

RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. THIRD SEMESTER EXAMINATION, DECEMBER 2019

SECOND YEAR [BATCH 2018-21]

ECONOMICS (Honours)

Paper : III

Date : 11/12/2019

Time : 11 am – 3 pm

Full Marks : 100

[Use a separate Answer Book for each Group]

Group-A

1. Answer **any three** questions of the following:

[3×4]

- a) In recent years, some policymakers have proposed requiring firms to give workers certain fringe benefits, such as health insurance. Suppose that a law required firms to give each worker Rupees 300 of fringe benefits for every hour that the worker is employed by the firm.
- i) How does this law affect the demand and supply curves for labour? Draw your answer on a graph with the cash wage on the vertical axis.
- ii) The wages of some workers, particularly the unskilled and inexperienced, are kept above the equilibrium level by minimum-wage laws. What effect would a fringe-benefit mandate have for these workers? (2+2)
- b) i) Would you like to buy shares of TCS and Infosys together? Explain.
- ii) Does your answer change if the choice is between Infosys and Surana Solar Limited?
- iii) Also what is your answer if the choice is between CESC and Surana Solar Limited? (2+1+1)
- c) Gautam and Siddhartha want to divide Rs. 100 between themselves. So they consult their friend Sugato who proposes Gautam should receive Rs. 70 while Siddhartha's share should be Rs. 30. If the utility functions are given by $U_{Gautam} = I_{Gautam} - I_{Siddhartha}$ and $U_{Siddhartha} = I_{Siddhartha} - I_{Gautam}$ where I denotes the share of a person. Argue whether Sugato's proposed division is Pareto optimal.
- d) In the Spence model of education signalling we studied, two possible equilibria can arise under certain conditions; a pooling equilibrium in which neither type obtained any education, and a separating equilibrium in which only the high-productivity worker obtained an education. Explain carefully if any of these equilibria is more efficient than the other.
- e) Briefly state the adverse selection and moral hazard problems in case of medical insurance.
- f) "Because all points on a contract curve are efficient, they all are equally desirable from a social point of view." — Do you agree with this statement? Explain.

2. Answer **any one** question of the following:

[1×8]

- a) Let two brothers are stranded in an island who live off by gathering wild apples (A) and bananas (B). On a typical day, they gather a total of 4 apples and 2 bananas. The utility functions of the elder brother (E) and the younger brother (Y) are given by $u_E = A_E + B_E + 2\sqrt{A_E B_E}$ and $u_Y = A_Y + B_Y$ respectively. On any day, the endowments of A

and B for E and Y are given by (3, 1) and (1, 1) respectively. Check if the First Welfare Theorem holds in this set-up while stating the theorem clearly.

- b) a. A landlord wants to hire a labourer who will prepare the ground for farming. The hired labourer is hard working with probability 0.25 and lazy with probability 0.75. A hard working labourer can do the task properly with probability 0.8 and a lazy labourer can do the same with 0.4. The landlord makes a profit of Rs. 1000 from farming if he gets a properly done ground and gets nothing if the ground is not prepared properly. In either case, however, the labourer has to be paid a wage of Rs. 100. i. Find the expected profit of the landlord. ii. Suppose instead of a fixed payment, the landlord pays a commission of $t\%$ on its profit to the labourer (i.e., if the ground is done properly the labourer gets $\text{Rs. } 1000 \times \frac{t}{100}$ and nothing otherwise). The labourer, irrespective of whether he is hard working or lazy, has an alternative option of working for Rs. 80. Find the profit maximizing value of t for the landlord. (4+4)

3. Answer **any two** questions of the following: [2×15]

- a) Suppose that there are two types of used cars: Good used cars ('peaches') and bad used cars ('lemons') whose valuations are measured in rupees. Assume that the sellers and the buyers are risk-neutral. Also assume the following:

- (A) The supply of cars is fixed; that is, there are n_l lemons and n_p peaches. Moreover, $n_l = 2n_p$.
 (B) The supply of potential buyers is infinite with each buyer willing to buy one car.
 (C) The valuation of a peach to a buyer is $v_{bp} = 3000$.
 (D) The valuation of a peach to a seller is $v_{sp} = 2500$, $v_{bp} > v_{sp}$.
 (E) The valuation of a lemon to a buyer is $v_{bl} = 2000$.
 (F) The valuation of a lemon to a seller is $v_{sl} = 1000$, $v_{bl} > v_{sl}$.

Answer the following questions:

- i. At what prices are the used cars sold under perfect information?
- ii. At what prices are the used cars sold under incomplete information (When no market agent knows the original type of the car)?
- iii. Suppose the sellers know the original type of the car. Then show that a lemon seller would be better-off at the cost of peach sellers.
- iv. Can you give some solutions to this adverse selection problem? [3+3+6+3]

- b) i. Using a diagram, explain briefly why the market demand curve for a variable factor usually differs from the horizontal summation of individual demand curves.
 ii. What is a monopoly's demand for labour if it uses a fixed-proportions production function, in which, each unit of output takes one unit of labour and one unit of capital?

- iii. Suppose there are two groups of workers, unionized and nonunionized. The Government passes a law that requires all workers to join the union. Assuming that the total supply of unionized and nonunionized workers is fixed, what do you expect to happen to the wage rates of each group of workers?
- iv. Does a shift in the supply curve of labour have a greater effect on wages if the output market is competitive or if it is monopolistic? Explain briefly using a diagram and/or algebra. (4+4+4+3)
- c) i. Suppose that the utility of wealth for a consumer is $U(W) = W^\alpha$. If the utility is 6.5 for wealth corresponding the certainty equivalent income of the gamble, which gives Rs 100 with probability 0.5 and Rs 9 with probability 0.5, then find at least one value of α .
- ii. A moderately risk-averse investor has 50 percent of his portfolio invested in shares and 50 percent in risk-free bonds. Show graphically in a mean-variance utility modelling framework, how each of the following events will affect the investor's equilibrium: I. The standard deviation of the return on the share market increases, but the expected return on the share market remains the same. II. The return on risk-free bonds increases.
- iii. Let Biswanath has the utility function $U(x) = 10\sqrt{x}$ where x denotes the amount of money available to him. Suppose, he has Rs100. However, he has option of buying a lottery that will cost him Rs 51. If purchased, the lottery pays Rs 351 with probability p , and pays 0 (nothing) with remaining probability. Assume that Biswanath is an expected utility-maximizer. Find the range of values of p for which he will buy the lottery. (5+(3+2)+5)
- d) i. Akash has 3 litres of soft drinks and 9 sandwiches. Bikash, on the other hand, has 8 litres of soft drinks and 4 sandwiches. With these endowments, Akash's marginal rate of substitution (MRS) of soft drinks for sandwiches is 4 and Bikash's MRS is equal to 2. Draw an Edgeworth box diagram to check whether this allocation of resources is efficient. If it is not, what exchanges will make both parties better off?
- ii. A and B consume orange juice and coffee. A's MRS of orange juice for coffee is 1 and B's MRS of orange juice for coffee is 3. If the price of orange juice is Rupees 20 and the price of coffee is Rupees 30, which market is in excess demand? What do you expect to happen to the prices of the two goods?
- iii. Consider a two-person two-goods pure exchange economy. The initial endowment vectors are $e^1 = (1, 0)$ and $e^2 = (0, 1)$. The two individuals have identical preferences represented by the utility functions:

$$U^i(x, y) = \begin{cases} 1, & x + y < 1 \\ x + y, & \text{else} \end{cases}$$

for $i=1,2$; x and y denote quantities of first and second good respectively. Calculate what is (/are) the Pareto Optimum allocation(s) in the economy. [(2+3)+(3+2)+5]

Group-B

1. Answer **any three** questions of the following: [3×4]
- a) Point out the indivisibilities in 'Big Push' theory.

- b) When is an inequality measure said to be Lorenz consistent?
- c) Explain the difference between absolute and relative notions of poverty and mention two indices to measure them.
- d) “Economic development is something more than economic growth.” — Explain.
- e) Explain the three core values of Economic Development.
- f) How is Human Development Index calculated? Discuss in short.
2. Answer **any one** question of the following: [1×8]
- a) Describe briefly the theory of demographic transition. At what stage in this transition do most developing countries seem to be? Explain your answer. (5+3)
- b) Discuss Poverty as Capability failure. How is Prof. A.K. Sen’s measure an improvement over traditional measures of poverty? (3+5)
3. Answer **any two** questions of the following: [2×15]
- a) i) Discuss the core idea of the O-ring theory with its various implications.
- ii) ‘Per capita income does not accurately measure an improvement in the standard of living for the majority of population.’ — Explain the validity of the statement in the context of using per capita income as an index of development. (7+8)
- b) Discuss the concepts of complementarity and coordination failure with examples. Discuss in detail, the issue of coordination failure using multiple equilibria and S curve analysis. Point out the assumptions of the Big Push Theory. (5+7+3)
- c) i) What is the relationship between a Lorenz curve and a Gini coefficient?
- ii) How do the measure of absolute poverty and poverty gap differ from the UNDP’s Human Poverty Index (HPI)?
- iii) Why should we be concerned with the measurement of poverty in developing nations? (5+5+5)
- d) What factors are responsible for differences in technological choice between less-developed countries and developed countries? Discuss in this context, the conflict between employment and surplus generation in the process of choice of techniques in less developed countries. (5+10)

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