

Bangabasi College
Mid-Term Test Examination, 2015
B.Sc (Hons.) (1+1+1 System), Part I
ECONOMICS (Hons)

Full marks: 50

Time: 2 Hrs.

Section A

1. Answer any five questions (5 × 4):

- a) Identify each of the following economic statement as positive or normative: (2+2)
 - (i) The government can collect more tax revenue by raising the tax rate.
 - (ii) Government should provide seeds at subsidised rates to the farmers.
- b) You can put your savings of Rs. 1000 either with a bank account that gives yearly interest rate of 6%, or you can use that money to purchase a story book worth Rs. 1000. What would be the opportunity cost of purchasing the story book?
- c) You have purchased 4 units of a commodity at a price of Rs. 10 per unit, but you were ready to pay Rs. 15 for the 1st unit, Rs. 12 for the 2nd unit, Rs. 11 for the 3rd unit and Rs. 10 for the 4th unit. Calculate Consumer's surplus.
- d) Distinguish between cardinal utility and ordinal utility.
- e) What would be the relation between two goods, say, x and y , if the cross price elasticity of demand $e_{xy} > 0$ and $e_{xy} < 0$?
- f) What is Market Failure? Indicate any two reasons for market failure. (2+2)
- g) Distinguish between absolute advantage and comparative advantage.
- h) What is a Production Possibility Frontier? Indicate an efficient and an inefficient production point. (2+2)
- i) Explain the role played by increasing cost in supply relation.
- j) What would be the magnitude of income elasticity of demand for normal and inferior goods?
- k) Distinguish between public goods and common property resources.
- l) Distinguish between Nominal GNP and Real GNP. Briefly explain the Value added method of measurement of GNP. (2+2)
- m) Define money and explain its primary, secondary functions in a modern economy.
- n) What is money multiplier?
- o) Indicate whether each of the following is included or excluded from national income and the rationale for its inclusion or exclusion: (4×1)
 - i) Business transfer Payment;
 - ii) Net interest paid by government;
 - iii) Wages and salaries paid in kind;
 - iv) Proprietor's income.
- p) Place each of the following transactions in one of the four components of expenditure: consumption, investment, govt. purchases and net exports (4×1)
 - i) Tata Motors sells a truck to Indian defense force;
 - ii) Tata Motors sells a truck to a private company in India;
 - iii) Tata Motors sells a truck to Nepalese army;
 - iv) Tata Motors builds a truck to be sold next year.

2. Answer any *two* questions (2 × 5):

- (a) Consider the following information and show the absolute advantage and comparative advantage in the production of food and clothes in India and Bangladesh (Consider that labour is the only factor of production):

Commodity	Labour Time required (in hrs.) to produce 1 unit	
	Food	Clothes
Country		
India	2	4
Bangladesh	16	8

- (b) Consider the following market demand (Q_d) and market supply (Q_s) functions respectively: $Q_d = 1000 - 50P$; $Q_s = -200 + 50P$ (where P denotes the price per unit). Calculate the equilibrium price and quantity. Draw the demand and supply schedules. Also calculate Consumer's surplus and producer's surplus at that equilibrium situation.
- (c) Calculate the market clearing price and quantity on the basis of the following market demand and supply schedules: $Q_d = 400 - 50P$; $Q_s = 25 + 12.5P$. If the government now fixes a price ceiling that is Rs.2 below the equilibrium price, then show its impact on this market. Draw diagram.
- (d) Do you think that removal of a trade restriction would lead to rapid economic growth? Explain.
- (e) Suppose that the required reserve ratio is 0.12 for deposits and there are no excess reserves. Suppose also that the total demand for currency is equal to 0.3 times deposits.
- (i) If total reserves are Rs. 40 billion, what is the level of money supply?
- (ii) By how much does the money supply change if the RBI increases the required reserve ratio to 0.20? Assume that the total reserves are unchanged at Rs. 40 billion.
- (iii) By how much does the money supply change if the RBI buys Rs. 1 billion of government bonds in the open market? (Keep the required reserve ratio at 0.12)
- (f) Growth theory predicts that poorer countries tend to grow at a faster rate than richer countries. Explain.

Section-B

3. Answer any *two* questions (2 × 4):

- a) What are the methods of collecting primary data? Which method do you prefer and why?
- b) The mean and standard deviation of height readings of a group of employees of a firm are found to be 172 cm and 18 cm, while the same measures for their weight readings are 65 kg. and 9 kg. Compare the variability of the height readings with that of the weight readings.
- c) Elucidate the concepts of Lorenz curve and Gini coefficient.
- d) Distinguish between difference and differential equation.
- e) What are the limitations of 'Classical Theory' of Probability?
- f) Define mutually exclusive and mutually exhaustive events.
- g) Define local and global maxima of a function $y = f(x)$ at $x = c$.
- h) Define convex set, and closed set. What is a closed convex set?

- i) Define continuity and differentiability of a one-to-one mapping.
 j) Define a polynomial function.
 k) The total cost C of a factory per week is a function of its weekly output Q given by the equation $C = 500 + 12Q$. The factory has a capacity limit of 600 units of output per week. Find the domain of definition and range of the cost function.

4. Answer any two questions (2×6):

- a) The median and mode of the following distribution are respectively 27 and 26. Find a and b .

Class-interval :	0-10	10-20	20-30	30-40	40-50
Frequency	3	a	20	12	b

(i) If $2u=5x$ is the relation between the variables x and u and geometric mean of x is 2.5, find the geometric mean of u .

(ii) Show that when prices of all items change in the same ratio, then Laspeyre's index = Paasche's index.

- b) Calculate Fischer's ideal index from the following data, and check whether it satisfies both time reversal and factor reversal tests

Commodity	2009		2010	
	Price(Rs)	Expenditure(Rs)	Price(Rs)	Expenditure(Rs)
A	8	80	10	120
B	10	120	12	96
C	5	40	5	50
D	4	56	3	60
E	20	100	25	150

- (c) Solve the following game problem and determine the value of the game: (3+3)

(i) $B_1 \quad B_2$

$$A_1 \begin{bmatrix} -4 & 6 \\ 2 & -3 \end{bmatrix}$$

(ii) $B_1 \quad B_2$

$$A_1 \begin{bmatrix} 3 & -2 \\ -2 & 3 \end{bmatrix}$$

- (d) Prove that $f(x)$ is continuous in $a \leq x \leq b$ and its derivative exists in $a < x < b$ If $x = c$ be a point in the domain of definition of $f(x)$ and $f(x)$ attains local extremum (critical point) at $x = c$, then

$f'(c) = 0$ Using the derivative sketch the graph of the following cubic function : $f(x) = x^3 - 3x$

(3+3)

- (e) Let $f(L, K) = A\{\alpha L^\rho + (1 - \alpha)K^\rho\}^{\frac{1}{\rho}}$ Show that $f(L, K)$ is a linear homogeneous function.

- (f) $y = L^a$, $a > 0$, relates the level of input labor L , to output y . This function is called the total product of labor, $TP(L)$. The marginal product of labour is $MP(L) = \frac{dY}{dL}$. If $a = 5$, obtain $MP(L)$ and find if the curve is increasing or decreasing. If ' a ' is equal to -7, will $MP(L)$ be decreasing?

- (g) The rate of price change in a market is 3 times the amount of excess demand in the market. If the demand and supply functions are given respectively as $D = 5 - 3P$ and $S = 3 - 2P$, examine the stability of the market in dynamic sense. The initial condition given is $P = P_0$ when $t = 0$.