Model Question Set for BA/BSC (Honours), Part I Paper IA: Microeconomic Principle Section A

Unit 1: The Economic Way of Thinking

- 1. Explain the relation between efficiency and comparative advantage.
- 2. Identify each of the following economic statement as positive or normative
 - a. An increase in minimum wage will increase the rate of unemployment
 - b. The government should raise the sales tax on tobacco to reduce the cigarette smoking
 - c. Equality should get more priority than cost-benefit.
 - d. Demand for gasoline falls as price rise.
- 3. Explain why efficiency is not sufficient to address equity issues?

Unit 2: Market and Adjustments

- 1. Why is price mechanism said to be an institution of exchange.
- 2. Distinguish between a free market economy and a centrally controlled economy?
- 3. Explain what is meant by excludability and rivalry in consumption.
- 4. Explain the role played by increasing cost in supply relation.

Unit 3: Market Sensitivity and Elasticity

- 1. What is the difference between arc elasticity and point elasticity?
- 2. Explain the signs of cross price elasticity of demand for substitute and complimentary goods.
- 3. If demand is unit elastic how will a decline in price affect total revenue?
- 4. What is the relation between demand elasticity and revenue? If demand is unit elastic how will a decline in price affect total revenue?

Section **B**

Unit 1: The Economic Way of Thinking

- 1. 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?
- 2. A flight company is studying the question of when to cancel flights for its Agartala to Bagdogra route. Flying nearly empty seats seems like bad business. The company wants to know the opportunity cost of going ahead with a scheduled round trip flight. There are two schedule flights per day. Here are some relevant cost data

Salaries of crew	Rs 1000 per day
Fuel	Rs 400 per round trip
Mortgage on plane	Rs 100 per day
Landing Flies	Rs 50 in Agartala
	Rs 100 in Bagdogra
Other in-flight costs	Rs 100 per round trip

Calculate the opportunity cost of each round trip

3. Suppose that two workers – Ram and Shyam – are working under you to paint the wall of a house and there are two tasks to be performed. First, the wall needs to be scrubbed and secondly, it needs to be painted. The following information is known to you: Ram needs 10 minutes to scrub a square foot of wall and 5 minutes to paint the same. Shyam takes 5 minutes to scrub the same one square foot of wall and 1 minute to paint it. What is the efficient division of labor that enables the maximum square feet of wall to be scrubbed and painted in an hour?

Unit 2: Market and Adjustments

 Explain which category each of the following goods falls in to.
 (a) National highways, (b) Primary education, (c) Cable TV connection in a locality, (d) Congested roads (e) uncongested roads (f) State parts.

- 2. Madhu dislikes having to walk 10 minutes to collect drinking water from the tube well nearest to his house. He is thinking about paying the water supply authority to install a new tube well outside his door
 - a) Why could the tube well be considered as a public good?
 - b) Describe briefly the externality associated with this public good.
 - c) Madhu thinks that it's only fair if the other people residing in his block help pay for the tube well, since it can be considered a public good. He decides to ask his neighbours how much they would be willing to contribute. Madhu's neighbours, however, are pretty sure that Madhu will pay for the tube well regardless of what they say since he wants it so badly. Describe the incentives faced by Madhu's neighbours, and suggest how they might respond to his request for contributions
- 3. Using supply demand diagrams show the market effect of the following events:
 - a) The cost of computer chips increases. At the same time, the income of people increases. Using graphs of market supply and demand curves, show what happens in the market for computers.
 - b) Bird flu forces the authority to cull chickens and scares the consumer from health risk.
- 4. Electricity is a major input used in the production of aluminium. Assume that the proposed energy tax will cause a significant increase in the price of electricity. What will happen to the price of aluminium? Of aluminium can? Of coke in cans? Of coke in bottles? What factors do you believe will influence the size of the respective price changes? (Use demand-supply curve to explain your answer)

Unit 3: Market Sensitivity and Elasticity

- 1. Assume that the demand curve takes the following form: q = 50 2p
 - a) Calculate the price elasticities of demand at p = 10 and p = 20 and justify that elasticity cannot be inferred by slope alone.
 - b) "The flatter the demand curve the greater the price elasticity of demand." Do you agree?
 - c) Change the demand curve to q = 80 2p. Calculate elasticity at p = 10. Is it the same as in (a) (since the slope is unchanged)
- 2. Take the following table:

Q	Р
0	6
10	4
20	2
30	2
	0

- a) Calculate the elasticities of demand?
- b) After plotting the demand curve from the calculations, explain the relation between the elasticities of demand and the demand curve?
- 3. Consider the demand curve q = 10 2p.
 - a) Find the quantities demanded at p = 0, 1, 2, 3, 4, 5 and plot the demand curve.
 - b) Find the total revenue schedule and illustrate the relationship between TR and elasticity of demand (use mid-point method).
- **4.** A person always spends one third of his income on clothing. What are his (a) own-price elasticity (b) cross price elasticity and (c) income elasticities of demand?

Paper IB: Macroeconomic Principle Section A

Unit 1: Nature and Scope of Macroeconomics

- 1. Using AD and AS curves examine the consequences of the following events:
 - a) A large oil-price increase
 - b) An arms-control agreement that cuts defense spending

- c) A surprise increase in investment spending
- d) A tight money policy

Unit 2: Accounting Output and Income

- 1. Which of the following transactions are included in the GDP, and by how much does each raise GDP
 - a) You buy a used bicycle paying Rs. 2000.
 - b) Your grandmother receives a pension of Rs. 50000 for the year.
 - c) You sell a poster to your roommate for Rs. 25.
 - d) Maruti manufactures 2000 automobiles at a cost of Rs. 250000 each. Unable to sell them, it holds them as inventories.
- 2. The following is information from the national income accounts for a hypothetical country:

GNP	Rs. 4,800
Gross Investment	Rs. 800
Net Investment	Rs. 300
Consumption	Rs. 3,000
Government purchase of goods and services	Rs. 960
National Income	Rs. 3,850
Wages and salaries	Rs. 2,920
Proprietors' income and rental income of persons	Rs. 320
Dividends	Rs. 100
Net Interest	Rs. 260
Government Budget Surplus	Rs. 30
Social Insurance Contribution	Rs. 380
Personal Interest income	Rs. 380
Government transfers to persons	Rs. 520
Personal tax and nontax payments	Rs. 600
nt.	

Find out:

- a) Net Exports?
- b) Disposable Personal Income?
- c) Private Savings?

Unit 3: Consumption and Investment

- 1. Plot the consumption function $C = 50 + 0.6Y_d$ and derive the corresponding saving function.
- 2. Consider a simplified economy where firms can invest in different projects: A, B, C and so forth up to H. Assume that these investments are so durable that we can ignore the need for replacement. Further, they yield a constant stream of net income each year and there is no inflation. Following table shows the initial data on each of the investment projects.

Project	Total	Annual	Cost per	r Re 1000	Annual Net Project per	
	Investment in	Revenues	borrowed at annual		Re 1000 borrowed at	
	project	per Re 1000	interest rate of		annual interest rate of	
	(Re, million)	invested	10%	5%	10%	5%
А	1	1500	100	50	1450	1400
В	4	220	100	50	12	170
С	10	160	100	50	60	110
D	10	130	100	50	30	80
E	5	110	100	50	10	60
F	15	90	100	50	- 10	40
G	10	60	100	50	- 40	10
Н	20	40	100	50	-60	-10

a) Which investment projects will be accepted and which rejected by the firms and why?

- b) What is the relation between the cut of between profitable/unprofitable investments and the interest rate?
- c) What would the cut-off be if the interest rate rose to 15%?

Section B

Unit 1: Nature and Scope of Macroeconomics

- 1. List the major objectives in the light of which macroeconomic performance of an economy can be judged.
- 2. What is meant by stagflation? Use AD & AS curves to explain stagflation.
- 3. In what background the Keynesian revolution took place? What were the main policy prescriptions of the Keynesian approach?
- 4. Briefly present the debate between new Classical and New Keynesian approaches.

Unit 2: Accounting Output and Income

- 1. Define GNP and GDP. Is the distinction between GNP and GDP significant?
- 2. Present the circular flow explication to show the linkage between households, firms and the government.
- 3. Explain the basic macroeconomic identity and show why the total investment, domestic and foreign must always be equal to total saving of an economy.
- 4. What adjustments are required to calculate disposable personal income from GNP?

Unit 3: Consumption and Investment

- 1. Explain the properties of consumption function. What is break-even point?
- 2. "Along the consumption function income changes more than consumption." Why? What does this say about the MPC and MPS?
- 3. What is the difference between the 'paper wealth' and the 'real wealth' of the economy? Does the increase in paper wealth indicate that the real wealth of the economy has increased?
- 4. What are the major economic forces that determine business investment?

Paper II A: Statistics for Economics Section A

Unit 1: Data Presentation

- 1. Classify the following characteristics as either an attribute or variable; if variable, mention whether discrete or continuous: size of agricultural holding, proportion of girls in a class of 100 students, educational levels of workers in a factory, colour of flowers in a garden, total value of shares sold each day in the stock market, age of a boy on his birthday, time of completing a difficult sum, outcomes in rolling a die.
- 2. What should be the suitable diagram to represent the data in each case?
 - a) The daily selling prices of gold in India in a particular week.
 - b) The profit and losses of a business concern for a period of 10 years.
 - c) Revenue and expenditure of the Central Government for a period of 5 years.
 - d) The total production cost and its components of a manufacturing firm in a particular year.
 - e) Share of different institutions in rural credit in three different years.
 - f) Growth of GDP in India during the last 10 years.
- 3. With suitable examples distinguish between
 - a) Class limits and Class boundaries
 - **b**) Frequency density and Relative frequency

Unit 2: Central Tendency

- 1. Why is harmonic mean never greater than the arithmetic mean of a set of observations? Can they be equal?
- 2. Giving suitable reasons, state which among AM, GM, HM, median and mode is the appropriate measure of central tendency for the following situations;

- a) size of footwear sold in a shop
- b) speed to cover a fixed distance
- c) life in hours of a sample of 80 bulbs
- d) rate of interest in 5 different years
- e) monthly income of advocates in a city
- 3. 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
- **4.** Suppose that in constructing the price index number for a certain year with a fixed base year, we take the simple arithmetic mean of price relatives. Would this be a satisfactory index number? Give reasons.

Unit 3: Dispersion

- 1. Evaluate standard deviation as a measure of dispersion.
- 2. 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 (a) Rs.3000, (b) 10%. If the cleaning and maintenance staff has been complaining of the disparity of wages paid to them, which of the policies (a) or (b) will take care of their complaint better?

	<u> </u>	1
Relevant information	Before dispute	After dispute
No. of workers	516	508
employed		
Mean wages	49.50	51.75
Median wages	52.70	50.00
Variance of wages	100	121.00

3. The following facts were gathered regarding an industrial dispute:

Compare the position before and after the dispute in terms of modal wages and coefficient of variation.

Section **B**

Unit 1: Data Presentation

1. Find the value of Q3 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

- 2. Discuss the problems encountered in the construction of a frequency distribution from a raw data.
- 3. What is a questionnaire? What are the points to be kept in mind while framing a questionnaire? Mention the disadvantages of Questionnaire Method in connection with collection of primary data.

Unit 2: Central Tendency

- 1. The mean and median daily wages of 90 workers in a factory are Rs 285 and Rs 270 respectively.
 - i) Do the data imply that the majority of workers earn less than Rs 285 per day? Give reasons for your answer.

ii) Choose the correct option:

The maximum number of workers is earning daily an amount close to (a) Rs. 285 (b) Rs.270 $\,$

- 2. (a) State two situations where you would prefer the median to the arithmetic mean.
 - (b) Prove that the sum of the squares of the deviations of all values of a variable in a set of observations from any constant c is the least if c = arithmetic mean
- 3. What is 'cost of living' index number? How is it constructed? Mention its uses.
- 4. The following data relate to the wholesale prices of cereals at selected centers in India during two different weeks and the corresponding weights:

		Price (Rs per ton)			
Item	Weight	Week I	Week II		
Rice	220	910	935		
Wheat	102	720	750		
Jowar	25	465	470		
Bazra	15	318	300		
Ragi	10	270	295		

Compare the wholesale prices of cereals for the two weeks

Unit 3: Dispersion

- 1. 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
- 2. From the data given below, state which series is more consistent?

Variable	Series A	Series B
10 - 20	10	18
20 - 30	18	22
30 - 40	32	40
40 - 50	40	32
50 - 60	22	18
60 - 70	18	10
S.D. (A) =14.06		S.D. (B) =14.06

Paper II-B: Mathematics for Economics

Section A

Unit 1: Introduction to Functions and Graphs

- 1. Define local and global maxima of a function y = f(x) at x = c.
- 2. Prove that if the function f(x) is differentiable at x = a then f(x) must be continuous at x=a.
- 3. Define convex set, and closed set. What is a closed convex set?
- 4. Define continuity and differentiability of a one-to-one mapping.
- 5. 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.
- 6. From a demand curve known to be linear, given, p = 15, q = 35 and p = 12, q = 50, write down the functional relationship between q and p. In which of the quadrants of the Cartesian plane does this function lie?

Unit 2: Derivatives and its uses of Single Variable Calculus

- 1. Prove that if f(x) is continuous in $a \le x \le b$ 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.
- 2. Prove that the point elasticity is -1 exactly at the midpoint of the of the linear demand curve q = a bp, (a, b > 0).
- 3. Using the derivative sketch the graph of the following cubic function.
- 4. State (without proof) the criterion for determining the maximum and minimum values of a single valued function.
- 5. Define point of inflexion of a curve. If $y = e^{-x}$, does the curve have a point of inflexion?
- 6. $y = L_a$, 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 = dY/dl}. If a = 5, obtain MP_L and find if the curve is increasing or decreasing.

Unit 3: Functions of Several Variables

- 1. Define a level curve in a function $y = f(x_1, x_2)$
- 2. Define a homogeneous function.
- 3. What is the distinction between homogeneous function and homothetic function?
- 4. Prove that "if f(x) is a concave function, then -f(x) is a convex function and vice versa."
- 5. Define homothetic function. Show that the following functions are homothetic;
 - i) $y = \log (x_1^2 + x_1 x_2)$
 - ii) $y = (x_1x_2)^2 + x_1x_2$
 - iii) Let $f(L, K) = A \{ \alpha L^{\rho} + (1 \alpha) K^{\rho} \}^{1/\rho}$. Show that f(L, K) is a linear homogeneous function.
- 6. Define a level curve in a function $y = f(x_1, x_2)$.

Section B

Unit 1: Introduction to Functions and Graphs

- 1. Prove that "continuity is a necessary condition but not a sufficient condition for existence of a finite derivative of a function."
- 2. Show that the function f(x) = |x 1| is not differentiable at x = 1, but it has a local minimum at x = 1.
- 3. Examine the continuity and differentiability of f(x) = 2x + |x 1| at x = 1.
- 4. An employee gets a salary according to a contract that establishes a relationship between pay and the level of sales made by the employee. The Contract stipulates that the salary will be composed of three parts: (a) Rs. 500 as basic amount, (b) Commission of 10% over sales, (c) Rs. 200 bonus if the sales exceed Rs. 10000. Form the function linking salary to sales. Draw the graph of the function.
- 5. On the same axes, sketch the graphs of (a) $x^2 + y^2 = 16$ and (b) $x^2 + xy + y^2 = 16$. Take x = -4, -3, -2, -1, 0, 1, 2, 3, 4
- 6. If $y = x^3 + 6x^2 12x + 50$, find $\frac{dy}{dx}$ and $\frac{d^2y}{dy^2}$.

Unit 2: Derivatives and its uses of Single Variable Calculus

- 1. The total cost C of a firm is given by C = $100q-80q^2 + \frac{1}{3}q^3$, where q is the quantity produced.
 - i) Find the marginal cost (MC) of production
 - ii) Find the slope of the MC function
 - iii) At what value of q does MC equal average cost (AC)
- 2. The average revenue function (AR) is given by AR = 10 3q. Find out the elasticity of demand when q = 2.
- 3. The demand function of a firm is 3P + Q = 48, where P is the price per unit and Q is the number of units demanded. Find the level of output where total revenue (TR) is maximized. If the average cost (AC) is given by AC = Q2 -18Q + 3, find the level of output which minimizes marginal cost (MC).
- 4. Define average and marginal change of a function.
- 5. Define curvature of a function in terms of second derivative.
- 6. For the cost function $f(q) = q^3 + q + 1$ graph the corresponding AC function and MC function on the same co-ordinate axes.

Unit 3: Functions of Several Variables

- 1. Check whether the following function $z = x_1^2 + x_2^2$ is concave or convex, where $U = (U_1, U_2)$ and $V = (V_1, V_2)$ be any two distinct points on the domain.
- 2. Let $y = L^{\alpha}K^{1\cdot\alpha}$ represent society's production function. Suppose L and K both grow at constant though different rates; that is $L = L_0e^{nt}$ and $K = L_0e^{mt}$ where t represents time. Find dy/dt by direct substitution and by the chain rule.
- 3. If the utility function of an individual takes the form:

 $U = U (q_1, q_2) = (q_1 + 2)^2 (q_2 + 3)^2$

Where U is the total utility, q_1 , q_2 are the quantities of two commodities consumed:

- a) Find the marginal utility function of each of the two commodities.
- b) Find the value of the marginal utility of the first commodity when 3 units of each commodity are consumed
- 4. If $f(x_1, x_2, \dots, x_n)$ is homogeneous of degree r then show that the first partial derivatives f_1, f_2, \dots, f_n are homogeneous of degree (r 1).
- 5. a. If $f(x_1, x_2, \dots, x_n)$ is homogeneous of degree r then show that

 $\delta f / \delta x_1 \cdot x_1 + \dots + \delta f / \delta x_n \cdot x_n = r. f(x_1, x_2, \dots, x_n)$ b. Verify the Euler's theorem for the function $f = x_1 x_2^2$

Model Question Set for BA/BSC (Honours), Part II Paper IIIA: Microeconomics Section A

Unit 1: Consumer Theory

- 1. Answer whether the following statements are true or false stating reasons:
 - a. With the assumption of non-satiation (more is better than less), indifference curve will always be negatively sloped.
 - b. A change in the price of X and the price of Y simultaneously will necessarily lead to a change in the slope of the budget line.
- 2. State whether the following statements are true or false or uncertain with reasons:
 - a. Consumer equilibrium is always signified by $MU_1/MU_2 = p_1/p_2$.
 - b. A Giffen good is necessarily an inferior good.
 - c. The Slutsky compensation effect measures the movement between two points on the same indifference curve.
 - d. When the price of a good rises and income remains constant there is a substitution effect on demand but no income effect.
 - e. Shyam's utility function is U $(x,y) = xy^2$. His marginal rate of substitution between X and Y does not change if you double the amount of both goods.
- 3. Suppose your friend consumes lassi and ice cube respectively in the fixed proportion of 1: 2. Draw his indifference curve, indifference map and direction of preference? Which assumption of standard consumer theory is violated here?
- 4. What is the economic interpretation of the slope of the budget line?
- 5. What is the intuitive interpretation of consumer equilibrium?

Unit 2: Production and Costs

- 1. "An employer should never hire another worker if the new person causes diminishing returns." Is the statement correct? Give reasons for your answer.
- 2. Suppose that constant returns to scale exist at all levels of output in the long run. What would be the long run average cost? (Simply draw the diagram)
- 3. What is the relationship between (i) marginal cost of output and the marginal product of labor? (ii) Average cost of output and the average product of labor?
- 4. Law of diminishing returns explains the short run average cost while returns to scale the long run average cost. Briefly Explain.
- 5. In the short run, the producer will avoid producing in the region where marginal product of labor is positive. Explain.

Unit 3: Market Structure

- 1. Explain why a monopolist cannot produce at any point of the demand curve it faces.
- 2. Different elasticities do not make price discrimination feasible. Explain
- 3. Is it true that the tax burden (consumer and producer surplus) collected in the form of revenue by the government constitutes a net loss to the society? Explain.
- 4. Since long run equilibrium price exceeds the minimum value of long run average cost under monopolistic competition, monopolistically competitive firms earn positive economic profits in long run equilibrium. Do you agree?
- 5. In a natural monopoly, one firm can produce at a lower average cost than it could be if it shared the market with other firms. Explore your agreement or disagreement?

- 6. Briefly explain the difference between the outcomes of perfectly competitive and monopoly market structure.
- 7. Explain the differences in the characteristics of a monopolistically competitive firm and perfectly competitive firm?

Section **B**

Unit 1: Consumer Theory

1. (a) Ravi faces a two commodity world of X and Y. His income is Rs 1000 and P_X and P_Y are Rs 25 and Rs 40 respectively. The bundle that gives greatest satisfaction contains 10 units of Y. What will be the optimum bundle of X for Ravi? Graph the budget set and the optimum bundles Name the optimum point as A.

(b) If the price of X decreases to Rs 20, Ravi's new optimum bundle contains 11 units of Y. How much X does Ravi's new optimum bundle contain? Graph the new budget set and the optimum bundles. Name the optimum point as B on the same set of axis as (a).

(c) At the new price ($P_x = Rs 20$ and $P_y = Rs 40$), the bundle that would give Ravi the same level of satisfaction as the original equilibrium consumption bundle in part (a) is at x = 26 and y = 8. Name the new pair of optimum bundle as C. In terms of X, what are the substitution effect, income effect and price effect?

- 2. Roma faces a two commodity world of X and Y. When her income is Rs 1000 and P_x and P_y are Rs 25 and Rs 40 respectively, the bundle that gives greatest satisfaction contains 24 units of X and 10 units of Y. If the price of X decreases to Rs 20, the bundle that would give Roma the same level of satisfaction as the original equilibrium consumption bundle in part (a) is at x = 26 and y = 8. At the new price (P_x = Rs 20 and P_y = Rs 40), when will she have X to be a Giffen good?
- 3. Suppose that an individual's utility function is U(w) = w². Is the person a risk lover? Will he accept a gamble where there is a chance of winning Rs 20 and of losing Rs 20 with equal probability, if his initial wealth is Rs 100? If instead his utility function is U(w) = w, will his actions be the same as before?
- 4. Suppose you live in a country of 5 people who have lunch in a common kitchen for 20 days. All the people are indifferent between Dosa and Sandwich whose price is Rs 20 each. Now suppose that the price of Dosa falls to Rs 15. Law of demand says that the quantity demand for Dosa should increase as a result. Using the decomposition of substitution and income effect explain why.
- 5. Suppose you are a mayor of a town which hosts a chemical plant that employs 200 people and emits 150 units of pollution. Suppose the CEO of chemical plant comes to you with a proposal to expand the chemical plant which will increase pollution by another 100 unit. You are considering on behalf of the town what it will take to keep your level of satisfaction the same with the increased pollution. In this context, draw your indifference curve, indifference map and direction of preference?

Unit 2: Production and Cost

- 1. Consider the cost function $C(q) = q^2 + 1$, Find out the variable cost, fixed cost, average variable cost, average fixed cost, average cost, and marginal cost and depict them in one diagram.
- 2. Consider the cost function $C(q) = q^2 + 1$, Find the supply function (in terms of q as a function of p) and depict it in a diagram.
- 3. (a) Explain the relation of LRAC with returns to scale.(b) What happens to LRAC if there is technology improvement?(c) What is the minimum efficient scale of production in LRAC?

Unit 3: Market Structure

- 1. A firm in a perfectly competitive industry has the following long run cost function C (q) = $q^3 60q^2 + 1500q$.
 - a. If the firm can sell its output at p = Rs 975, how much will it produce to maximize profit?
 - b. Is the output of the firm in (a) compatible with industry equilibrium?
 - c. If the industry is that of constant average cost, derive the equation for the long run supply curve of the industry.
- 2. Suppose minimum Long Run Average Cost (LRAC) = Rs 3 per kg for chicklet. Show that, if the chicklet industry is monopolistically competitive, in the long run equilibrium the price per kg will

exceed Rs 3. Also show how a decrease in the price of inputs used in chicklet production will affect the industry. Assume that, after the decrease in costs, minimum LRAC = Rs 2.

- 3. The greater the degree of competition in a monopolistically competitive market, the flatter (more elastic) demand tends to be. As the amount of competition increases, how will this affect the degree of excess capacity of firms in the long run equilibrium?
- 4. A monopolist faces a demand curve Q = 20 P and has a total cost function function TC = 4Q. To practice perfect price discrimination, how much profit should the monopolist earn?

Paper IIIB: Macroeconomics Section A

Unit 1: The Economy in the Long Run

1. Consider an economy described by the following equations :

Y = C+I+G Y = 5000 G = 1000 T = 1000 C = 250+0.75 (Y-T) I = 1,000 - 50r.

- a) In this economy, compute private saving, public saving and national saving.
- b) Find the equilibrium interest rate.
- 2. Suppose that the government increases taxes and government purchases by equal amounts. What happens to the interest rate and investment in response to this balanced-budget change? Does your answer depend on the marginal propensity to consume?
 - a) In case of balanced budget, explain the relation of government with the financial market in a closed economy?
 - b) In case of government budget deficit, explain the relation of private savings with investment in a closed economy?
- 3. The government raises taxes by Rs 10 billion. If the marginal propensity to consume is Rs 0.6, what happens to (i) national savings and (ii) investment?
- 4. In a particular month, the labor force is 130 million, there are 9.1 million unemployed workers, the job-losing rate is 3 percent per month, and the job-finding rate is 40 per cent per month. How many people will be unemployed next month? At what unemployment rate would the number of unemployed remain the same from one month to the next?

Unit 2: The Economy in the Short Run

- 1. Suppose that money demand depend only on income and not on interest rates.
 - a) What does the LM curve look like in this case?
 - b) Show graphically that G has no effect on the level of output. What does G affect?
- 2. Show how the IS curve and the LM curve can be shifted to get an increase in output without a change in interest rates. What kind of mix of monetary and fiscal policy is needed to do this? Will a reduction in interest rates, while holding output constant, do this?
- 3. In a simple Keynesian model for a closed economy without government, there are two groups of income earners. Group 1 earns 800, while the income of Group 2 is Y-800, where Y denotes net domestic product. Average consumption propensities of Group 1 and 2 are 0.6 and 0.5 respectively. Investment function is given by 400 + 0.1 Y. Derive the aggregate saving function and the equilibrium amount of saving. Now suppose that there takes place a transfer of income from Group 1 to Group 2 of 100 units. How will it affect the aggregate saving function? Do you expect paradox of thrift here?
- 4. Suppose that the money demand function is $(M/P)^d = 1,000 100 r$, where r is the interest rate in per cent. The money supply M is 1,000 and the price level P is 2.
 - a) What is the equilibrium interest rate?
 - b) If the Central Bank wishes to raise the interest rate to 7 per cent, what money supply should it set?
- 5. Consider the following functions: $C = 50 + 0.8 Y_D$; I = 70; G = 200; TR = 100; t = 0.2.
 - a) Suppose that't' rises to 0.25. Calculate the change in the budget surplus. Would you expect the change in the budget surplus to be more or less if C = 0.9 instead of 0.8? Explain.

b) Can you explain why the multiplier is 1 when t = 1.

Unit 3: Foreign Trade and Exchange Rate

- 1. Suppose that a country has a capital account surplus of Rs 20 million and a current account deficit of Rs 14 million.
 - a) Calculate the Balance of Payment and state its situation?
 - b) If the Central Bank intervenes, does it buy or sell the home currency?
 - c) If the Bank does not intervene, what will be the impact on the home exchange rate?
- 2. Suppose that the rupee is appreciating steadily against the dollar. How would this affect (i) your US friend who wants to visit India, (ii) if you are an exporter of garments to the USA?
- 3. Decline is the price of oil in 1985-86 led to a sharp depreciation of the currency of Mexico, a major oil exporter. Explain this fact using a suitable diagram.
- 4. Suppose that money demand depends on disposable income, so that the equation for the money market becomes

M/P = L(r, Y-T)

Analyze the impact of tax cut in a small open economy on the exchange rate and income under both floating and fixed exchange rates.

Section **B**

Unit 1: The Economy in the Long Run

- 1. What determines the amount of output an economy produces?
- 2. What is the role of competition, economic profit and constant returns to scale in the distribution of income in the classical model?
- 3. What factor makes the demand for the economy's output of goods and services equal to the supply in the classical model? Explain its role.
- 4. Explain what happens to consumption, investment and the interest rate when the government increases taxes.
- 5. Examine the impact of a decline in the income velocity of circulation of money in the classical model.

Unit 2: The Economy in the Short Run

- 1. Define Keynesian cross. Why is the Keynesian cross a stable equilibrium?
- 2. Define tax multiplier. Explain the effect of tax cut on the equilibrium output.
- 3. Describe the effect of a tax cut on IS curve and the output.
- 4. What is Liquidity Preference theory? Explain the effect of money supply expansion in that theory? What does the explanation assume about the price level?
- 5. (i) Define interest rate. (ii) What is the role of interest rate in liquidity preference theory?
- 6. Explain the role of liquidity preference in the derivation of the LM curve.

Unit 3: Foreign Trade and Exchange Rate

- 1. Define (i) current account, (ii) capital account and (iii) balance of payments.
- 2. Capital account surplus means that domestic capital accumulation is being funded by loans from foreigners. Explain.
- 3. Should a Current Account deficit always be a cause for alarm?
- 4. What are the forms of financing Current Account Deficit?
- 5. Currency appreciation has adverse effect on trade balance by stimulating imports and reducing exports. Explain.
- 6. Suppose that the RBI embarks on a tight money policy. What is the lively impact on India's exports under (i) fixed exchange rate and (ii) flexible exchange rate?

Paper IVA: Development Theory Section A

Unit 1: Concepts and Measures of Development

- 1. Name any two critical issues which are dealt in development economics.
- 2. What is the need for considering PPP rate of exchange between countries?

- 3. Why should consumption per man hour worked be considered as better index of economic development?
- 4. What variables are taken into consideration for measuring HDI?

Unit 2: Process of Development – Theoretical Perspectives

- 1. Indicate the pattern of change in the occupational structure while a country ascends from less developed to developed status.
- 2. Mention one of the principal determinants of resource shift from the primary to the secondary sector with the economic development of a country.
- 3. Indicate any two conditions which are to be fulfilled by an industry to become a leading sector at the 'take off' stage.
- 4. State any one criticism against the Rostow's stage theory.
- 5. What is Verdoorn's law?

Unit 3: Factors in Economic Development

- 1. Distinguish between fixed rent tenancy and share cropping?
- 2. Indicate a situation where fixed rent tenancy is preferred to share cropping.
- 3. How can land-labour ratio affect agricultural productivity?
- 4. Indicate three instances of urban bias against agriculture.
- 5. Mention the two broad types of labour which are observed in the hired labour market.

Section **B**

Unit 1: Concepts and Measures of Development

- 1. (a) Examine the core values of economic development.
 - (b) Explain the notion of economic development in terms of 'capabilities' as suggested by A.K.Sen.
- 2. (a) Economic growth is possible without economic development—Explain.
- (b) Do you think that per capita income of a country can be considered as the proper index of economic development of that country? Give reasons.
- 3. What is PPP? Why do we require a PPP measure of PCI while making international comparisons regarding economic development?
- 4. Discuss some of the common characteristics of developing countries.

Unit 2: Process of Development – Theoretical Perspectives

- (a) Explain the Fisher-Clark views regarding the economic transition of a country.(b) What is the relevance of 'take off' stage as indicated by Rostow?
- 2. Critically analyse Rostow's stage theoretic approach towards economic development of a country.
- 3. Show that the characteristic features of modern economic growth as observed by Kuznets are mutually reinforcing.
- 4. Explain the relationship between industrial growth, GDP growth and productivity growth in an economy with the help of Kaldor's Growth Laws.
- 5. Critically analyze the Neo-Classical approach towards market fundamentalism and economic growth.

Unit 3: Factors in Economic Development

- 1. Explain the major contributions of the agricultural sector towards economic development of a nation.
- 2. Land reforms may be considered as a necessary condition for increasing agricultural productivity, but this cannot be treated as the sufficient condition.
- 3. (a) Explain some of the barriers to agricultural development in less developed countries.(b) Explain the reasons behind higher incidence of share-cropping as opposed to fixed-rent tenancy in Asian countries.

Paper IVB: Indian Economy since Independence

Section A

Unit 1: Indian economy at the time of Independence

1. What is de-industrialisation?

Unit 2: Planning: Evolution of India's Development Goal and Strategy

- 1. What are the three basic characteristics of Indian planning?
- 2. What was the principal constraint for Indian planning at the beginning?
- 3. Which area of development was emphasized in the second five year plan and why?
- 4. What is meant by urban bias against agriculture in Indian planning?
- 5. Why are the first three five year plan separate from other plans?
- 6. State two reasons for the failure of the Nehru-Mahanalobis plan.

Unit 3: Land and Agriculture

- 1. Mention the policy objectives of structural reorganization.
- 2. Mention any two features of green revolution.
- 3. Distinguish between the concepts of marketed surplus and marketable surplus.
- 4. What are the limitations of the agricultural price policy in India?
- 2. What were three types of land reform measures adopted in the 1950s policy of land reform program?
- 3. Why was the adoption of abolition of intermediary tenants seen as important under the land reform program?

Section B

Unit 1: Indian Economy at the time of independence

1. Describe the features of Indian economy on the eve of independence with a reference to the colonial rule.

Unit 2: Planning: Evolution of India's Development Goal and Strategy

- 1. "Indian plans are good in paper but are not so good in implementation"—logically explain the statement.
- 2. What were the structural constraints to the implementation of developmental planning in India?
- 3. Explain the causes behind regional inequality in India and the probable corrective measures.
- 4. Explore the various problems that arose with respect to implementation of Indian plans?
- 5. Examine the role of poverty eradication and foreign aid in India's fifth five year plan?

Unit 3: Land and Agriculture

- 1. State the objectives of land reforms in India and the reasons behind its failure.
- 2. Do you think that the relation between farm size and productivity is scale neutral? Why?
- 3. Explore the reasons behind the partial success of Green Revolution in India?
- 4. What were the objectives behind the price policy in agriculture? Do you think that the outcomes have fulfilled the proposed objectives?
- 5. Distinguish between support price and procurement price in the context of Indian agriculture. What was the controversy behind the subsidies in Indian agricultural sector?
- 6. Describe how the relation between minimum support price and foodgrain surplus evolved in the pre-NEP period?

Model Question Set for BA/BSC (Honours), Part III

Paper VA: International Economics

Section A

Unit 1: Basic Models of Trade

- 1. 'Trade between two countries can benefit both countries if each country exports that good in which it has comparative advantage'. Justify.
- 2. 'A country engaging in trade according to the principles of comparative advantage gains from trade because it is producing imports indirectly more efficiently than it could domestically'. Justify.
- 3. 'In a two product two country world, international trade can lead to increases in output of both products and consumer welfare in both countries'. Justify.
- 4. 'If the world terms of trade for a country are somewhere between the domestic cost ratio of A and that of B, then country A and country B will both gain from trade'. Justify.

- 5. 'Gains from trade can be understood by thinking of trade as an indirect method of production'-Explain using an example.
- 6. 'The closer the equilibrium relative price to a country's autarkic domestic price ratio, the larger is its gain from trade'-true/false? Explain.

Unit 2: Resources, Comparative Advantage, and Income Distribution

- 1. Suppose that there are two factors, capital and land, and that the United States is relatively capital endowed while India is relatively labour-endowed. According to the Heckscher-Ohlin model, will the US capitalists support India-US free trade? Why?
- 2. Consider two countries, India and South Korea in an H-O world. Each country produces two goods, cars (a relatively capital intensive good) and shirts with two factors of production labor and capital. At the world relative price of 200 for cars, South Korea exports cars and imports shirts from India. Is India relatively capital abundant? Why?
- 3. Suppose you have the following diagram for a country under the 2 factor Heckscher-Ohlin framework, where C stands for cloths and F refers to food production:



Given the information in the above figure, how does a decrease in the relative price of cloth affect the use of land and labor in the respective sectors?

- 4. 'A small poor country has no abundant resource and hence can never participate in exports' Do you agree? Justify.
- 5. Explain why the Leontief paradox contradicts the factor-proportions theory.
- 6. Consider the following factor endowments of two countries, A and B:

	А	В	
Labour force (millions of labour hours per year)	50	15	_
Capital stock (millions of machine hours per year)	25	20	

- a) Which country is capital abundant and why?
- b) Which country is labor abundant and why?

Unit 3: The Standard Trade Model

- 1. 'A rise in terms of trade increases a country's welfare and while a decline in terms of trade reduces its welfare.' Justify.
- **2.** If a country experiences import biased growth does it necessarily gain in terms of Welfare? Explain your answer.
- **3.** In a 2 good 2 country world how is the equilibrium relative price determined? Why is the relative demand curve (RS) downward sloping?
- **4.** Comment: 'Imposition of tariff on imported goods by a large country like US will improve its terms of trade'.
- 5. What is 'biased growth'? Explain with the help of a diagram.
- 6. During the 19th Century, economic growth of the major trading countries was biased toward manufactures and away from food. The less developed countries of that time were

net exporters of food. What would you infer about the terms of trade of the less developed countries? Justify your answer.

Section B

Unit 1: Basic Models of Trade

- 1. The evidences of the East Asia New Industrializing Countries (NICs) suggest that as international productivities converge, so do international wage levels. Why do you suppose this happened for the East Asian NICs? In light of your answer, what do you think is likely to happen to the relative wages (relative to those in the United States) of India in the coming years? Explain your reasoning (Hint: Use Ricardian Comparative advantage concept).
- 2. An examination of the Ricardian model of comparative advantage yields the clear result that trade is (potentially) beneficial for each of the two trading partners since it allows for an expanded consumption choice for each. However, for the world as a whole the expansion of production of one product must involve a decrease in the availability of the other, so that it is not clear that trade is better for the world as a whole as compared to an initial situation of non-trade (but efficient production in each country). Are there in fact gains from trade for the world as a whole? Explain.
- 3. In a Ricardian Model (with only factor labour) what is the world supply of exportables X when px/py lies between the home opportunity cost of X in terms of Y and the foreign opportunity cost of X in terms of Y?

Unit 2: Resources, Comparative Advantage, and Income Distribution

- 4. 'If there is free trade between two countries in a HO world, and both countries produce both goods, then wages in the two countries will be the same.' Justify.
- 5. Suppose that at current factor prices cloth is produced using 20 hours of labor for each acre of land, and food is produced using only 5 hours of labor per acre of land.
- 6. a. Suppose that the economy's total resources are 600 hours of labor and 60 acres of land. Using a diagram, determine the allocation of resources.

b. Now suppose that the labor supply increases first to 800, then 1000, then 1200 hours. Using diagram, trace out the changing allocation of resources.

c. "What would happen if the labor supply were to increase even further?"

7. a. Using the data given in the previous question draw two national supply and national demand diagrams to illustrate the autarky equilibria for each country and a possible international equilibrium.

b. (or) Label the autarky prices, the international price, and the relative quantities consumed and produced in each country. Describe the adjustment from autarky to free-trade equilibrium.

- 8. Considering the factor endowments given in the previous question and supposing that the good T is labor intensive relative to good S, which country will have a comparative advantage in the production of T? Explain your answer.
- 9. Suppose that at current factor prices cloth is produced using 20 hours of labor for each acre of land, and food is produced using only 5 hours of labor per acre of land.

a. Suppose that the economy's total resources are 600 hours of labor and 60 acres of land. Using a diagram, determine the allocation of resources.

b. Now suppose that the labor supply increases first to 800, then 1000, then 1200 hours. Using a diagram, trace out the changing allocation of resources.

c. What would happen if the labor supply were to increase even further?

Unit 3: The Standard Trade Model

- 1. Show with the help of a diagram, the effects of rise in P_C / P_F in an economy producing and consuming 2 goods, Cloth and Food, where P_C for price of Cloth and P_F stands for price of Food.
- 2. Bangladesh exports rice to India and imports cloth instead. Bangladesh's mpc of rice is 0.8 and mpc of cloth is 0.6, whereas India's mpcs are 0.7 and 0.75 for rice and cloth

respectively. If India gives an aid of 25,000 crores of rupees to Bangladesh, what happens to the terms of trade between these two countries?

- 3. When and why is a PPF concave? Derive relative supply curve of a commodity from the PPF.
- 4. Is economic growth in the rest of the world good or bad for a nation? Explain.
- 5. Suppose there is a transfer of income from one trading country to another. Does it necessarily affect the TOT? Explain in terms of world relative demand and relative supply curves.
- 6. Using world relative demand and supply curves show how imposition of a tariff on imports can improve a country's TOT at the expense of its trade partner.

Paper VB: Public Finance Section A

Unit 1: Introduction to public economics

- 1. Why public sector is required in any economy?
- 2. What is public finance?
- 3. Distinguish between private and public finance.
- 4. Distinguish between normative approach and positive approach to public economics.

Unit 2: Forms and Functions of Government

- 1. What are the basic reasons for market failure in the provision of social goods?
- 2. "The market mechanism is well suited for the provision of private goods." Explain why.
- 3. Distinguish between public provision and public production?
- 4. State the difference between national and local social goods?
- 5. Discuss the effectiveness of federal grant system in fiscal equalization.
- 6. What are the main fiscal instruments of Distribution Policy of the Government?

Unit 3: Federal Finance

- 1. What do you mean by Federalism?
- 2. Distinguish between conditional and unconditional aid?
- 3. What do you mean by tied grants and matching grants?
- 4. Suppose the central government is concerned with achieving equality of fiscal capacity in all states. What should be the relevant grant policy?

Section **B**

Unit 1: Introduction to public economics

1. Why do we need a separate public sector in a supposedly private enterprise economy?

Unit 2: Resources, Comparative Advantage, and Income Distribution

- 1. Why does market failure arise in the provision of public goods?
- 2. Discuss the economic significance of different regulatory functions of the government.

Unit 3: Federal Finance

- 1. Define Fiscal Position. What are the determinants of fiscal position?
- 2. Make a comparison of matching and non-matching grants.

Paper VIA: Comparative Development Experience Section A

Unit 1: International Comparison of Development

- 1. Do you think that differences in agricultural productivity can be a possible explanation for development gap between countries? Give example.
- 2. What are the two aspects to the measurements of income inequality across the world?
- 3. 'International inequality and 'Global inequality' do not reflect the same aspects to the measurement of income inequality across the world Do you agree? Give reason.

- 4. Do you support the view that the absolute gap between the richest and the poorest countries has widened over time? Give some evidence.
- 5. Can global inequality be higher than international inequality? Give reasons.
- 6. What are the possible causes of increasing global inequality during the 20th century?

Unit 2: Genesis of Capitalism

- 1. What is the basic difference between a 'feudal' and 'Semi-feudal' character of a precapitalist society?
- 2. Give two illustrations of precapitalist societies other than feudalism.
- 3. State some possible reasons for the breakdown of feudalism in Western Europe.
- 4. 'The Western European Capitalism transformed the Third World Countries partly by interacting with and partly by destroying the precapitalist structure of society'—Do you agree? Explain briefly by way of illustration.
- 5. Distinguish between mercantile phase and industrial phase of capitalism.
- 6. Mention some of the principal features of Industrial Revolution in Great Britain.

Unit 3: Industrialization Experiences in Early part of 20th Century

- 1. What is the basic difference between a 'feudal' and 'Semi-feudal' character of a precapitalist society?
- 2. Give two illustrations Define the concept of 'Primitive Socialist Accumulation' used in the context of planned economic development of erstwhile Soviet Union.
- 3. Mention and explain any one point in the debate between Heavy Industrialisation and Light Industrialisation?
- 4. Indicate some of the fundamental flaws in the economic structure of USA that led to its economic collapse in 1929.
- 5. Distinguish between the 'First New Deal' and 'Second New Deal' as implemented in USA to overcome the impact of Great Depression.
- 6. Mention some of the basic causes of economic crisis faced by Great Britain during the great Depression of 1930s.

Section B

Unit 1: International Comparison of Development

- 1. Explain some of the significant differences in initial conditions of development between LDCs and present day developed countries.
- 2. How can you assess the development gap between nations on the basis of growing income inequality across the world? Give illustration from the experiences of some rich and poor countries.

Unit 2: Genesis of Capitalism

- 1. Explain the basic features of Western European Feudalism as a variant of precapitalist social formation. (b) Discuss in brief the differences in opinions of economists and historians regarding the relative importance of factors responsible for the breakdown of feudalism.
- 2. What is the origin of exploitation in capitalist production? Explain how the process is similar to mercantilism.
- 3. Explain different phases of capitalism in Western Europe and the nature of 'exploitation' in these phases.
- 4. Describe how the Western European capitalism transforms the third world countries? Do you think that the Neo-Classical economists can offer little explanation for the problems faced by today's Third World? Explain.
- 5. Examine the debate regarding the period of 'First Industrial Revolution'.
- 6. Discuss the characteristic features of Industrial Revolution of Great Britain. (b) What were the consequences of this Industrial Revolution in Great Britain?

Unit 3: Industrialization Experiences in Early part of 20th Century

- 1. Explain the argument why priority was laid on heavy industrialization in Soviet Union in the early phase of development planning.
- 2. What were the recovery strategies from Great Depression in the 1930s? Discuss with reference to USA's experience.
- 3. Analyze the basic causes of economic collapse as experienced by USA during 1930s. How far these causes were different from those experienced by Great Britain during the same period?
- 4. Discuss the basic causes of economic crisis that Great Britain had to face during 1930s.
- 5. Discuss the measures undertaken by Great Britain for the revival of her economy after the Great Depression of 1930s.
- 6. Give a critical evaluation of New Deal as adopted in USA with particular reference to the agricultural sector.

Paper VIB: Contemporary Economic Issues: India and West Bengal Group A: Contemporary Economic Issues: India

Section A

Unit 1: Economic Reform in India since 1991

- 1. Mention any two causes behind the macroeconomic crisis of 1991.
- 2. Mention any two changes in the role of the state?
- 3. In what way did new economic policy bring about a shift in the development strategy of India?
- 4. What were the components of the reform package outlined in 1991?
- 5. Mention the two categories of the policy changes of 1991.
- 6. What were the objectives behind the adoption of the stabilization policies and structural reforms policies?

Unit 2: Agriculture, Poverty and Social Security

- 1. State two risks faced by the farmer.
- 2. What are the challenges faced on account of deforestation?
- 3. What was the Indian Forest Act of 1927?
- 4. What was the principle of National Forest Policy of 1952?
- 5. What is Joint Forest Management?
- 6. How can forest be related to conservation strategy?

Unit 3: Post-reform performance of Indian Economy

- 1. How pro-market orientation is different from pro-business orientation?
- 2. Was there any convergence between the states in terms of growth? If not, then give any one explanation in support of your answer.

Section B

Unit 1: Economic Reform in India since 1991

- 1. What was the immediate background that led to the adoption of new economic policies?
- 2. Examine the objectives of NEP.
- 3. Describe the changing role of Indian state following the adoption of new economic policy.

Unit 2: Agriculture, Poverty and Social Security

- 1. Examine the performance of Indian agriculture since 1990s.
- 2. Describe the forest policies undertaken in India since independence.
- 3. Explain the different programmes implemented by the state to eradicate poverty in India since 1991.
- 4. Examine the operational dimensions of NREGA.
- 5. Examine the relation of deprivation in India with positive freedom, negative freedom and discrimination.

Unit 3: Post-reform performance of Indian Economy

- 1. Describe whether the Indian economic reforms have been gradual or big bang.
- 2. Compare India's growth experience in 1991-2011 to that experienced in pre-reform India.

Group B: Economy of West Bengal Section A

- 1. What do you mean by State Domestic Product? What are the official sources of statistics on State Domestic Product?
- 2. What can you say of the general trend of State Domestic Product of West Bengal during the last decade?
- 3. Mention two features of land reform policy of the state of West Bengal during the last twenty-five years?
- 4. Mention two features of agrarian relations in the state of West Bengal.
- 5. What do you mean by Rural Non Farm sector? Does this sector contribute to State Domestic Product in West Bengal?

Section **B**

- 1. Compare trends in employment and growth in SDP in West Bengal with five major states in India.
- 2. What do you mean by Operation Barga? Discuss the major debates around this policy in West Bengal.
- 3. What has been the growth of informal sector in West Bengal during the last two decades? How do you explain this growth?
- 4. What are Self-Help groups? What were the reasons behind the policy of setting up such groups in the state of West Bengal?
- 5. What were the policies of poverty alleviation in the state of West Bengal?

Paper VII A: Statistics and Basic Econometrics Section A

Unit 1: Joint Probability Distribution

- 1. Prove that the expectation of the product of two independent random variables is equal to the product of their expectations.
- 2. Evaluate the conditional probability that P (X $\ge 1/Y = 2$) if the joint probability function is given as: $f(0,0) = \frac{1}{2}$, $f(2,0) = \frac{1}{2}$, $f(0,2) = \frac{1}{2}$, $f(1,2) = \frac{2}{3}$, $f(2,2) = \frac{3}{2}$, f(x,y) = 0 elsewhere.

Unit 2: Sampling Theory & Unit 3: Sampling Distribution

- 1. Distinguish between
 - a. a random and a non random sample
 - b. Simple random sampling with replacement and simple random sampling without replacement.
- 2. Distinguish between parameter and statistic. Explain the notion of sampling distribution of a statistic.
- 3. Distinguish between sampling error and non sampling error.
- 4. If X₁, X₂, X₃ be a random sample from N(0, σ²) population, what would be the distribution of the following statistics? Mention the degrees of freedom.
 (a) (X₁² + X₂² + X₃²) /σ² (b) X₁² / X₂²

Unit 4: Classical Statistical Inference

- 1. What do you mean by an estimator of a parameter? What is MVUE? Give example.
- **2.** Explain the notions of unbiasedness, consistency, efficiency and sufficiency of a point estimator.
- **3.** If T_1 , T_2 and T_3 are independent unbiased estimators of θ with variances in the ratio 2:3:5, which of the following estimators of θ would you prefer most? $(2T_1+T_2+T_3)/4$, $(T_1+2T_2+T_3)/4$, $(T_1+T_2+2T_3)/4$

4. What are Type I and Type II errors? Explain how there is a trade-off between probability of making a Type I error and probability of making a Type II error

Section B

Unit 1: Joint Probability Distribution

- 1. A perfect die is thrown twice. Find the expected values of the sum and the product of the number of points obtained in two throws.
- 2. A perfect coin is tossed three times in succession. Given X = 1 if first toss gives head, X = 0 if first toss gives tail and Y = number of heads obtained in three tosses. Construct the joint distribution of X and Y. Are X and Y independent?

Unit 2: Sampling Theory & Unit 3: Sampling Distribution

- 1. Derive the expressions for the expectation and standard error of sample mean in SRSWOR.
- 2. Consider a population of 4 members having values 4, 6, 6 and 9 and obtain random samples of size 2 drawn with replacement and without replacement. Derive the sampling distributions of the statistic \bar{x} in both the cases and verify that their expectations equal population mean.
- 3. Marks of statistics for a population of 30 students of a class are given below: 70,75,80,85, 90, 93, 65, 80, 95, 92, 86, 81, 78, 74, 79, 68, 72, 69, 83, 86, 94, 92, 93, 66, 72, 90, 68, 88, 92, 75.

Draw a simple random sample of 5 students and obtain the sample average of marks. Consider with and without replacement schemes while drawing the samples with the help of the following random sampling numbers:

4652 3819 8431 2150 2352 2472 0043 3488 9031 7617 1220 4129

Unit 4: Classical Statistical Inference

- 1. Suppose x_1, x_2, \dots, x_n is a random sample from an infinite population with mean μ and variance σ^2 . Show that sample variance $s^2 = \frac{1}{n} \sum (x_i \bar{x})^2$ is a biased estimator of σ^2 . When is the bias negligible? Can you suggest an unbiased estimator of σ^2 ?
- 2. For a Binomial distribution find out the MLE of the population proportion. Is the estimator unbiased?
- 3. During negotiations with the management of a retail store which pays Rs 4.50 per hour to its workers, union officials claim that the mean hourly wage paid by other stores in that area is higher. Test this hypothesis at 5 % level of significance if the mean wage of a random sample of 49 workers in other stores is Rs 4.65 and the sample standard deviation is Re 0.56.
- 4. In what situations will a hypothesis test of a population employ (a) the sample z statistic (b) the sample t statistic? If the null hypothesis is H_0 : $\mu = 30$, when would a Type II error be made?

Paper VIIB: Applied Economics Group A: Application of Economics to Managerial Issues Section A

Unit 1: Nature and Scope of Managerial Economics

- 1. Do you think it is appropriate to think firms as economic entities?
- 2. Write down the valuation model used by firms.
- 3. How the 'valuation model' is used to describe the integrated nature of managerial decision-making across functional areas of business?
- 4. What is the 'opportunity cost' principle in decision making?
- 5. What are the similarities between the 'principle of time perspective' and the 'discounting principle'?
- 6. Can a manager really apply 'the equi-marginal principle'? If not, why?

Unit 2: Demand, Cost and Profit Analysis

1. Differentiate between industry demand and firm demand.

- 2. What is the relation between the demand function and demand curve?
- 3. What is the link between accounting and economic valuation?
- 4. Differentiate between historical and current cost.
- 5. What is the importance of 'replacement cost' in a world of decreasing price for computers, hardware and software taking together?
- 6. How is cost elasticity related to 'economies of scale'?

Unit 3: Organizational Design, Principal-Agent Analysis & Incentive Design

- 1. What are the three main legal forms of a firm?
- 2. 'Limited liability corporations' are the firms of twenty-first century' Do you agree?
- 3. What is the role of the owner in partnership and proprietorship firms?
- 4. What happens to the goal of the firm if there is conflict of interest among shareholders?
- 5. Is there a market for managers? What are the assumptions behind the existence of such a market?
- 6. How the capital market ensures efficient functioning of the firm?

Section B

Unit 1: Nature and Scope of Managerial Economics

- 1. Describe the effects of the following decisions on the value of the firm: (3 marks for each)
- 2. The firm is required to install new equipment to reduce air pollution.
- 3. The advertisement expenditure is increased followed by a substantial increase in sales.
- 4. The production department buys new equipment leading to lowering of manufacturing cost.
- 5. The price of the commodity is raised leading to fall in sales in the long run.
- 6. The central bank policies lower interest rate dramatically.

Unit 2: Demand, Cost and Profit Analysis

- 1. Identify each of the following statements as true or false and explain why (3 marks each)
 - a. The effect of a Re. 1 change in price is constant, but the elasticity of demand will vary along a linear demand curve.
 - b. In practice, price and quantity tend to be individually rather than simultaneously determined.
 - c. A demand curve is revealed if prices fall but supply conditions are held constant.
 - d. The effect of a Re. 1 change in price will vary but, but the elasticity of demand is constant along a log-linear demand curve.
 - e. Consumer surveys are useful for incorporating subjective information.
- 2. Is historical data useful in the time of launching a new product?
- 3. What are the drawbacks for 'direct market experiments'?
- 4. What are the merits and demerits of market survey?
- 5. Describe the 'engineering analysis' approach to cost estimation.
- 6. What is the utility of account-based data for cost estimation?

Unit 3: Organizational Design, Principal-Agent Analysis & Incentive Design

- 1. Why do firms exist?
- 2. What is the role of transaction cost in the existence of a modern firm?
- 3. In 'limited liability corporations' is it limited liability for managers or shareholders or both? Explain your answer.
- 4. If a firm earns profit, the shareholders get dividend. So, do they want to maximize profit?
- 5. What is satisfying behavior for firms?
- 6. 'One way to align the interests of the shareholders and managers is to provide the latter with appropriate incentives and another is to offer shares' which would be more effective in your opinion?

Paper VIIB: Applied Economics Group B: Mathematical Economics Section A

Unit 1: Theory of the Consumer

- 1. Give one example of separable utility function and state why it is separable.
- 2. Compute Indirect utility function when $U = (x_1 + x_2)^2$
- 3. Why are Shadow Prices called Shadow?
- 4. Distinguish between Homogeneous Production Functions and Homothetic Utility Functions.
- 5. Define Quasi-Linear Utility functions.

Unit 2: Theory of the Firm

- 1. In a 2 variable Leontief Static Input-Output framework, is it necessary that both the outputs require both the inputs?
- 2. Define CES production function.
- 3. State the relationship between Average Cost and Marginal Cost.

Unit 3: Games and Decisions

- 1. Define sequential games.
- 2. What is the difference between dominating strategy and strictly dominating strategy?
- 3. Why a Saddle point solution called a Saddle?
- 4. Define Mixed Strategies.

Section B

Unit 1: Theory of the Consumer

- 1. Utility function between leisure x_1 (hours/week) and earned income x_2 (Rs/week) of a person is given by U= $15x_1x_2 100 x_1 140 x_2 25x_1^2 2x_2^2$. Find the optimum values of x_1 and x_2 and hence determine the implied wage rate. Consider the indirect utility function: $v(p_1,p_2,m) = m/p_1+p_2$
 - i. What are the demand functions?
 - ii. What is the direct utility function?
- 2. Consider the utility function $u(x_1, z_2, z_3) = x_1^a z_2^b z_3^c$. Is this utility function (weakly) separable in (z_2, z_3) ?
- 3. How will your demand for paper and pen change if your income increases? Is this fact someway related to any particular form of utility function? Explain.
- 4. What is Roy's Identity? How do you prove it?

Unit 2: Theory of the Firm

- 1. If the market demand of a manufacturer's product p = f(x) and his production function is x = f(L,K), find the limits of MRP_L and MRP_K when elasticity of demand for the product approaches infinity ?
- 2. A coal company is the only hirer of labour in its area. It can hire any number of male and female workers it wishes. The supply curve for female workers is $L_f = 100 w_f$ and that of male workers is $L_m = 9 w_m^2$. If the company sells coal in a perfectly competitive market at Rs 5 per ton and each worker hired can mine 2 tons of coal per hour, find the number of male and female workers hired for maximum profit. Also find w_f and w_m . How will your results change if the firm was forced to pay the same wage rate to male and female workers?
- 3. The total cost function of a perfectly competitive firm is $C = x^2/25 + 3x + 100$. Determine: i) the lowest price to cover total cost ii) the lowest price to cover total variable cost. A firm has a production function $Y = x_1x_2$. If the minimum cost of production at $w_1=w_2=1$ is equal to 4, what is the value of Y?
- 4. Suppose that the inverse demand curve facing a monopolist is given by p(y, t), where t is a parameter that shifts the demand curve. For simplicity assume that the monopolist has a technology that exhibits constant marginal cost. Derive an expression showing how output

responds to a change in t. How does this expression simplify if the shift parameter takes the special form p(y,t) = a(y) + b(t)?

Unit 3: Games and Decisions

- 1. Differentiate between dominating strategy and strictly dominating strategy in two person matrix games.
- 2. Define Nash equilibrium of two person matrix game.
- 3. Show that a matrix A has a saddle point at (I,j) if and only if the strategy (I,j) is a Nash equilibrium for the aero-sum game determined by matrix.
- 4. State the properties of any tree in sequential decision.
- 5. Show that if a tree has n edges, and k vertices, then n=k-1

Paper- VIII (A): Indian Economic History Section-A

Unit: 1 Economic Condition in India on the Eve of British rule.

- 1. What was the Land Revenue administration under the Mughal Empire?
- 2. How can you compare the urban handicrafts and rural handicrafts in the pre-British period?
- 3. What are the features of the urban economy of India during the pre-British days?
- 4. What was the land ownership structure and revenue experiments before the beginning of the British rule?

Unit: 2 Aspects of Economic Policies in British India.

- 1. Why the East India Company was favoured the system of 'Permanent Settlement'?
- 2. What were the land revenue arrangements under *Permanent Settlement*?
- 3. Why the Permanent Settlement had been labeled as "*one of the great wrongs*" made by the British government?
- 4. Did *Permanent Settlement* promote India's agricultural development? Give reasons for your answer.
- 5. Give an outline on *Mahalwari System* that was prevailed in the British period as a land revenue arrangement.
- 6. "The ultimate pattern in the Ryotwari System was not too dissimilar from the Zamindari System"- Why?

Unit: 3 Impact of British Rule on India.

- 1. What do you understand by the term '*de-industrialisation*' in India in the 19th century?
- 2. What were the factors responsible for '*de-industrialisation*' (*decline of handicrafts*) occurred in the British rule?
- 3. Was *de-industrialisation* a myth? Give reasons for your answer.
- 4. What were the basic motives or force behind the transformation of subsistence agriculture to commercial agriculture during the British period?
- 5. Explain the concepts of '*Economic Drain*' from India to England during the British rule.
- 6. What were the constituents of 'Home Charges'?

Section-B

Unit: 1 Economic Condition in India on the Eve of British rule.

1. Briefly discuss the nature and economic activities of the village and urban economies of India prior to the British rule.

Unit: 2 Aspects of Economic Policies in British India.

1. Discuss how did land ownership structure and revenue arrangements under the so-called permanent settlement change in British India.

- 2. Give an outline of the changes in the Indian land ownership and tenancy system introduced in the British period.
- 3. Discuss whether the policy of 'Discriminating Protection' contributed to industrial development in British India.
- 4. Discuss the major features of the policy of '*Discriminating Protection*' followed in India between the 1st and 2nd World Wars.
- 5. Critically discuss the main functions of the *Managing Agency System* in India's economic history.
- 6. Discuss the various causes of origin of the Managing Agency System in the development of Indian industries during the British period.

Unit: 3 Impact of British Rule on India.

- 1. Account for the growth of commercial agriculture in India since the 19th century.
- 2. Examine the causes of rapid expansion of the area under commercial crop in India under British rule.
- 3. Evaluate the over-all impact of commercialization of agriculture on the Indian economy under British rule.
- 4. How do economic historians establish the phenomenon of '*de-industrialisation*' in India during the 19thcentury?
- 5. Explain underlying causes of '*de-industrialisation*' and its effects on the contemporary Indian economy. What is meant by '*economic drain*' from India to England after the battle of Plassey of 1857? What were the economic effects of such drain?
- 6. Examine the arguments advanced to explain the theory of '*Economic Drain*' from India in the second half of the 19th century.

Paper VIIIB: Term Paper

- 1. The body of the term paper must follow the following format: (i) Title, (ii) Abstract, (iii) Introduction, (iv) Sections, (v) Conclusion, and (vi) References.
- 2. Abstract must not be more than 150 words and should focus on the research question and findings. Introduction should elaborate on the motivation and question of the term paper. Sections, which could be multiple, should elaborate on the arguments of the student including his/her findings. One of the sections may even include a literature survey. Conclusion should present the summarized findings. Reference list should only include the texts (books, articles, etc.) mentioned in the term paper.
- 3. The term paper may be descriptive, exploratory or empirical.
- 4. Each student will prepare a term paper not exceeding 5000 words (excluding charts, diagrams, tables etc.).
- 5. The selection of the topic will be from the subjects covered in the undergraduate economics honors syllabus.
- 6. Term paper must be submitted. Without the term paper, no one would be allowed to take the viva-voice.
- 7. The term paper should be strictly original and not be copied electronically or otherwise.