YANSHAN UNIVERSITY

PRACTICE EXAM – June/July 2025

Unit Name: Economics

Duration: 2 hours

Total Marks: 100

Calculator: Yes, any hand-held calculator approved by Yanshan University

THIS IS A CLOSED BOOK EXAM

IMPORTANT INFORMATION

Mobile phones or any other devices capable of communicating information are prohibited during examinations.

Electronic Organizers/PDAs (with the exception of calculators) or any other similar devices capable of storing restricted text or restricted information are prohibited during examinations.

Other Information: This paper contains 5 questions

Attempt as many questions as you can.

All working must be shown

Surname: _____

Given Name: _____

Student Number: _____

Question 1 (20 marks)

The market demand curve (Q_D) and supply curve (Q_S) of Good Z are given by the following equations:

$$Q_D = 180 - 3P$$

$$Q_S = P + 150$$

where P is the price in dollars.

a) Determine the equilibrium market price and quantity of Good Z. (5 marks)

b) Calculate the amount of surplus or shortage when the market price is \$12.(5 marks)

c) Suppose the government imposes a specific tax of \$4 per unit on producers. Determine the new equilibrium price paid by consumers, price received by producers, and quantity traded. Then, compute the total tax revenue generated. (5 marks)

d) Instead of a tax, now assume the government provides a $5 subsidy per unit to producers. Derive the new demand equation and calculate the resulting equilibrium price and quantity. (5 marks)

e) Due to adverse economic conditions, consumer demand falls by 10%, and the supply curve becomes more elastic, changing to $Q_S = 2P + 100$. Compute the new equilibrium price and quantity. Comment on how increased supply elasticity affects the outcome. (5 marks)

Question 2 (20 marks)

A consumer earns $60,000 per year and regularly purchases 500 packets of ChocoSnack Bars at a price of $1.50 each. The price of FruitBites is also $1.50. The following are the consumer's elasticities of demand for ChocoSnack Bars:

- Price elasticity of demand for ChocoSnack Bars = –1.2
- Income elasticity of demand for ChocoSnack Bars = +0.8
- Cross-price elasticity of demand for ChocoSnack Bars with respect to FruitBites = +0.6
- Cross-price elasticity of demand for ChocoSnack Bars with respect to AlmondMilk = –0.5

Using the relevant elasticity formulas, calculate and explain the changes in the consumer's demand for ChocoSnack Bars and their total expenditure on ChocoSnack Bars in each of the following scenarios:

a) The price of ChocoSnack Bars falls to $1.35, while the price of FruitBites rises to $1.65. (10 marks)

b) The consumer's income decreases to $57,000 per year. (7.5 marks)

c) The price of AlmondMilk decreases from $3.00 to $2.70. (7.5 marks)

Question 3 (20 marks)

Alto Ltd and Bari Ltd are duopolists in the premium bottled water market. Each must independently choose between Premium and Discount pricing strategies. Market outcomes and firm profits (in $ millions) are shown in the payoff matrix below:

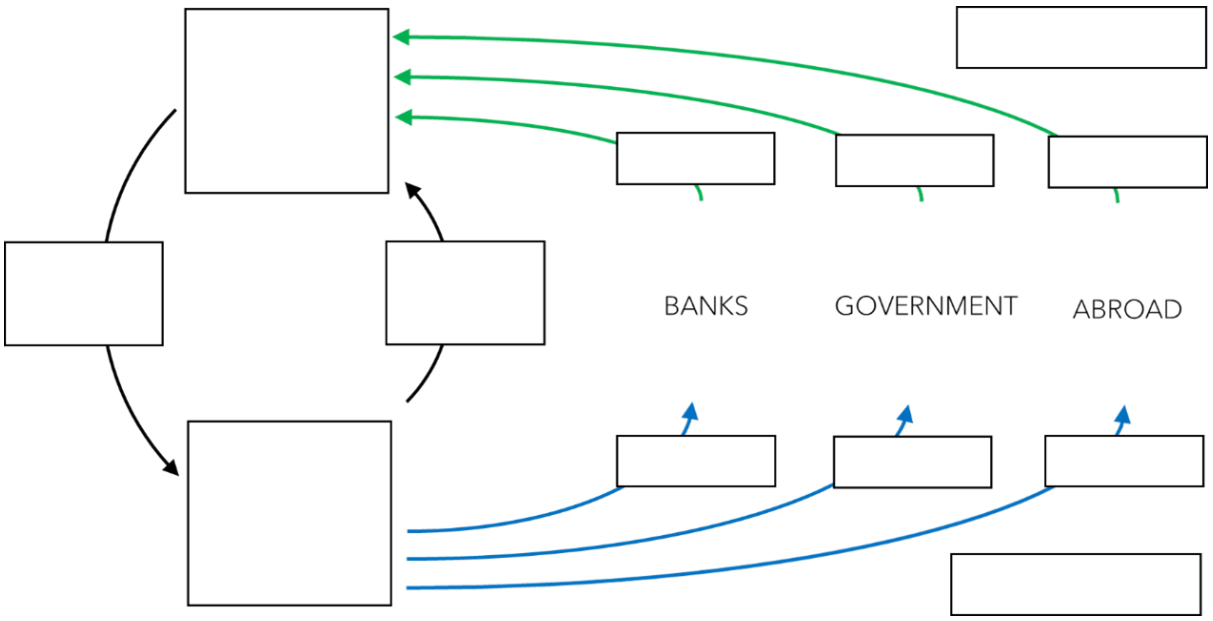
		Bari Ltd	
	(Alto, Bari)	**Premium**	**Discount**
Alto Ltd	**Premium**	(5, 2)	(6, 3)
	Discount	(4, 4)	(3, 5)

a) Identify the dominant strategy for each firm, if any. Justify your answer. (15 marks)

b) Does a Nash equilibrium exist? Carry out a step-by-step check for each strategy pair. If so, identify it and explain your reasoning. (10 marks)

Question 4 (20 marks)

Complete the space provided to label the circular flow of income diagram of the economy:



a) Suppose the following values are given (in billions):

- $C_d = 800$
- $S = 150$, $T = 60$, $M = 120$
- $I = 170$, $G = 100$, $X = 60$

i) Verify whether the economy is in equilibrium. (5 marks)

ii) Calculate the value of national income Y and verify that it's equal to the nominal gross domestic product (GDP). (5 marks)

iii) Suppose a country has a real GDP of \$750 billion, calculate the GDP deflator and briefly explain the result. (5 marks)

Question 5 (20 marks)

Use the circular flow of income and aggregate demand and supply model to illustrate and explain the causes and the differences between demand-pull and cost-push inflation. (10 marks)

END OF EXAMINATION

ECONOMICS FORMULA SHEET

Supply and Demand

Equilibrium: $Q_D = Q_S$

$P > P_e$: surplus = $Q_S - Q_D$

$P > P_e$: shortage = $Q_D - Q_S$

Elasticities

$$PED = \%\Delta Q_D \,/\, \%\Delta P$$

$$YED = \%\Delta Q_D \,/\, \%\Delta Y$$

$$CPED = \%\Delta Q_A \,/\, \%\Delta P_B$$

Utility & Consumer Surplus

$$MCS = MU - P$$

$$TCS = TU - TE = \sum MCS$$

$$TU = \sum MU$$

$$TE = P \times Q$$

Consumer Demand & Uncertainty

Expected Value: $E(X) = \sum w_i \, p(w_i)$

Expected Utility: $E[U(w)] = \sum U(w_i) \, p(w_i)$

Max premium (P): $E[U(a - X)] = U(a - P)$

Min premium (Q): $E[U(a + Q - Y)] = U(a)$

Production

$$TPP = f(K, L)$$

$$APP = TPP \,/\, Q_V$$

$$MPP = \Delta TPP \,/\, \Delta Q_V$$

$$MPP_A/P_A = MPP_B/P_B = ... = MPP_N/P_N$$

Costs

$$TC = TFC + TVC$$

$$AC = TC \,/\, Q = AVC + AFC$$

$$AVC = TVC \,/\, Q$$

$$AFC = TFC \,/\, Q$$

$$MC = \Delta TC \,/\, \Delta Q$$

Revenue

$$TR = P \times Q$$

$$AR = TR \,/\, Q$$

$$MR = \Delta TR \,/\, \Delta Q$$

Profit

$$T\pi = TR - TC = A\pi \times Q$$

$$A\pi = AR - AC$$

Macroeconomics

Equilibrium: $W = J$

$$W = S + T + M$$

$$J = I + G + X$$

$$Y = C_d + W$$

$$E = C_d + J$$

$$C = C_d + M$$

$$k = \Delta GDP \,/\, \Delta E = \Delta Y \,/\, \Delta J$$

$$GDP = C + G + I + X - M$$

$$GNY = GDP + (X - M)$$

$$NNY = GNY - D$$

$$\text{Unemployment rate} = \frac{\text{\# Unemployed}}{\text{\# Labour force}}$$

$$\text{GDP deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}} \times 100$$