 x (20 - 10) x 200 = $1000. It measures the gain consumers obtain, and it grows as the price falls.	5
10	Government revenue is $6000 billion and spending $7200 billion. Find the surplus or deficit and its size as a percentage of revenue.	Deficit = 7200 - 6000 = 1200 billion, since spending exceeds revenue. As a share of revenue it is 1200 / 6000 x 100% = 20%. Persistent deficits must be met from reserves or borrowing, which reduces future fiscal room.	4
11	A taxpayer has net chargeable income of $348000. The standard rate is 15%; progressive rates are 2% on the first 50,000, 7% on the next 50,000, 12% on the next 50,000 and 17% on the remainder. Compute both and state the tax payable.	Tax at the standard rate = 348000 x 15% = $52,200; progressive tax = 50000x2% + 50000x7% + 50000x12% + 198000 x 17% = 44,160. Tax payable is the lower figure, $44,160, since Hong Kong charges salaries tax at the lower of the standard rate and the progressive rates.	4
12	Nominal GDP grows 5% while population grows 1%. Find the growth of GDP per capita. With 132000 unemployed and a labour force of 3800000, find the unemployment rate.	GDP per capita growth = (1.05 / 1.01 - 1) x 100% = 3.96%, below headline growth because population also rose. Unemployment rate = 132000 / 3800000 x 100% = 3.47%. The rate counts only unemployed people within the labour force, excluding full-time students and retirees.	4

Part D - Trade, Exchange Rates and Tariffs (16 marks)

Answer each question and explain the effect on Hong Kong.

#	Question	Answer	Marks
13	Exports are $4000 billion and imports $4500 billion. Find the trade balance and the deficit as a percentage of imports.	Trade balance = 4000 - 4500 = -500 billion, a deficit of 500 billion because imports exceed exports. The deficit is 500 / 4500 x 100% = 11.11% of imports. It may reflect strong local consumption and re-export demand or weaker export competitiveness.	4
14	One Hong Kong dollar buys 0.92 yuan. What is a good priced at CNY 368 in Hong Kong dollars? If the yuan appreciates, what happens to	Price in Hong Kong dollars = 368 / 0.92 = $400.00. If the yuan appreciates, one Hong Kong dollar buys less yuan, so the same item costs more in Hong Kong dollars; cross-border spending becomes dearer and	4

	Hong Kong shoppers spending across the border?	Hong Kong shoppers spend less. A weaker yuan would have the opposite effect.	
15	An import has a CIF value of $200 and faces a 10% tariff. Find the duty and the landed cost, and explain the effect on local consumers.	Duty = 200 x 10% = $20; landed cost = 200 + 20 = $220, a 10% increase. Tariffs raise prices, cut import volume and may shield domestic producers, but consumers pay more.	4
16	Local emissions per person are 6.0 tonnes against a world average of 4.7 tonnes. By what percentage is the local figure higher, and what would it be after a 20% cut?	Excess = (6.0 / 4.7 - 1) x 100% = 27.66%; after a 20% cut the figure is 6.0 x 0.8 = 4.8 tonnes. Developed economies usually emit more per person, which is why climate talks apply the principle of common but differentiated responsibilities.	4

Part E - Sustainability and Resources (16 marks)

Use the electricity and waste data below; calculate and then suggest action.

#	Question	Answer	Marks
17	Monthly use is 350 kWh, charged at $0.9 for the first 100 kWh, $1.2 for the next 150 and $1.5 thereafter. Find the bill.	Bill = 100x0.9 + 150x1.2 + 100 x 1.5 = 90 + 180 + 150 = $420. The rising block tariff makes the marginal cost higher for heavy users, encouraging conservation.	4
18	Municipal solid waste is 11,000 tonnes a day and 3,300 tonnes are recovered. Find the recovery rate, and the tonnage needed to reach 40% with the same total.	Recovery rate = 3,300 / 11,000 x 100% = 30%. To reach 40%, recovery would need to be 11,000 x 0.4 = 4,400 tonnes, an increase of 1,100 tonnes (about 33%). Better collection alone is not enough; waste must also be avoided at source.	4
19	Producing one kilogram of beef emits 27 kg of carbon dioxide equivalent and one kilogram of vegetables 2 kg. How many times more is beef, and how much is saved each year by eating 2 kg less beef a week?	Beef emits 27 / 2 = 13.5 times as much. Eating 2 kg less beef a week saves 2 x 27 = 54 kg a week, or 54 x 52 = 2,808 kg a year (about 2.81 tonnes). Food choice is one low-cost way for an individual to cut emissions.	4
20	A shower uses 10 litres a minute. How much water does an 8-minute shower use, and how much and what percentage is saved by cutting it to five minutes?	Use = 10 x 8 = 80 litres; a five-minute shower uses 10 x 5 = 50 litres; saving = 80 - 50 = 30 litres, or 30 / 80 x 100% = 37.5%. Once a day, that is 10,950 litres a year.	4

Part F - Civic Participation and the Rule of Law (16 marks)

Use the community and election data; calculate and explain the value of civic participation.

#	Question	Answer	Marks
21	In an election with 120,000 valid votes and 5 seats, find the quota under proportional representation. A list wins 30,000 votes: how many seats and what remainder?	Quota = 120,000 / 5 = 24,000 votes. With 30,000 votes the list gains 30,000 / 24,000 = 1 seat, leaving 6,000. Under proportional representation remainders are compared for the last seats, so minority views are better reflected.	4
22	There are 620,000 registered electors and 217,000 voted. Find the turnout, and explain the effect of a low turnout.	Turnout = 217,000 / 620,000 x 100% = 35%. A low turnout weakens the mandate of those elected and makes policy less representative of the whole community; raising it depends on civic education, transparency and convenient voting arrangements.	4

23	A consultation receives 480 submissions: 300 support the policy and 120 oppose it, the rest raising other points. Find the support and opposition shares and advise the government.	Support = 300 / 480 x 100% = 62.5%; opposition = 120 / 480 x 100% = 25.0%; other views = 100% - 62.5% - 25.0% = 12.5%. The government should publish its response to the main points, explain any changes and review the policy after implementation, which is how accountability and transparency are shown.	4
24	A student volunteers 3 hours a week for 40 weeks. How many hours is that in a year? Give two ways of taking part in community affairs and their value.	Annual total = 3 x 40 = 120 hours. Examples of participation: joining an owners corporation or community group, which directly shapes the living environment; and responding to consultation papers or public hearings, so policy reflects different needs. The value lies in building civic responsibility and mutual trust between government and citizens.	4