CERTIFIED PUBLIC ACCOUNTANT

FOUNDATION LEVEL 2 EXAMINATIONS

F2.2: ECONOMICS AND BUSINESS ENVIRONMENT

DATE: 25, AUGUST 2025

MARKING GUIDE & MODEL ANSWERS

QUESTION ONE

Q1.A:	12
i) Award 1 mark for clear discussion about the concept of an economic system adopted under this case study (1+1=2Marks)	
ii) Clear four advantages and four disadvantages of the system identified in the case study above (1*8=8Marks)	
iii) Clear explanations on how the private sector contributes to agriculture under this system (1+1=2Marks)	
Q1B. Formula (1mark), plugging in data correctly (1mark), correct answer (1mark)	3
Q1C)	5
i) Clear Plot of the supply and demand curves for the bicycles, stating the equilibrium price and equilibrium quantity of bicycles (1+1+1=3 marks)	
ii) Clear definition the terms market surplus and market shortage and calculate the amount of surplus or shortage at a price of $100 per bicycle in this market (0.5+0.5+1=2Marks)	
Total	20

Model answers

Q1. a)

i) Under the case study above, Rwanda has adopted a mixed economic system as it blends elements of both market (capital) and command (planned) economies. While private enterprises play a significant role in production and service delivery, the Government also intervenes to regulate, support, and guide economic activities especially in critical sectors like agriculture.

ii) Advantages and disadvantages of mixed economic system

Advantages

- Producers and consumer have sovereignty to choose what to produce and what to consume but production and consumption of harmful goods and services may be stopped by the government.
- Social cost of business activities may be reduced by carrying out cost-benefit analysis by the government.
- May have less income inequality due to the role played by the government.
- Monopolies may be existing but under close supervision of the government.

Disadvantages

- Mixed economy system has a natural tendency to move further and further away from reliance on competitive market mechanism to greater and greater bureaucratic controls and interventions until the system efficiency goes down to zero and the system breaks down or dictatorships get firmly established to hide inefficiencies and remove all economic and political freedom from the citizens.
- Mixed economy systems tend to encourage more state monopolies, higher and higher tax to GDP ratio and dominant public finances, making the Government the overwhelmingly large economic player as compared to corporate or individual entities.
- Mixed economic systems often turn into closed economies hindering international trade and globalization and depriving citizens from the benefits of interdependent world economies.

- Mixed economic systems incentivize corruption and political-bureaucracy-capitalist enjoying at the cost of the citizens.
- A mixed economic system delivers neither efficiency goals achievable through competitive market system nor do they bring about fast reduction in poverty incidence and socialistic societies

ii)The contribution of the private sector to agriculture in Rwanda under the mixed system

- Investment and innovation: Private agribusiness firms introduce new technologies, improve supply chains, and boost export capacity in horticulture, floriculture, and coffee.
- Employment and capacity building: Private firms create jobs and offer training in modern agricultural practices, thereby improving productivity and farm income
- Drives economic growth and innovation: Private firms and entrepreneurs invest in new ideas, technologies, and production facilities, which fosters economic growth and pushes the boundaries of innovation.
- Boosts efficiency and productivity: Driven by profit motive and competition, private sector businesses strive to operate efficiently, leading to higher productivity and better allocation of resources compared to government-run entities.
- Promotes competition and quality: The competitive environment in the private sector encourages businesses to improve the quality of their products and services and to offer them at more competitive prices to attract customers.

Q1.b PED $= \frac{\%change\ in\ quanity\ demanded}{\%change\ in\ price}$

Initial quantity demanded Q1= 2000kg
New quantity demanded Q2=1,600kg

$$\%\Delta Q = \frac{Q2 - Q1}{(Q1 + Q2)/2} * 100 = \frac{1{,}600 - 2{,}000}{\frac{2000 + 1{,}600}{2}} * 100 = \frac{-400}{1{,}800} = -22.22\%$$

Change in price
Initial price P1=800Frw
New price P2 = 1,000Frw

$$\%\Delta P = \frac{P2 - P1}{(P1 + P2)/2} * 100 = \frac{1{,}000 - 800}{\frac{1000 + 800}{2}} * 100 = \frac{200}{900} = 22.22\%$$

PED $= \frac{-22.22\%}{22.22\%} =$ -1

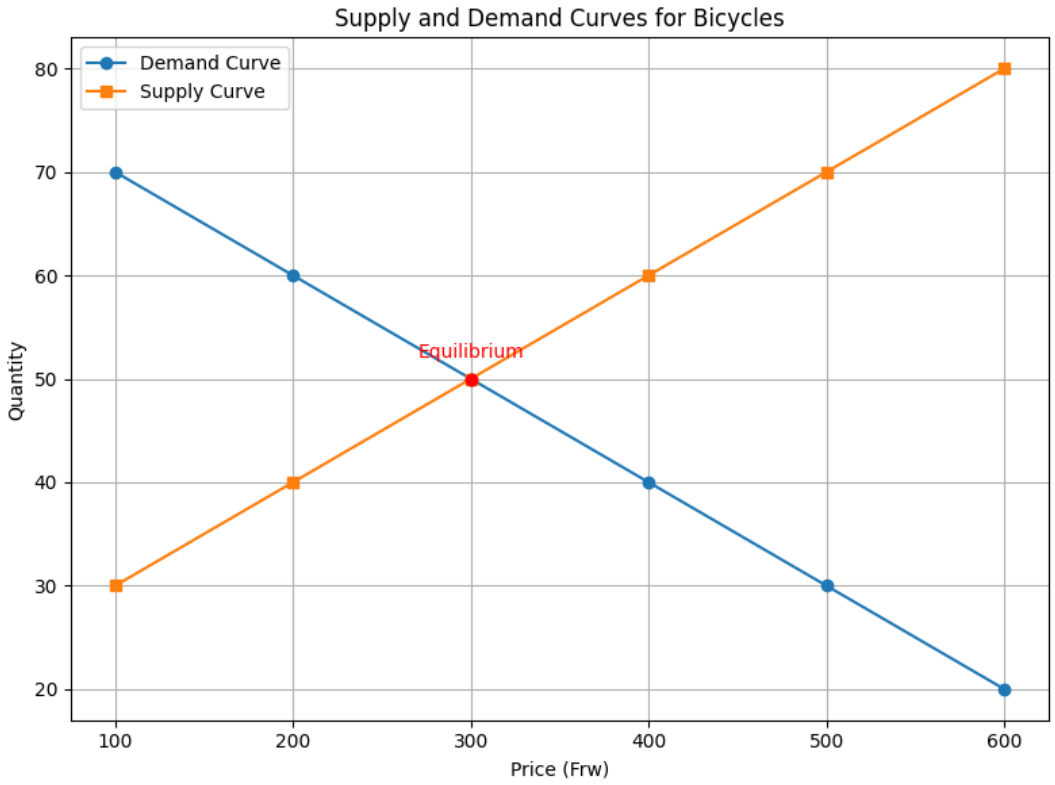
As economic interpretation, the price elasticity of demand is -1, which means
Demand is inelastic: A 1% increase in price leads to exactly a 1% decrease in quantity demanded
Consumer behavior: Consumers are moderately responsive to price changes. The total revenue remains constant because the % fall in quantity equals the % rise in price.

c. i) Supply and demand curves for bicycles

The plots of Demand and supply curves with equilibrium point of (50,300)

As per graphical illustration, Equilibrium Price = Frw 300, Equilibrium Quantity = 50 bic9ycles

- The demand curve slopes downward, showing that as price increases, quantity demanded decreases.
- The supply curve slopes upward, indicating that higher prices incentivize producers to supply more.
- The equilibrium occurs at Frw 300 and 50 bicycles, where supply equals demand.



ii) **market surplus and market shortage**

- Market surplus (Excess supply) and it occurs when the quantity supplied of a good exceeds the quantity demanded at a given price.
- On the other hand, market shortage (Excess demand) occurs when the quantity demanded of a good exceeds the quantity supplied at a given price.
- At the price of Frw100 there is an excess demand of 40 bicycles because the price is low
- Market Surplus and Shortage
- At Frw 100:
- Quantity Demanded = 70
- Quantity Supplied = 30
- Shortage = 70 - 30 = 40 bicycles

QUESTION TWO

Q2.A:	
a) Clear concepts of total utility and marginal utility, and clear explanation of their significance in consumer choice theory (1+1+1=3marks)	3
Q2 B)	
i) (Formula 0.5marks, any correct marginal utility 0.5*5 =2.5 marks)	3
ii) Any two correct point worth 2 marks	2
Q2.C 1 mark for a well explained point (5 points needed)	5
Q2.D Clear definition of an indifference curve (1Mark), clear explanations on its core property (1mark) and clear explanation on why those properties reflect the rational consumer behavior (1mark)	3
Q2. e	
I&ii Clear explanations on how changes in income or relative prices would shift the budget line and affect the consumer's choices (1+1=2marks)	4
Total marks	**20**

Model answers

Q2. a. Definitions of Total Utility, Marginal Utility and significance of consumer choice:

- The total utility is the overall satisfaction or benefit a consumer derives from consuming a certain quantity of goods and services,
- Marginal utility is the additional satisfaction gained from consuming one more unit of good or services,
- The significance in consumer choice: These concepts explain how consumers allocate their limited income across goods to maximize satisfaction. According to the law of diminishing utility, as more units of a good are consumed, marginal utility decreases, guiding rational consumers to diversify their consumption for optimal utility

(b)

i)MU = **Change in TU / Change in Quantity,**

Therefore, our calculation of marginal Utility is as follows in the table:

Cups of Coffee	Total Utility (TU)	Marginal Utility (MU)
1	25	—
2	45	20
3	60	15
4	70	10
5	75	5
6	75	0

ii)

- Marginal utility declines with each additional unit consumed
- Zero MU at 6^{th} cup, satisfaction will be zero as the consumer will be at maximum consumption rate.
- This illustrates the law of diminishing marginal utility

c) **Inflation erodes the "real" value of money (i.e. the purchasing power of money).**

Inflation prevents money from performing its functions properly as explained below:

- Medium of exchange: Rapid price changes reduce confidence in money's purchasing power. Example: If the price of a loaf of bread in Rwanda jumps from Frw 500 to Frw 700 in a few weeks, people may avoid holding cash and instead trade goods directly or seek foreign currency, reducing the effectiveness of Rwandan Franc as a medium of exchange.
- Store of value: Inflation erodes savings; Frw saved today buys less tomorrow. Example: A Rwandan worker saving Frw 100,000 in a bank account may find that after a year of 15% inflation, the real purchasing power of that money is only Frw 85,000, meaning they can buy significantly less than when they saved it.
- Unit of account: Price instability makes it hard to compare values across time. Example: A business in Kigali trying to price its products may struggle because the cost of raw materials fluctuates weekly due to inflation, making it difficult to set stable prices or compare profits over months.
- During periods of high inflation in Rwanda, both households and businesses face challenges in budgeting, saving, and planning, as money no longer reliably represents value.
- Standard for Deferred Payment: In a period of inflation debtors gain at the expense of creditors. That is an unfair/arbitrary change. It makes people/banks reluctant to lend and increases the interest rate. Long-term contracts are hard to negotiate.
- Store of Wealth: Inflation erodes the "real" value of money and leads to people holding their wealth in other assets e.g. property, art etc.

d) Definition: An indifference curve is a curve showing all combinations of two goods that provide the same level of satisfaction.

Core Properties:

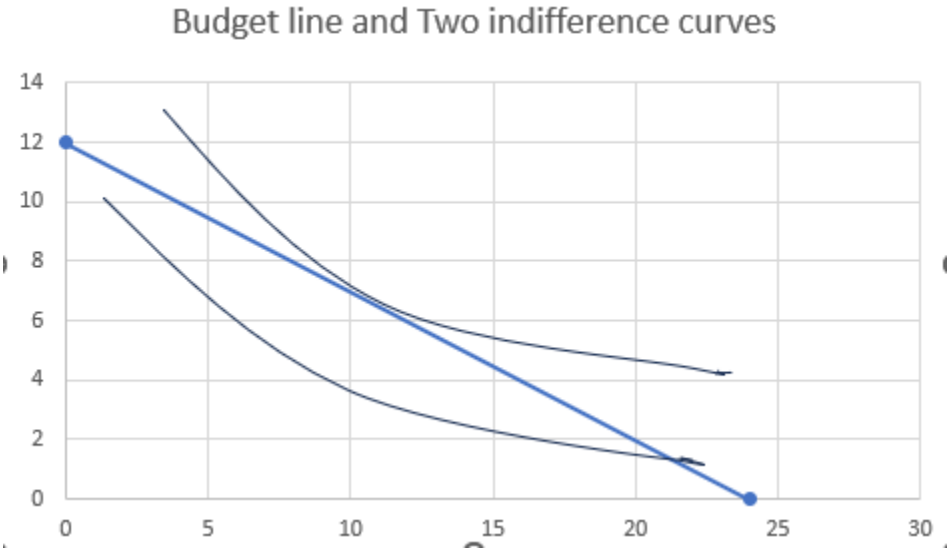
- Downward sloping: More of one good requires less of the other.
- Convex to origin: Reflects diminishing marginal rate of substitution.
- Non-intersecting: Each curve represents a distinct utility level.
- Higher Curves = Higher Utility/Satisfaction

These properties reflect rational behavior, assuming consumers prefer more to less and make consistent choices.

e) i) Given data

- Budget =FRW 24,000
- Price of coffee= FRW 1,000 per cup
- Price of pastry= FRW 2,000 per piece
- Let C= number of cups of coffee
- P = number of pastries

- Budget equation: 1000C+2000P =24,000 or P =12-0.5C



The blue line is the budget line, the two curves in black are the indifference curves, one tangent to the budget line and another one below it as was required.

ii) If income increases

New budget is said to be 30,000

- Budget line shifts outward, parallel to the original and new intercepts formed and a consumer can afford more goods, likely shifts to higher indifference curve.
- If income decreases budget line will shift inward, parallel and consumer moves to a lower indifference curve, and If prices change increase or decrease proportionally: the same effects will be observed.

QUESTION THREE

a) Clear explanations for each factor of production (2 *4= 8 Marks)	8
b) Exercise	5
i) Any four correct answer worth 0.25 mark* 4 = 1 marks	
ii)Plot of total product curve (increasing at increasing rate) (0.5Marks), plot od marginal product curve (rise and, then falls) (0.5marks), Axes labelled (0.5*2=1mark)	
iii)Four clear interpretations (1*2 = 2Marks)	
c)The clear concept of the production possibility Frontier (1mark), clear explanation on what it reveals about the trade-offs, opportunity costs, and efficiency (2marks)	2
d.i) Profit function (1mark), first derivative and set it to zero (1mark), solving for quantity (1mark)	5
ii)Plugging in the Quantity that maximize the profit (1mark)	
iii)Clear explanation of economic meaning of setting the first derivative of profit function to zero (1mark)	
Total marks	**20**

Model answers

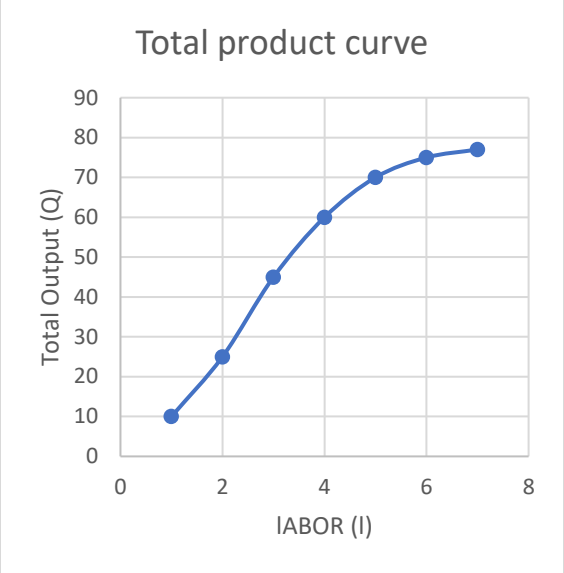
Q3.a) Factors of production

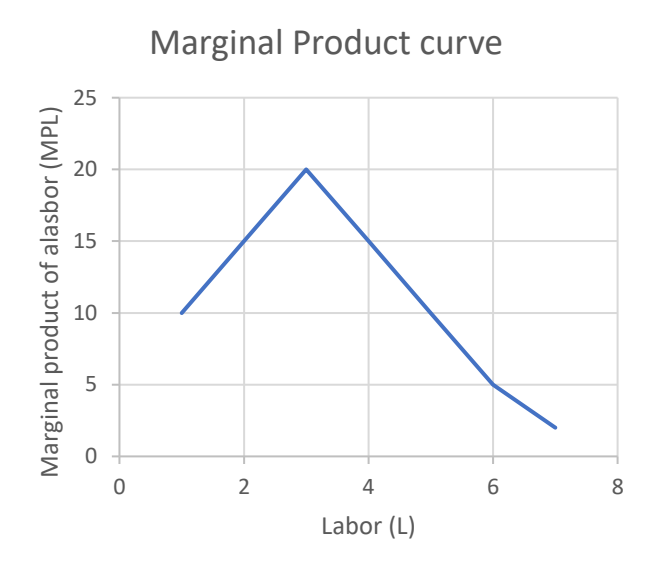
- Land: Includes natural resources (soil, minerals, water).
  Role: Provides raw materials for production (e.g., farmland for agriculture).
- Labor: Human effort (physical and mental).
  Role: Transforms inputs into outputs through work (e.g., factory workers, accountants).
- Capital: Man-made tools, machinery, buildings.
  Role: Enhances productivity and efficiency (e.g., tractors, computers).
- Entrepreneurship: Risk-taking and innovation.
  Role: Organizes other factors, makes strategic decisions, drives growth.

b) i) MPL=Change in output/change in labor

Labor (L)	Output (Q)	Marginal Product (MPL)
1	10	—
2	25	15
3	45	20
4	60	15
5	70	10
6	75	5
7	77	2

ii)Plots the Total Product and Marginal Productivity of Labor





iii)Total product interpretations

Initially increasing at an increasing rate (concave upward), indicating rising marginal returns
Then, increasing at a decreasing rate (concave downward), showing diminishing returns
Eventually flattens, indicating very small additions to output despite more labor.

Marginal product curve interpretation
Rises initially (up to L=3) peak at 20 units, then begins to decline as more labor is added.
Low of diminishing returns: it states that as additional unit's variable input (labor) is added to an existing input (capital), marginal product eventually declines.

The impact on production decision

- Firms should hire labor up to the point where MPL is positive and contribute significantly to output
- Beyond that point, adding more labor becomes inefficient and raises costs without proportional output
- This helps firms optimize resource allocation to maximize productivity

c)The production possibility Frontier (PPF) is a graphical representation that shows the maximum possible combinations of two goods or services an economy can produce, given its limited resources and technology, assuming full and efficient utilization of resources.

- Trade-off: A trade-off occurs when choosing to produce more of one goods resulting in producing less of another. For example, Rwanda faces a trade-off between investing in agriculture and infrastructure i.e. more focus on roads may mean fewer resources for farming subsidies and vice versa.
- Opportunity cost: The opportunity cost is what is sacrificed to gain something else. If Rwanda chooses to allocate more land and labor to tea production rather than mining, the opportunity cost is the potential revenue or growth from the mining sector. The PPF curve illustrates this cost, the slope at any point on the PPF shows how much of one good must be given up producing more of another

- Efficiency: Points on the PPF indicate efficient use of resources, Rwanda is maximizing its productive capacity. Point inside the PPF are unattainable with current resources, unless Rwanda improves technology, education, or imports aids ad capital.

Rwandan example:
- Rwanda may allocate resources between agriculture and manufacturing.
- Investing more in tea exports may reduce resources for maize production.
- The PPF helps policymakers visualize these trade-offs and make informed decisions.

d) i)Profit function: $\pi(Q) = TR-TC = 60-(10Q^2+20Q+100) = -10Q2+40Q-100$
$\pi(Q)/dQ = -20Q+40$
Set $\pi(Q)/dQ = 0$, $Q = 2$.

ii)Maximum Profit: $\pi(2) = -(10)^2+40(2)-10$
=-60. The firm is incurring a loss of RWF 60
iii)Explanation: Setting the derivative of the profit function to zero finds the output level where marginal profit is zero. i.e. no additional profit is gained from producing one more unit, a condition for maximization.
Setting the derivative of the profit function to zero identifies the critical point where profit is maximized or minimized. It reflects the point where marginal revenue equals marginal cost, guiding optimal output decisions.

QUESTION FOUR

Q4.a) Discuss the main six functions of Markert in an economy, by explaining how each function contributes to economic efficiency and business decision-making	6
Q4. b	4
i)QD=QS (1), Solution and answer (1+1+1 =3 marks)	
ii)Clear discussion on the likely outcome if the government decided to introduce a price ceiling at RWF 10.000 (1 mark)	
Q4.c	3
i)Clear discussion on the rationale behind price regulation in markets (1 mark)	
ii)Clear explanation of at least two types of regulation and how such interventions may impact supply and demand (1+1=2 Marks)	
Q4. d	7
i)Clear market structure based on the scenario (1mark)	
ii) Clearly discussion on the four conditions necessary for perfect competition, and evaluate how well the Irish potato market in Rwanda fits these conditions (1.5*4=6 Marks)	
Total marks	**20**

Model answers

Q4.a Functions of markets in an economy

- Price determinization: Markets help establishing the equilibrium price through the interaction of demand and supply. Markets enable producers, allocative efficiency.
- Resource allocation: The market allocates resources to where they are most demanded and profitable. Ensures efficiency use of scarce resources, firms invest in areas with higher returns
- Consumer sovereignty: Consumers influence production decisions through their purchasing preferences. Guides businesses on what to produce and in what quantity, promoting productive efficiency and consumer satisfaction
- Distribution of goods and services: The market facilitates the distribution of output to consumers through supply chain. Enhances accessibility and availability of goods and services, supporting better logistical and sales planning.
- Provision of incentives: Prices serve as incentives for producers and consumers to act in economically beneficial ways. Encourages innovation, efficiency, and productivity in business strategies
- Adjustment to changes: Markets are dynamic and can adapt quickly to shifts in demand, technology, or trends. Helps businesses remaining flexible and competitive by responding swiftly to market trends

Q4.b

i)Qd= 120-4P and Supply Qs= -20+6P.
At equilibrium point Qd=Qs
120-4P = -20+6P
P =14
Equilibrium price will be 14,000 Frw
Substituting P=14 into demand function to find quantity we get;
Qd =120-4(14) = 64
Equilibrium quantity is 64 bicycles

ii)There will be excess demand:
At the lower price of RWF10,000 more consumers will want to by bicycles because they are cheaper
However, producers will be less willing to supply bicycles at that price
This creates a shortage, where quantity demanded exceeds, quantity supplied

Q4.C:
i)The rationale behind price ceiling regulation:

- Price ceiling regulation aims to protect consumers, especially vulnerable populations, from excessive price volatility and unaffordable costs of essential goods. It ensures equity and access, especially during economic shocks or supply disruptions.
- Price regulation is used by Government of Rwanda to intervene in markets to ensure affordability, fairness, and economic stability, particularly for essential goods. In Rwanda, the Government employs various forms of regulation to stabilize markets and protect consumers.

ii)Some of types **of regulation in Rwanda include:**

1. Price Controls: The Rwandan Government has placed price ceilings on staple foods such as maize flour and rice, especially during periods of poor harvests or global food price shocks. The same for the maximum pump price for petrol and diesel every month is set by RURA.
   Impact: Prevents inflation but may cause shortages.
2. Subsidies:
   - Example: Fertilizer subsidies under Smart Nkunganire.
   - Impact: Boosts supply and affordability.
3. Import Tariffs or Quotas:
   - It is used to protect local industries.
   - May raise prices but support domestic producers.

Q4.d
i)Based on the case study, the market structure is perfectly competitive as the scenario displays key characteristics such as: Many small producers, Homogenous products, perfect information and free entry and exit.
ii)The main conditions for perfectly competitive market are:

- Many buyers and sellers: There must be a large number of participants, none of whom can influence the price (the case of hundreds of small farmers)
- Homogenous (identical) product: Products offered by all sellers are the same in quality and features (the same case for hundreds of small farmers)
- Perfect information (All participants have full knowledge of prices and products)
- Freedom of entry and exit: In this case, farmers can easily start or stop growing potatoes, fulfilling this condition

QUESTION FIVE

5.a	
i) Clear definition of vertical integration (1mark), clear difference between backward and forward integration (1mark)	2
ii) Any three benefits (0.5*3=1.5marks). any correct challenges (0.5*3=1.5marks)	3
iii)Clear explanations on how vertical integration might impact the company's cost structure (1mark), financial reporting and profitability (0.5*2=1mark)	2
5.b	
i)Clear definition of diversified growth strategy (1mark), difference between unrelated and related diversification (0.5*2=1mark)	2
ii)Any correct strategy (1*3=3marks)	3
iii)Clear explanations of the impact of diversification strategy on company financial performance (1mark), on reporting structure and resource allocation (0.5*2=1mark)	2
5.C:	
i)Clear definition of price discrimination (1mark), any correct types of discrimination used by the company (1mark)	2
ii)Any correct two benefits (0.5*2=1mark), any two correct drawback (0.5*2=1mark)	2
iii)Clear explanations on how such pricing strategy can impact profitability (1mark), on customer perception (1mark)	2
Total	20

Model answers

5.a

i)Definition and types of vertical integration

- Vertical integration is a business strategy where a company expands its operations into different stages of the same production process either upstream (toward suppliers) or downstream (toward consumers).
- Backward integration: involves acquiring or controlling suppliers
  Ex: Rwanda Tea Co. ltd acquiring tea plantations
- Forward integration: Involves moving closer to the consumer by controlling distribution or retail.
  Example: Opening branded tea outlets in Kigali and Musanze.

ii)Any three benefits and any three challenges of vertical integration in the context of Rwanda Tea Co. Ltd

Benefits:

- Greater control over the supply chain
- Cost reduction and improved profit margins
- Better Quality Control
- Increases market power

Risks:
- High capital investment
- Reduced flexibility
- Management complexity.

iii)How diversification affects financial reporting, cost structure and profitability.
From a Certified Public Accountant's viewpoint:
- Cost structure: Vertical integration increases fixed costs (e.g., land, equipment, retail space), which affects break-even analysis and cost-volume-profit planning.
- Financial reporting: Requires consolidated financial statements across multiple business units (plantation, processing, retail), increasing reporting complexity.
- Profitability: Potential for higher margins due to internal sourcing and direct sales, but also exposes the company to higher operational risks and capital lock-in.

5.b
i)Diversification is a corporate growth strategy where a company enters into new products/services or markets that are different from its existing operations, in order to spread risk and create new opportunities.
- Related diversification where the company expands into similar/connected industries

Example: A construction firm entering cement production.
- Unrelated diversification whereby the company expand by entering in the industries with no direct link.

Example: Akagera Business Group moving from construction materials to hospitality or agriculture.

ii)strategic benefits and risks of diversification
Clear benefits
- risk spreading
- revenue stability
- economies of scale
- market research

Clear risks
- Loss of strategic focus
- management inefficiency
- capital dilution

iii)By analysing how vertical integration might impact the company's cost structure, financial reporting and profitability in the CPA's perspectives:
- Complex financial reporting (segment reporting, and consolidation as well at their separate segment reporting to assess profitability of each business line.)
- Changes in the performance evaluation
- Need for effective budgeting and cost control across units

5.c

i)Price discrimination: This is charging different customers for the same product/service, not based on the cost differences. In this case, Virunga used third-degree price discrimination, as they segment the market and charge different prices to each segment based on factors like age, timing and purchase channel all aimed at maximizing revenue and capacity utilization.

ii)**Two benefits and two drawbacks of using price discrimination for both the firm and consumers**

Benefits:

- Increases revenue
- Better resources use
- Affordability for some segments

Drawbacks:

- Potential customer dissatisfaction
- Complex pricing
- Perceived unfairness.

iii) impact of price discrimination on profitability and customer perception

Profitability:

- Price discrimination can increase profits by tailoring prices to different consumer groups.
- Helps recover fixed costs and optimize seat occupancy.

Customer perception:

- If well-communicated, it's seen as offering choices.
- If poorly managed, it may lead to distrust, especially in Rwanda's service sector where fairness and transparency are valued.

Example: Offering discounts to students or early online buyers is acceptable, but charging significantly more at terminals without clear justification may harm reputation.

QUESTION SIX

Answer	**Marks**
6.A: (i) Using the income-expenditure approach, calculate the equilibrium level of national income (Y) for this closed economy	
Correct formula (1mark)	
Plugging in correct values (1mark)	
Computation and correct Answer (0.5+0.5=1mark)	3
(ii)Determine the level of consumption and savings at equilibrium	
Correct formula (1mark)	
Plugging in correct values (0.5marks)	2
Computation and correct Answer (0.5 marks)	
(iii) Explain how leakages and injections interact to determine equilibrium in a closed economy	
Clear explanations on leakages and injection (1+1=2marks)	2
(iv) Briefly comment on how fiscal policy could be used to influence equilibrium income	
Clear comments on how fiscal policy could influence equilibrium (1mark)	1
6B:	
(i) Calculate the equilibrium level of national income (Y) using the income expenditure approach for two sector model	
Correct formula (1mark), plugging in correct values (1mark), calculations and Correct answer(0.5+0.5=1mark)	3
ii) Compute the equilibrium the equilibrium level of consumption and savings	
Correct formula (1mark), plugging in correct values and Correct answer (0.5+0.5=1mark)	2
(i) Briefly explain how equilibrium is achieved in a two-sector model	
Any correct point (1mark)	1
6.C:	
(a) Define the concept of credit creation, and explain how it contributes to the money supply in an economy	
Clear definition of credit creation (1mark), how it contributes to the monetary supply in an economy (1mark)	2
(b) Discuss three factors that influence the extent of creation in Rwanda's banking system	
Any correct point (1*3=3marks)	3
(c) Briefly explain one risk or limitation associated with excessive credit creation from a financial stability perspective	
Any one correct risk or limitation (1mark)	1
Total	20

Model answers:

6.a

i)National income using expenditure approach
In a closed economy: Y=C+I+G
Y= 600+0.8Y+1,000+1,400
Y-0.8Y=3,000
0.2Y=3,000
Y=15,000

ii)C=600+0.8*15,000
=12,000
Savings (S)= Y-T-C
= 15,000-1,200-12,000
=1,800

iii)How leakers and injections interact to determine equilibrium in a closed economy.

- Leakages: are withdrawals from the circular flow of income. They reduce the amount of money circulating in the economy. In a closed economy, the main types leakages are:
  - ❖ Savings(S): income not spent on consumption
  - ❖ Taxes(T): income collected by the government
- Injections: these are additions to circular flow. They increase spending and income in the economy. In a closed economy, the main injections are:
  - ❖ Investment(I): spending by firms on capital goods
  - ❖ Government spending(G): expenditure by the government on goods and services

Equilibrium condition:
Leakages = Injections
⇒ S+T = I+G
In this case:

- Leakages: Savings and taxes
- Injections: Investment ang Government Expenditure
  - ❖ If leakages exceed injections: contraction
  - ❖ If injections exceed leakages: expansion

In Rwanda, balancing these flows is crucial for stable growth, especially in agriculture and infrastructure sectors.

iv)How fiscal policy could be used to influence equilibrium income

- Fiscal policy can raise or lower aggregate demand
- Example: Increasing public investment in roads or irrigation boosts income and employment.
- Increasing G or lower T raises equilibrium income, the reverse contacts it.
- Example: Reducing taxes increases household spending, raising equilibrium income.

b)

i)An equilibrium level of national income (Y) using the income expenditure approach:

In two sector model: Y= C+I

Y=500+0.75Y+800

=Y-0.75Y = 1,300

Y=5,200

ii)An equilibrium the equilibrium level of consumption and savings

C =500+0.75*5,200 = 4,400 (1mark)

S= Y-C =5,200-4,400= 800 (1mark)

iii)Explanations on how equilibrium is achieved in a two-sector model

Equilibrium is achieved when planned savings =planned investment, or when total output (Y) =total spending (C+I)

6.c

i)The credit creation refers to the process by which commercial banks lend more than their actual reserves, multiplying deposits through the fractional reserve banking system. It contributes to the money supply by expanding demand deposits as loans are issued.

ii)Three factors that influence the extent of creation in Rwanda's banking system.

- Reserve ratio, set by the central bank
- Public demand for credit
- Confidence in the banking system
- Bank liquidity and capital adequacy
- Central bank's monetary policy stance

iii)Explanations on one risk or limitation associated with excessive credit creation from a financial stability perspective

- Inflation,
- Non-performing loans
- Asset bubbles, or loss of control over monetary policy

QUESTION SEVEN

Answer	Marks
Qn.7.a) i) Calculation of Gross Domestic Product (GDP) at market prices using the expenditure approach	3
Correct formula for GDP (1Mark)	
Plugging in the given data correctly (1Mark)	
Computation and Final Answer (1Mark)	
(ii) Compute the Gross National Product (GNP) at the market prices from the GDP.	2
Correct formula for GDP (1Mark)	
Plugging in the given data correctly and Final Answer (0.5+0.5=1 Mark)	
(iii) Determine the Net National Product (NNP) at market prices.	2
Correct formula for GDP (1Mark)	
Plugging in the given data correctly and Final Answer (0.5+0.5=1Mark)	
(iv) Explain the economic significance of the difference between GDP and GNP in the context of Rwanda's open economy. Clear explanations of what GDP includes (1=1Mark)	2
Clear explanations of what GNP includes (1=1Mark)	
(v) Briefly discuss how indirect taxes and depreciation affect the interpretation of national income figures. Clear explanation of how depreciation accounts for wear and tear of capital and how taxes distort true output value (0.5+0.5=1Mark)	1
Qn.7.b) i) Define fixed and floating exchange rate systems, and explain the main difference between them.	
Clear definitions of fixed exchange and floating exchange rates (0.5+0.5=1Mark)	2
Clear difference between the two exchange rates (1Mark)	
(ii) Discuss two advantages and one disadvantage of each system, particularly in the context of Rwanda.	3
Two advantages and one disadvantage for each (0.5*6= 3 Marks)	
(i) Briefly explain how the choice of exchange rate regime can impact macroeconomic management and external trade in Rwanda.	1
Clear explanation on how the choice can affect inflation control, interest rate decisions, export competitiveness and foreign investor confidence (Any two impacts: 0.5+0.5 = 1Mark)	
Qn.7.c) i) Identify and briefly describe the two main components of the balance of Payments.	2
Identification of the components of the balance of Payments and clear explanation of each component (1+1=2Marks)	
(ii) With reference to the case, analyze how coffee exports, FDI, and external borrowing are recorded in the BoP, and explain their impact on Rwanda's external financial position. Clear explanation on how coffee exports, FDI and external borrowing are recorded, and their impact on Rwanda's external financial position (1+1=2Marks)	2
Total marks	**20**

Model answers:

7.a

i)Gross Domestic Product (GDP) at market prices using the expenditure approach:

GDP = C+I+G+(X-M)

=6,800+2,400+2,100+(1,500-2,000)

=6,800+2,400+2,100-500

=10,800 billion RWF

So, the GDP at market prices for Rwanda in 2024 using the expenditure approach is 10,800 billion RWF.

ii)Gross National Product (GNP) at the market prices from the GDP.

To compute the Gross National Product (GNP) at market prices, we adjust the Gross Domestic Product (GDP) by adding net income from abroad:

GNP at market prices formula:

GNP=GDP + Net Factor Income from Abroad

Where:

Net Factor Income from Abroad=Income Earned by Rwandan Citizens Abroad−Income Paid to Foreign Workers in Rwanda

- GDP at market prices = 10,800 billion RWF (from previous calculation)
- Income Earned by Rwandans Abroad = 600 billion RWF
- Income Paid to Foreign Workers in Rwanda = 400 billion RWF

Net Factor Income from Abroad=600−400=200 billion RWF

Final GNP calculation:

GNP=10,800+200=11,000 billion RWF

iii)National Product (NNP) at market prices

To calculate the Net National Product (NNP) at market prices, we adjust the Gross National Product (GNP) by subtracting Depreciation (also called Capital Consumption Allowance).

NNP at market prices formula:

NNP market prices=GNP market prices−Depreciation

- GNP at market prices = 11,000 billion RWF (from previous step)
- Depreciation = 500 billion RWF

Final NNP calculation:

NNP market prices=11,000 – 500 = 10,500 billion RWF

So, Net National Product (NNP) at market prices = 10,500 billion RWF

iv)Explanation of the economic significance of the difference between GDP and GNP in the context of Rwanda's open economy.

GDP includes only income produced within the country's border; GNP adjusts for income earned by nationals abroad and income paid to foreigners. GNP better reflects income accruing to citizens.

Implications in context of Rwanda:

1. External income is important to the economy

- The positive gap between GNP and GDP shows that Rwandans earn a net income from foreign investments or remittances (e.g., from diaspora workers or Rwandan-owned businesses abroad).

- This additional income boosts national purchasing power and savings, even though it's not generated domestically.

2. GDP understates the true national income
- If Rwanda only considered GDP, it would underestimate the income available to Rwandan citizens and businesses.
- GNP gives a fuller picture of what Rwandans actually earn and can spend or invest.

3. Implications for policy and planning
- A positive net factor income implies that diaspora engagement, foreign asset ownership, and international labor mobility are vital to Rwanda's economy.
- The government might encourage further foreign employment, remittance facilitation, and foreign investments by Rwandans.

4. Balance of payments relevance
- The difference between GDP and GNP is also reflected in the current account of the balance of payments.
- A sustained positive factor income can improve Rwanda's foreign exchange reserves and reduce reliance on external borrowing.

5. Income distribution considerations
- If most of the income from abroad goes to a small portion of the population (e.g., elite investors or skilled migrants), GNP may overstate average well-being.
- So, policymakers must look beyond GNP to assess inclusive growth and inequality.

The difference between GDP and GNP in Rwanda highlights the country's economic interdependence with the global economy. It shows that external earnings play a meaningful role in national income, and policies that support Rwandans abroad can have tangible impacts on domestic economic well-being.

v)Depreciation accounts for wear and tear of capital, making NNP a more realistic income measure. **Indirect taxes** distort true output value, as they are not payments for factor services

- **Indirect taxes**

Indirect taxes are taxes imposed on goods and services (e.g., sales tax, VAT, excise duties) rather than on income or profits. Subsidies are government payments that reduce the cost of goods/services.
Effect on National income includes:

- ❖ Indirect taxes increase the market prices of goods and services, so GDP at market prices includes these taxes.
- ❖ However, indirect taxes do not represent income earned by factors of production; they go to the government.
- ❖ To measure income earned by factors of production (wages, profits, rents), economists calculate GDP at factor cost by subtracting indirect taxes and adding subsidies to GDP at market prices.
- ❖ This adjustment helps better reflect the actual earnings of households and businesses.

- **Depreciation (capital consumption allowance)**

Depreciation accounts for the wear and tear or obsolescence of capital assets (like machinery, buildings) used in production.
Effect on National income includes:

- ❖ Gross measures (GDP, GNP) include total output without subtracting depreciation.

- ❖ To get a clearer picture of the net income available for consumption and investment, depreciation is subtracted, resulting in Net Domestic Product (NDP) or Net National Product (NNP).
- ❖ This shows the actual addition to the economy's wealth, as it accounts for the capital that must be replaced to maintain productive capacity.
- ❖ Ignoring depreciation can overstate how much income is truly available for use by the economy.

7.b

i)Fixed and floating exchange rate

- Fixed Exchange rate: Currency value is pegged to another currency or basket
- The floating exchange rate is the value determined by supply and demand in foreign markets.
- So, the main difference is that for the fixed exchange rate the Government controls it while for floating exchange rate there is market-determined value

ii) Two advantages and one disadvantage of each system, particularly in the context of Rwanda

Fixed exchange rate system

Advantages:

- Promotes regional monetary stability: fixed rates reduce exchange rate volatility, which can encourage trade and investment, especially within the EAC regional bloc where Rwanda participates.
- Predictability for Businesses and Investors: stable exchange rates help businesses and investors plan better without worrying about exchange rate fluctuations.

Disadvantages:

- Loss of monetary policy autonomy: Rwanda would have to focus monetary policy on maintaining the fixed exchange rate, limiting its ability to respond flexibly to domestic economic shocks or inflation.

Floating exchange rate system

Advantages:

- Monetary policy flexibility: Rwanda can use interest rates and other monetary tools independently to respond to economic shocks, inflation, and growth objectives.
- automatic adjustment of external imbalances: exchange rates adjust naturally to changes in trade balances, helping correct deficits or surpluses without depleting foreign reserves.

Disadvantages:

- Exchange rate volatility: frequent fluctuations can increase uncertainty for traders and investors, potentially discouraging cross-border trade and investment.

iii)Impacts of exchange rate regime choice on macroeconomic management and external trade

- **Macroeconomic stability:**
  - ❖ A fixed exchange rate can anchor inflation expectations and provide price stability, aiding macroeconomic stability.
  - ❖ Conversely, a floating system allows for independent monetary policy to stabilize the economy during shocks but may face higher inflation volatility.
- **External trade and investment:**

- ❖ Fixed rates reduce exchange rate risk, encouraging foreign direct investment (FDI) and regional trade by lowering uncertainty.
- ❖ Floating rates, while flexible, may deter trade and investment due to currency risk, but can improve competitiveness if the currency depreciates when needed.

7.C:

i) Two main components of the balance of payments

1. Current Account:
- Records transactions related to trade in goods and services, income receipts/payments, and current transfers.
- It includes exports and imports of goods and services, income earned from abroad, and remittances.
2. Capital and Financial Account:
- Records cross-border flows of capital, including foreign direct investment (FDI), portfolio investment, loans, and other financial assets/liabilities.
- It captures transactions that affect the country's ownership of foreign and domestic assets.

ii) Analysis of coffee exports, FDI, and external borrowing in the Balance of Payment context

1. Coffee Exports (20% increase)
- Recorded in: Current Account (specifically, the goods export section).
- Impact:
  - ❖ This increases foreign exchange inflows, improving the trade balance.
  - ❖ Helps reduce the current account deficit or improve the surplus, supporting external stability.

2. Foreign Direct Investment (FDI) of Frw 100 million
- Recorded in: Capital and Financial Account (as a financial inflow under FDI).
- Impact:
  - ❖ Inflows of FDI increase foreign exchange reserves and finance capital formation (e.g., industrial parks).
  - ❖ Strengthens the financial account and overall balance of payments.
  - ❖ Also signals investor confidence, potentially attracting more investment.

3. External borrowing of FRW 250 million (from international lenders)
- Recorded in: Capital and Financial Account (as a financial inflow under external debt).
- Impact:
  - ❖ Provides funds for infrastructure development, potentially boosting economic growth.
  - ❖ Increases foreign liabilities, meaning future repayment obligations.
  - ❖ Improves immediate foreign exchange availability but adds to long-term external debt service requirements.

Overall implications for Rwanda's external financial position and macroeconomic stability

- Despite increased exports and capital inflows, the negative current account due to rising imports and service payments shows a structural trade imbalance.

- Positive capital inflows (FDI, borrowing) help finance the current account deficit, maintaining external financial balance.
- However, reliance on borrowing raises concerns about debt sustainability and future balance of payments pressures due to debt servicing.
- Managing this balance is crucial to maintain exchange rate stability, foreign reserves, and macroeconomic stability.
- Policies should focus on boosting export competitiveness and managing import demand to improve the current account in the long run.

END OF MODEL ANSWERS AND MARKING GUIDE