HE1002 Macroeconomics I

Final Practice Examination 1 – Problems

Academic Year 2025/2026, Semester 1

Quantitative Research Society @NTU

November 14, 2025

Examination Instructions

Time Allowed: 120 minutes (2 hours)

Total Marks: 100

Answer Requirements:

There is a total of 4 questions. Answer all the questions.

- **Question 1** consists of 15 calculation questions. 2 marks each, total 30 marks. Please state the formula used and show your working.
- **Question 2** consists of 10 short-answer questions. 3 marks each, total 30 marks. Each answer is expected to be around 4 to 5 lines (or 2 to 3 sentences) long.
- **Question 3** consists of 10 true or false questions. 3 marks each, total 30 marks. Please clearly explain your reasoning for both true and false statements. Each answer is expected to be around 4 to 5 lines (or 2 to 3 sentences) long.
- **Question 4** consists of 2 diagram-related questions. 5 marks each, total 10 marks.

Additional Instructions:

- There are NO MCQ questions.
- Bring a calculator.
- It is a closed-book examination.
- Write all answers in the answer booklet provided.
- Show all working for calculations.

Question 1: Calculations (30 marks)

Answer all 15 questions. Each question carries 2 marks. Show all formulas and working.

1.1 *[Adapted from T01-Q04]*
Given: $C = \$20.1$ billion, $I = \$3.5$ billion, $G = \$5.2$ billion, $NX = -\$1$ billion.
Calculate total GDP.

1.2 *[Adapted from T01-Q07]*
An economy has: Consumption = \$200,000, Investment = \$50,000, Government purchases = \$75,000, Exports = \$45,000, Imports = \$20,000.
Calculate GDP using the expenditure approach.

1.3 *[Adapted from T02-Q03]*
The cost of a market basket in 2023 was \$20,000. In 2024, the cost of the same basket was \$21,400. Using 2023 as the base year (CPI = 100), calculate:

(a) The CPI in 2024
(b) The inflation rate from 2023 to 2024

1.4 *[Adapted from T03-Q02]*
An economy has: Working-age population = 130,000, Labor force = 65,000, Employed = 53,000, Unemployed = 12,000.
Calculate:

(a) Unemployment rate
(b) Labor force participation rate

1.5 *[Adapted from T04-Q03]*
A country has real GDP per capita growing at 3.5% per year. Using the Rule of 70, calculate how many years it will take for income per capita to double.

1.6 *[Adapted from T04-Q01]*
Country data: Nominal GDP growth = 8%, Inflation = 3%, Population growth = 1%.
Calculate real GDP per capita growth rate.

1.7 *[Adapted from T05-Q12]*
An economy has: Autonomous consumption = \$800, MPC = 0.75, Investment = \$1,000, Government spending = \$600, Net exports = \$400, Taxes = \$500.
Calculate equilibrium output (Y^*).

1.8 *[Adapted from T05-Q15]*
Given MPC = 0.8, calculate:

(a) The expenditure multiplier
(b) The change in equilibrium output if autonomous expenditure increases by \$500 million

1.9 *[Adapted from T07-Q10]*
MPC = 0.75. Calculate:

(a) Government spending multiplier
(b) Tax multiplier

1.10 *[Adapted from T07-Q11]*
Government spending = \$300 billion, Tax revenue = \$275 billion.
Calculate the budget deficit or surplus.

1.11 *[Adapted from T08-Q19]*
An economy has: GDP = \$500B, Consumption = \$380B, Government spending = \$140B, Investment = \$80B, Taxes = \$120B.
Calculate:

(a) Public saving
(b) Private saving

1.12 *[Adapted from T09-Q07]*
Reserve ratio = 0.10, Initial deposit = \$2,000.
Calculate total money supply created through the money multiplier.

1.13 *[Adapted from T10-Q16]*
Money supply grows at 7%, velocity is constant, real GDP grows at 2%.
Using the Quantity Theory of Money, calculate the inflation rate.

1.14 *[Adapted from T12-Q01]*
U.S. exports = \$235 billion, U.S. imports = \$310 billion.
Calculate the balance of trade and identify whether it is a surplus or deficit.

1.15 *[Adapted from T12-Q18]*
A Big Mac costs C\$5.20 in Canada and US\$4.00 in the United States. The actual exchange rate is US\$0.75 per C\$.
Calculate:

(a) The PPP-implied exchange rate
(b) Whether the Canadian dollar is overvalued or undervalued

Question 2: Short Answer (30 marks)

Answer all 10 questions. Each question carries 3 marks. Each answer should be 4-5 lines (2-3 sentences).

2.1 *[Adapted from T01-Q03]*
Does government spending on transfer payments (such as Social Security or unemployment benefits) count as part of GDP? Explain why or why not.

2.2 *[Adapted from T02-Q05]*
Why do laptop computers require hedonic quality adjustment when measuring inflation in the CPI?

2.3 *[Adapted from T03-Q07]*
Distinguish between frictional unemployment and structural unemployment. Provide one example of each.

2.4 *[Adapted from T04-Q04]*
A research team designs a more efficient irrigation system. Which component of productivity does this improve, and why does it promote economic growth?

2.5 *[Adapted from T05-Q03]*
Explain why transfer payments have a smaller multiplier effect than government purchases of goods and services.

2.6 *[Adapted from T06-Q08]*
What is the key difference between short-run aggregate supply (SRAS) and long-run aggregate supply (LRAS)?

2.7 *[Adapted from T07-Q08]*
How do automatic stabilizers help reduce the severity of economic fluctuations? Provide one example.

2.8 *[Adapted from T08-Q04]*
Distinguish between "saving" and "investment" in macroeconomic terms.

2.9 *[Adapted from T09-Q01]*
State and briefly explain the three functions of money.

2.10 *[Adapted from T10-Q12]*
What is meant by the "neutrality of money" in the long run?

Question 3: True or False (30 marks)

Answer all 10 questions. Each question carries 3 marks. State whether each statement is TRUE or FALSE and explain your reasoning in 4-5 lines (2-3 sentences).

3.1 *[Adapted from T01-Q17]*
Statement: A parent who quits a paid job to stay home and care for their child causes GDP to fall, even though the same childcare service is being provided.

3.2 *[Adapted from T03-Q01c]*
Statement: A worker who becomes discouraged and stops looking for work is classified as unemployed by the Bureau of Labor Statistics.

3.3 *[Adapted from T04-Q08a]*
Statement: Country A's labor share is 60%, Country B's labor share is 70%, and labor is growing at 3% in both countries. All else equal, Country B has a higher growth rate of output.

3.4 *[Adapted from T05-Q02]*
Statement: Investment spending is more volatile than consumption spending over the business cycle.

3.5 *[Adapted from T06-Q02]*
Statement: A tax cut that increases disposable income will shift the aggregate demand curve to the right.

3.6 *[Adapted from T07-Q09]*
Statement: According to Ricardian equivalence, a tax cut financed by government borrowing will increase consumption because consumers have more disposable income.

3.7 *[Adapted from T08-Q17]*
Statement: If financial markets are efficient, it is impossible to consistently earn above-average returns by trading based on publicly available information.

3.8 *[Adapted from T09-Q06]*
Statement: M1 and M2 both measure money supply, with M2 being a broader definition that includes less liquid assets.

3.9 *[Adapted from T10-Q22]*
Statement: The Phillips curve is downward sloping in both the short run and the long run.

3.10 *[Adapted from T12-Q17]*

Statement: Monetary policy is more effective under a fixed exchange rate regime than under a floating exchange rate regime.

Question 4: Diagrams (10 marks)

Answer both questions. Each question carries 5 marks.

4.1 *[Adapted from T06-Q17]* **(5 marks)**

An economy is initially in long-run equilibrium. Consumer confidence suddenly falls, causing consumption spending to decrease.

(a) Draw an AD-AS diagram showing the initial long-run equilibrium.
(b) Show the immediate short-run effect of the confidence shock on the diagram.
(c) Describe what happens to output, unemployment, and the price level in the short run.
(d) Explain how the economy adjusts back to long-run equilibrium if the government does not intervene.

4.2 *[Adapted from T08-Q06 & T08-Q21]* **(5 marks)**

(a) Draw a loanable funds market diagram showing the initial equilibrium interest rate and quantity of funds.
(b) The government increases spending while keeping taxes constant, creating a budget deficit. Show the effect on the loanable funds market using your diagram.
(c) Explain what happens to the equilibrium interest rate and quantity of loanable funds.
(d) Briefly explain the concept of "crowding out" in this context.

END OF EXAMINATION

Total: 100 marks
Time: 120 minutes

All questions adapted from HE1002 Tutorial Problem Sheets 1–12