UNIVERSITY OF RUHUNA

Faculty of Engineering

End-Semester 3 Examination in Engineering: July 2017

Module Number: IS 3303 **Module Name: Basic Economics**

[Three Hours]

[Answer **all questions**, each question carries ten marks]

Q1.

(a) Suppose that the generalized demand function for good X is,

$$Q_d = 60 - 2P_X + 0.01M + 7P_R$$

Where,

Q_d = quantity of X demanded

P_X = price of X

M = (average) consumer income

P_R = price of related good R

i. Is good X normal or inferior? Why?

ii. Are goods X and R substitutes of complements? Why?

iii. Suppose that M = Rs.40,000 and P_R = Rs.20. Then, what is the demand function for good X?

iv. Suppose the supply function is,

$$Q_s = -600 + 10P_X$$

Then, what are the equilibrium price and quantity?

What happens to equilibrium price and quantity if other things remain the same as in above (iv) but income increases to Rs.52,000?

v. Suppose the government decides price of X is too high and imposes a price ceiling of Rs.90. Then, what will happen to the X goods if other things remain the same as in above (iv). You can state whether it is a surplus or shortage and in which quantity of X.

vi. Suppose that instead of imposing a ceiling price, the government places a floor price of Rs.120 on price of X. Then, what will happen to the X goods if other things remain the same as in above (iv). You can state whether it is a surplus or shortage and in which quantity of X.

[10 Marks]

Q2.

(a) What kind of shift or movement will happen to the demand or supply curves when following changes take place? State the direction of the change (rightward, leftward, upward and downward) and whether it is a shift or movement

i. A price of a substitute good decreases, what will happen to the demand curve?

ii. A price of a complementary good increases, what will happen to the supply curve?

iii. The product is a normal good and its price falls, what will happen to the supply curve?

iv. The product is an inferior good and consumers' income increases, what will happen to the demand curve?

[4 Marks]

(b) Suppose that a firm is currently employing 50 workers, the only variable input, at a wage of Rs. 600 per employee. The average product of labour is 25, the last worker added 15 units to total output, and total fixed cost is Rs. 540,000.

i. What is marginal cost?

ii. What is average variable cost?

iii. How much output is being produced?

iv. What is average total cost?

v. Is average variable cost increasing, constant or decreasing?

vi. What is the main difference between short-run and long-run production?

[6 Marks]

Q3.

Assume that you consume three goods: Pizza, Coke and Chocolate. The marginal utility of each good is independent of the rate of consumption of other goods. The prices of Pizza, Coke and Chocolate are respectively, Rs.5, Rs.3 and Rs.1. The total income of you is Rs.65. Marginal utility schedule is as follows.

Units of good	Marginal utility of Pizza (units)	Marginal utility of Coke (units)	Marginal utility of Chocolate (units)
1	70	60	12
2	60	55	11
3	50	48	10
4	40	40	9
5	30	32	8
6	25	24	7
7	18	21	6
8	10	18	5
9	3	15	4
10	1	12	3

i. Given a Rs.65 income, how much of each good should you purchase to maximize utility (clearly show your calculations)?

ii. Suppose income falls to Rs.43 with the same set of prices, what combination will you choose to maximize utility?

iii. Let income fall to Rs.50; let the price of Chocolate rise to Rs.2 while the price of Coke and Pizza remain and Rs.3 and Rs.5. How do you allocate the income now to maximize utility (clearly show your calculations)?

iv. Since the price of Chocolate is Rs.2 now, you decide not to purchase Chocolate. Then how do you allocate the income of Rs.38 to maximize utility?

v. Draw the budget line, the indifference curve and the utility maximizing equilibrium point for above (iv) situation.

[10 Marks]

Q4.

You are required to evaluate following project A and B for the future investment. Both projects are based on purchasing machinery. In addition to the given costs and incomes in the tables below, Project A will generate Rs.12,000 of scrap value and Project B will generate Rs.18,000 of scrap value at the end of 3rd year. Depreciation is allowed on straight line basis for both projects. The applicable discount rate is 7% per year for both projects.

Project A				
	Now	1st Year	2nd Year	3rd Year
Initial cost of purchasing machinery	Rs.54,000			
Production cost		Rs.12,000	Rs.18,000	Rs.23,000
Income		Rs.38,000	Rs.85,000	Rs.115,000

Project B				
	Now	1st Year	2nd Year	3rd Year
Initial cost of purchasing machinery	Rs.75,000			
Production cost		Rs.19,000	Rs.12,000	Rs.19,000
Income		Rs.51,000	Rs.112,000	Rs.240,000

i. Calculate the depreciation value per year for Project A.
ii. Calculate the depreciation value per year for Project B.
iii. Calculate the Net Present Value (NPV) of Project A.
iv. Calculate the NPV of Project B.
v. What will be the best investment option based on NPV? Why?
vi. Briefly discuss the differences between pay back period and NPV methods.

[10 Marks]

Q5.

(a) Identify the labour market flows which related to the following situations and mention from which category to which category ("Employment", "Unemployment" and "Out of labour force") the flow happens.

i. Yamuna is a university lecturer and takes study leave to move to Japan to follow her PhD degree.
ii. Jagath is the Chief Financial Officer at ABC company and company dismisses him due to a financial dispute with the company.
iii. Mekhala was on maternity leave for three months and resigns from the job after the child's birth to look after the kid full time.
iv. Jayantha did not apply for any job within last four weeks as he gave up the hope of receiving a job to make a living, but, all of a sudden he was offered a job by a company which he applied nine months ago.

[4 Marks]

(b) Following table carries country A's statistics for the year 2016. Calculate the unemployment rate of country A using following data.

People who aged 16 years and above	12,345,201
Retired people	3,549,300
Disabled people who aged 16 years and above	98,569
Volunteers aged 16 years and above	250,660
Discouraged workers	67,430
Employed people	6,245,411
Students at higher education institutes aged 16 years and above	43,100

[3 Marks]

(c) Following table contains statistics of Country B for the year 2016.

Government purchases	Rs.600,000
Proprietors' incomes	Rs.220,000
Wages and salaries	Rs.1,080,000
Depreciation	Rs.40,000
Net exports	Rs.200,000
Personal consumption	Rs.10,540,000
Corporate profits	Rs.10,000,000
Income of sale of used goods	Rs.65,000
Gross investment	Rs.500,000
Indirect taxes	Rs.100,000
Value of inventory of goods produced in 2015	Rs.250,000
Interest income	Rs.400,000

i. Calculate the GDP of country B using the income approach.
ii. Calculate the GDP of country B using the expenditure approach.
iii. If the population of country B is 6000 in 2016, then what is the GDP per capita?

[3 Marks]

Q6.

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

Product	Market basket quantity (kg)	Price per 1kg (2010) Rs.	Price per 1kg (2016) Rs.
Rice	600	55	80
Sugar	50	65	110
Flour	30	85	145
Potatoes	45	340	490
Onions	35	280	450

i. Calculate the inflation rate of the year 2016.

ii. How do you elaborate above inflation rate?

[2 Marks]

(b) Briefly explain about four market structures: perfect competition, monopoly, monopolistic competition and oligopoly.

[4 Marks]

(c) Following table consists with information about output per day of work of country A and B for the production of cotton and meat.

	Cotton	Meat
Country A	14	3
Country B	5	11

i. What do you mean by comparative advantage?

ii. What do you mean by absolute advantage?

iii. Which country has the comparative advantage of producing cotton (Illustrate your answer with calculations)?

iv. Which country has the absolute advantage of producing meat (Illustrate your answer with calculations)?

[4 Marks]