Bangabasi College
Test Examination, 2014
B.Sc (Hons.) (1+1+1 System), Part I
ECONOMICS (Hons)

Full marks: 50 + 50   **Time:** 4 Hrs.

Section A

1. Answer any *five* questions (5 × 4):
   - (a) "Incentives are crucial to analyzing how markets work." Explain with an example.
   - (b) Distinguish between a free market economy and a centrally controlled economy.
   - (c) Explain the role played by increasing cost in supply relation.
   - (d) A linear demand curve will necessarily have different elasticity along the curve. Examine whether this statement is true, false or uncertain.
   - (e) Show that there arises a dead weight loss to the society after the imposition of a commodity tax by the government in a competitive market situation.
   - (f) What is the principle of diminishing marginal utility?
   - (g) Show the relationship between dead weight loss and the elasticity of the demand and supply curves.
   - (h) Define market failure. Explain. Indicate any two causes of market failure.
   - (i) Distinguish between public goods and common property resources.
   - (j) Which of the following transactions are included in the GDP, and by how much does each raise GDP? (i) You buy a used bicycle paying Re 2000.(ii) Your grandmother receives a pension of Rs. 50000 for the year. (2+2)
   - (k) Plot the consumption function $C = 50 + 0.6Y_d$ and derive the corresponding saving function.
   - (l) What is the frictional unemployment rate?
   - (m) Efficiency wage theory explains that firms charge workers equilibrium wage rate- True or false?
   - (n) Define the consumer price index.
   - (o) Distinguish between nominal and real interest rate.

2. Answer any *five* questions (5 × 6):
   - (a) You have got a gift cheque of Re 1000.00 from your uncle in your birth day. You have a choice of spending it to buy a fancy salwar suit now or making a fixed deposit in the bank for one year at the rate of interest 7%? What is the opportunity cost of buying the salwar suit now?
   - (b) Suppose labor is the only factor of production and the table below describes the production conditions between India and UK.

Country	Tea	Wine
India	$A_{lc} = 1$	$A_{lw} = 2$
UK	$A_{lc}{}^{\cdot} = 8$	$A_{lw}{}^{\cdot} = 4$

   A_{lc} = amount of time it takes to produce one unit of tea for the home country (India).
   A_{lw} = amount of time it takes to produce one unit of wine for the foreign country (UK)
   (i)What good does India have an absolute advantage in? What good does the UK have an absolute advantage in? Why?
   (ii)What good does the India have a comparative-advantage in? What good does the UK have a comparative advantage in? Why? (3+3)
   - (c) Assume that the demand curve takes the following form: $q = 50 - 2p$. Calculate the price elasticities of demand at p = 10 and p = 20 and justify that elasticity cannot be inferred by slope alone.

(d) The demand and supply curves for a good are given by the equations:

$$q_d = 400 - 50p$$

$$q_s = 25 + 12.5p$$

    (i) Plot the demand and supply curves and find the market clearing price and quantity.

    (ii) Suppose the government creates a price ceiling that is Rs 2 below the equilibrium price. What will be the new market price and quantity?

    (iii) What happens to the market price and quantity if the government replaces the price ceiling by a price floor that is Re 1 above the equilibrium price?   (2+2+2)

(e) You are trying to decide what to order: Drinking a lemon juice gives you marginal utility of 32, while drinking a cup of tea gives you a marginal utility of 27. Say the price of a lemon juice is Rs 4 and the price of tea is Rs. 3. What will you order and why? What will happen as a result of the good you order? Explain the relation between the behavior of consumer and law of demand?   (4+2)

(f) Differentiate between actual and potential GDP. Explain the importance of GDP gap.   (3+3)

(g) Define GNP and GDP. Is the distinction between GNP and GDP significant?

(h) What adjustments are required to calculate disposable personal income from GNP?

(i) Consider the following S function for the year 2013.

    $S = 70 + 0.2Y_p$, where Y_p is the weighted average of the income levels in 2011 and 2012. The level of Y are 3,000 and 4,000 in 2011 and 2012 respectively with 0.75 being the weight attached to 2012's income.

    (i) Calculate C and S for 2013.

    (ii) Calculate MPC, APC, MPS and APS for 2013.

(j) What are the determinants of money supply in an economy? "The size of the money multiplier becomes greater, the smaller is bank's desired reserve ratio and still smaller is the public desired cash ratio." - Explain.

Section B

3. Answer any *five* questions (5 × 4):

    (a) With suitable examples distinguish between :(i) Class limits and Class boundaries;(ii) Frequency density and Relative frequency.

    (b) Why is harmonic mean never greater than the arithmetic mean of a set of observations? Can they be equal?

    (c) State giving reasons how you will calculate mode from the following data?

Class:	5 – 14	15 – 19	20 – 29	30 – 39	40 – 44	45 – 49
Frequency:	4	6	10	15	8	2

    (d) Evaluate standard deviation as a measure of dispersion.

    (e) Wages paid last year to the cleaning and maintenance staff of a shopping mall had a mean of Rs 30,000 with a standard deviation of Rs 2400. What will be the new mean and standard deviation if all wages are increased by : (i) Rs 3000? (ii) 10%? If the cleaning and maintenance staff has been complaining of the disparity of wages paid to them, which of the policies – (i) or (ii) will take care of their complaint better?

    (f) In a survey report it is stated that 65% of the college –goers prefer surfing internet as a pastime, , 41% like music, 34% like sports, 17% both surfing net and music, 10%both surfing net and sports, 15% both sports and music and 6% all three. Show that the statement, as it stands is not correct.

    (g) State whether the following statements are true or false giving reasons:

        (i) Unit of a measure of skewness of an income distribution is rupees.

        (ii) Karl Pearson's coefficient of skewness can take any value in the real line.

    (h) Consider two events A and B with positive probabilities: (i) If A and B are mutually exclusive, will they be independent? (ii) If A and B are independent, will they be mutually exclusive?

    (i) State two uses of Life Table.

(j) Define local and global maxima of a function $y = f(x)$ at $x = c$.

(k) Define convex set, and closed set. What is a closed convex set?

(l) Prove that the point elasticity is -1 exactly at the midpoint of the linear demand curve $Q = a - bP$, $(a, b > 0)$.

(m) Define a homogeneous function.

(n) Define homothetic function. Show that the following functions are homothetic:

(i) $y = \log(x_1^2 + x_1 x_2)$

(ii) $y = (x_1 x_2)^2 + x_1 x_2$

4. Answer any *five* questions (5×6):

(a) Explain how the techniques of linear programming help us to solve two person zero sum games.

(b) Suppose two players A and B, each having a coin participate in a game of showing coins. Both the players show their coins simultaneously. If both of them show the same side of the coin then B gives Rs 1 to A and otherwise A gives Rs. 1 to B. Put this information in the form of a pay-off matrix. Is there any pure strategy equilibrium? If not, what is the mixed strategy solution?

(c) Obtain the time path P(t) of the following market model:

D=45-4P-6dP/dt-d^{2}P/dt^2

S=-9+5P

D=S

With P(0)=10 and P'(0)=3

(d) Enumerate all the subsets of the set $A = \{1, 2, 3\}$. How many subsets are there altogether? Given two sets $X = \{1, 2\}$ and $Y = \{3, 4\}$, find Cartesian products $X \times Y$ and $Y \times X$.

(e) A mini laptop manufacturer determines that in order to sell x laptops, the price must be $P = 1,200 - x$, the cost of the manufacturer for producing x laptops is $C = 4,000 + 30x$. Find out the optimum number of mini laptops that will maximize the profit.

(f) Classify the stationery values of the function $f(x) = x^3 - 3x^2 + 5$, as local maximum, local minimum and inflexional values.

(g) Give one example of a homogeneous function. Verify Euler's theorem for this function.

(h) For any utility function the first partial derivatives give the marginal utilities of the respective goods. Given the utility function $U = x_1 x_2$, find the marginal utilities and examine how marginal utility of good one changes with change in consumption of it.

(i) Find out the mean and standard deviation of the Binomial distribution.

(j) Find the value of Q_3 from the following data by drawing an ogive on a graph paper:

Mid-value:	7	14	21	28	35	42
Frequency:	8	18	30	25	15	4

(k)

Daily Expenses:	0 – 199	200 – 399	400 – 599	600 – 799	800 – 999	1000 & above
% of household:	18.9	26.9	30.8	10.4	9.0	4.0

(i) Can you compute the standard deviation from the above data? Give reasons for your answer.

(ii) Find the dispersion using a suitable measure.