



UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 3 Examination in Engineering: July 2022

Module Number: IS3301

Module Name: Basic Economics

[Three Hours]

[Answer all question, each question carries ten marks]
[Use separate booklets for Section A and Section B]

Section A

- Q1 a) Production possibility frontier illustrates three concepts: choice, scarcity and opportunity cost. Explain these concepts separately. [3 Marks]
- b) The following relations describe monthly demand (Q_d) and supply (Q_s) for a toy manufacturing business.
 $Q_d = 3000 - 10P$
 $Q_s = 10P - 1000$
Calculate equilibrium price and equilibrium quantity. [2 Marks]
- c) Consider the information in following table 1 which describe few points on a linear demand curve.
Calculate:
i. The point elasticity of demand at the price of Rs. 10
ii. The arc elasticity of demand over the price range Rs. 3 to Rs. 5.

Quantity	Price (Rs.)
0	12
200	11
400	10
1400	5
1800	3
2400	0

Table 1

[5 Marks]

Q2 a) What do you mean by diminishing marginal utility? [2 Marks]

b) Assume a consumer buy only two goods, X and Y. Explain following statements.

- i. "An increase in price of X causes budget line to pivot backward around the original vertical intercept"
- ii. "An increase in money income causes a parallel outward shift in the budget line"

[4 Marks]

c) Consider the following table 2 on marginal utility of X and Y commodities.

Q	1	2	3	4	5	6	7	8
MU _X	16	14	12	10	8	6	4	2
MU _Y	11	10	9	8	7	6	5	4

Table 2

Prices of commodities (P_X and P_Y) and consumer income (I) are given as follows:

$P_X = \text{Rs. } 2.00$, $P_Y = \text{Rs. } 1.00$, $I = \text{Rs. } 6.00$

Find the combination of X and Y that maximizes the level of utility.

[4 Marks]

Q3 a) Briefly explain the terms "explicit cost" and "implicit cost". [2 Marks]

b) Given the total cost function: $TC = 1000 + 10Q - 0.9Q^2 + 0.04Q^3$

- i. Derive the total variable cost (TVC) function
- ii. Derive the marginal cost (MC) function

[4 Marks]

c) Fill in the blanks in the following table 3.

Units of labour	Total product (Q)	Average product (AP)	Marginal product (MP)
1		40	
2			48
3	138		
4		44	
5			24
6	210		
7		29	
8			-27

Table 3

[4 Marks]

Q4. Your firm has an opportunity to make an investment of Rs. 350,000. The cost of capital is 12 percent. It expects after-tax cash flows (including the tax shield from depreciation) for the next 5 years to be as follows:

Year	Cash Flows (Rs.)
1	70,000
2	80,000
3	90,000
4	90,000
5	50,000

Table 4

An advertising campaign has been proposed at the end of 2nd year which will cost Rs. 50,000.

- a) Calculate the Net Present Value (NPV). [4 Marks]
- b) Calculate the Internal Rate of Return (IRR) (to the nearest percent). [4 Marks]
- c) Would you accept this project? Explain your answer. [2 Marks]

Section B

- Q5. a) Discuss the nature and scope of macroeconomics. [2 Marks]
- b) What are the two primary methods used to determine Gross Domestic Product? Explain your answer. [4 Marks]
- c) The following table 5 contains national income accounting data for a hypothetical economy.

Factors	bn. USD
Transfer payments	72
Interest income (i)	200
Depreciation	50
Wages (W)	80
Gross Private Investment (I)	150
Business Profits (PR)	250
Indirect Business Taxes	70
Rental Income (R)	85
Net Exports (X-M)	20
Government Purchases (G)	195
Household Consumption (C)	250

Table 5

Calculate the Gross Domestic Product by using two primary methods for a hypothetical economy.

[4 Marks]

- Q 6. a) Explain the economic cost of unemployment for the government. [2 Marks]
- b) What is inflation? Distinguish between demand-pull inflation and cost-push inflation. [4 Marks]
- c) The table 6 below shows the production possibilities of two countries, China and Australia, of two goods, iron ore and cars, given a fixed amount of resources.

	Iron ore	Cars
China	80	100
Australia	70	50

Table 6

- i. Which country has the absolute advantage in iron ore and which has the absolute advantage in cars? [2 Marks]
- ii. Which country has the comparative advantage in iron ore and which has the comparative advantage in cars?

[2 Marks]