

# UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 3 Examination in Engineering: August 2018

Module Number: IS3303

Module Name: Basic Economics

[Three Hours]

[Answer all questions, each question carries ten marks]

Q1.

- a) i.) What is meant by 'the Production Possibility Frontier (PPF)'?
- ii.) How do you briefly explain these three production situations related to the PPF: a point outside the PPF, a point on the PPF and a point inside the PPF?

[4 Marks]

- b) In a week, the manager (the owner) of a manufacturing firm spends Rs. 35,000.00 on raw materials, Rs. 18,500.00 on electricity, Rs. 75,000.00 on employee salary and Rs. 15,000.00 on building rent. This manager earned Rs. 25,000.00 per week before resigning from his previous job to start this manufacturing firm. The manager uses his own vehicle for the business and the vehicle could earn Rs. 20,000.00 per week from a commercial renter. The firm's total revenue is Rs. 200,000.00 per week. (Assume the firm does not have any other costs)

- i.) Calculate the firm's total implicit costs per week.
- ii.) Calculate the firm's total explicit costs per week.
- iii.) Calculate the firm's accounting profit per week.

[3 Marks]

- c) Assume you are a 'Ceylon Tea' producer in Sri Lanka. Then, what kind of shift or movement will happen to the supply curve of Ceylon Tea when following changes take place? State the direction of the change (rightward, leftward, upward or downward) and whether it is a shift or movement.

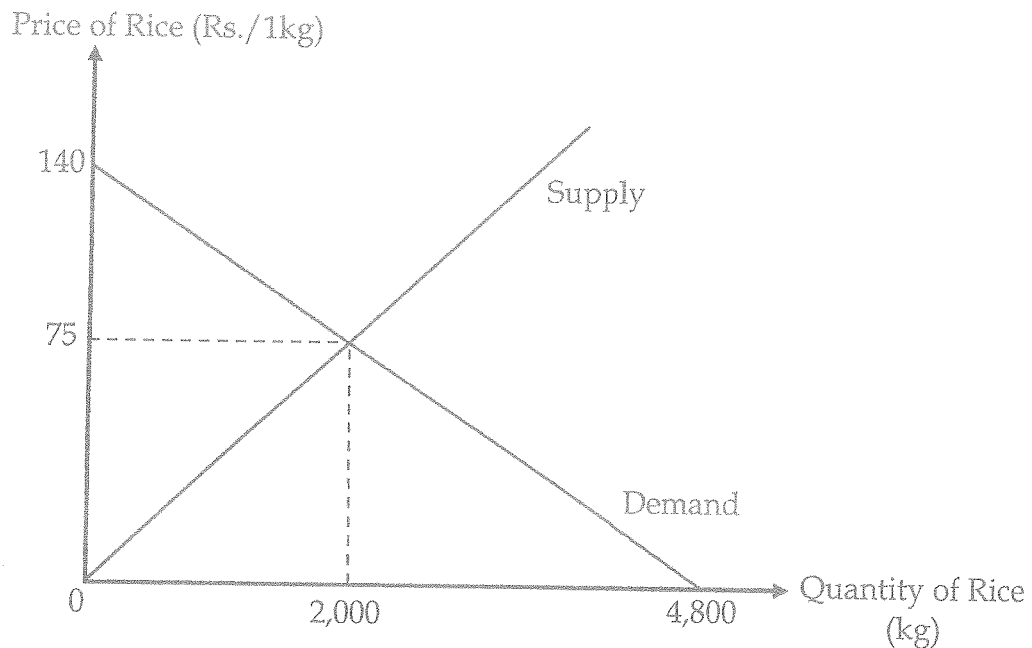
- i.) Sri Lankan government instructs tea producers to increase the wages of labourers in tea manufacturing industry.

- ii.) Sri Lankan researchers discover a new fertilizer which increases tea harvest.
- iii.) The price of Ceylon Tea increases in the international market.

[3 Marks]

Q2.

- a) Use the following graph to answer questions i-iii.



- i.) Calculate the consumer surplus.
- ii.) Calculate the producer surplus.
- iii.) Calculate the social surplus.

[3 Marks]

- b) i.) What is meant by 'price elasticity of demand'?
- ii.) How does the total revenue changes, when price of a product changes in elastic and inelastic situations?

[3 Marks]

- c) "Healthy Life" is a fitness training company and it offers both traditional type Yoga training course and western type physical training course. Generally, one customer registers with one course. Recently, the company experienced a drop of number of customers for the traditional type Yoga training course.

Therefore, the company wanted to increase the number of customers for the traditional type Yoga training course and it took following two actions.

- Action 1: Increase the price of western type physical training course from Rs. 58,000 to Rs. 65,000. This results to increase the number of customers for traditional type Yoga training course from 33 to 40.
- Action 2: The company sells traditional healthy meals for traditional type Yoga training course customers and western healthy food for western type physical training course customers. Now the company reduced the unit price of traditional healthy meal from Rs. 550.00 to Rs. 350.00. This results to increase the number of customers for traditional type Yoga training course from 40 to 42.

- i.) Calculate the cross-price elasticity for Action 1.
- ii.) Calculate the cross-price elasticity for Action 2.
- iii.) Discuss the effectiveness of these two actions by comparing respective cross-price elasticities.

[4 Marks]

Q3.

- a) Following table shows Saman's marginal utilities of consuming oranges and apples. Price of an orange is Rs. 3.00 and price of an apple is Rs. 5.00.

Units of item	Marginal utility of oranges	Marginal utility of apples
1	50	70
2	40	50
3	30	40
4	20	35
5	15	30
6	10	25

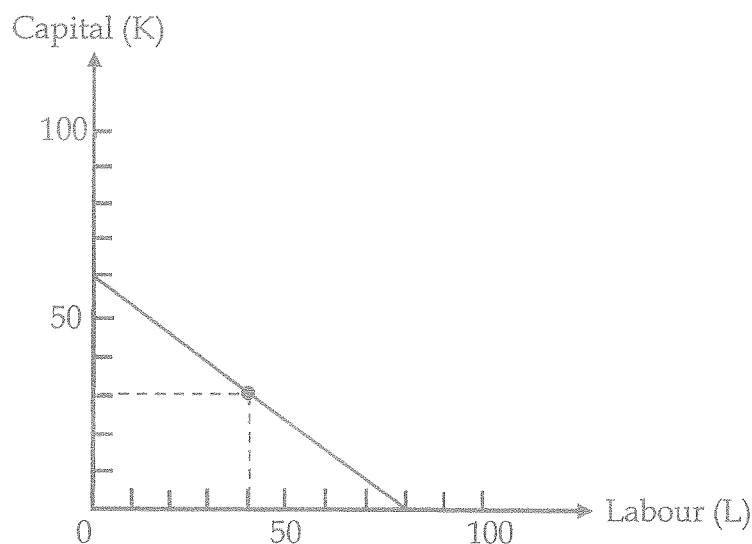
- i.) Calculate 'marginal utility per rupee spent on orange' values.
- ii.) Calculate 'marginal utility per rupee spent on apple' values.
- iii.) If Saman has only Rs. 45.00 in his pocket, then what is the optimal combination of oranges and apples, gives him the maximum utility?

[3 Marks]

- b) i.) What is meant by 'technical efficiency' in production?  
ii.) What is meant by 'economic efficiency' in production?  
iii.) In the production short run, why does 'diminishing marginal product' issue occur?  
iv.) What do you suggest to solve 'diminishing marginal product' issue?

[4 Marks]

- c) Use the following graph which shows an isocost curve to answer questions i-iii. The price of capital (K) is Rs. 50.00 per unit.



- i.) Write the equation for the above isocost curve (hint:  $K = \dots\dots\dots$ ).  
ii.) What is the price of Labour per unit?  
iii.) What is the total cost associated with the above isocost curve?

[3 Marks]

Q4. An initial investment on a machinery of Rs. 9,420.00 is expected to generate cash inflows of Rs. 3,520.00, Rs. 3,832.00, Rs. 6,950.00 and Rs. 3,065.00 at the end of first, second, third and fourth years respectively. At the end of the fourth year, the machinery will be sold for Rs. 1,800.00. Depreciation is allowed on straight line basis for the machinery. The applicable discount rate is 16% per year for this investment.

- i.) Calculate the depreciation value per year for the machinery.  
ii.) Calculate the Net Present Value (NPV) of the investment.  
iii.) Based on the NPV, do you recommend accepting this project or not? Why?  
iv.) Write the formula for the Profitability Index (PI).

- v.) Calculate the PI of this investment.
- vi.) What does this PI value (answer of above question v) mean?
- vii.) Based on the PI value, do you recommend accepting this investment? Why?
- viii.) Compare your recommendations based on NPV and PI. How do NPV and PI recommendations relate to each other?

[10 Marks]

Q5.

- a) Identify the labour market flows related to the following situations and mention from which category to which category ("Employment", "Unemployment" and "Out of labour force") the flow happens.
  - i.) Kumari was a bank officer in the past and she has retired from the job now.
  - ii.) Damith was an engineering undergraduate in the past and he receives a job as soon as he passed out from the university.
  - iii.) Prabhath did not have the intention to do a job in the past, he has joined as a voluntary worker for a Non-Governmental Organization (NGO) now.

[3 Marks]

- b) Briefly explain three positive consequences for the businesses due to the unemployment.

[3 Marks]

- c) Following table contains statistics of Country A for the year 2017.

Indirect taxes	Rs. 480,000
Exports	Rs. 430,000
Wages and salaries	Rs. 340,000
Depreciation	Rs. 65,000
Household spending	Rs. 1,350,000
Current spending of government	Rs. 7,366,000
Corporate profits	Rs. 8,500,000
Income of sale of used goods	Rs. 84,000
Gross investments	Rs. 570,000
Proprietors' incomes	Rs. 123,000
Imports	Rs. 124,000
Payment transfers	Rs. 120,000
Interest income	Rs. 84,000

- i.) Calculate the GDP of country A using the income approach.
- ii.) Calculate the GDP of country A using the expenditure approach.
- iii.) What is meant by 'double counting' when calculating GDP?
- iv.) How to prevent from 'double counting' when calculating GDP?

[4 Marks]

Q6.

- a) Following table shows the prices and quantities of three products market basket. Market basket carries only these products and the base year is 2010.

Product	Market basket quantity (kg)	Price per 1kg (2010) Rs.	Price per 1kg (2017) Rs.
Rice	475	64	76
Flour	65	90	125
Dhal	50	65	136

- i.) Calculate the inflation rate of the year 2017.
- ii.) How do you elaborate above inflation rate?
- iii.) Why does 'demand pull inflation' occur?
- iv.) When 'demand pull inflation' occurs, what happens to the demand curve? (State the direction of the change (rightward, leftward, upward or downward) and whether it is a shift or movement.)
- v.) Why does 'cost push inflation' occur?
- vi.) When 'cost push inflation' occurs, what happens to the supply curve? (State the direction of the change (rightward, leftward, upward or downward) and whether it is a shift or movement.)

[6 Marks]

- b) Following table consists with information about output per day of work of country X and Y for the production of wine and cheese. (Illustrate your answers with calculations.)

	Wine	Cheese
Country X	5	13
Country Y	2	8

- i.) Which country has the comparative advantage of producing wine?
- ii.) Which country has the absolute advantage of producing wine?
- iii.) Which country has the comparative advantage of producing cheese?
- iv.) Which country has the absolute advantage of producing cheese?

[4 Marks]