RAMAKRISHNA MISSION VIDYAMANDIRA
(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. THIRD SEMESTER EXAMINATION, DECEMBER 2018
SECOND YEAR [BATCH 2017-20]

Date : 15/12/2018

Time : 11 am – 3 pm

ECONOMICS [Honours]

Paper : III

Full Marks : 100

[Use a separate Answer Book for each Group]

Group – A

1. Answer **any three** questions of the following :   [3×4]

    a) Show the equilibrium of a monopsonist who uses a single variable input and who has a monopoly power in the commodity market.   (4)

    b) Why is a firm's demand curve for labour more inelastic when the firm has monopoly power in the output market than when the firm is producing competitively?   (4)

    c) "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.   (4)

    d) Suppose that your current wealth is 100 and your utility function is $u = W^{0.2}$. You have a lottery ticket that pays 10 with probability of 0.25 and 0 with a probability of 0.75. What is the minimum amount for which you would be willing to sell this ticket?

    e) Consider there are two types of workers: low-productivity workers (Group I) and high-productivity workers (Group II). The yearly average (and marginal) product of workers of Group I and Group II are respectively Rs 100000 and Rs 200000. Now answer the following questions :

        i)   If the firms could identify people by their productivities, then what optimal wage would the firms offer?   (0.5)

        ii) Suppose the firms could not identify people by their productivities and they only know that the proportion of Group I and Group II workers is 1:1. In that case, what optimum wage will the firms offer?   (0.5)

        iii) Suppose that a worker can signal via education and education is indexed by y. The cost of education of Group I and Group II workers are respectively, $C_I(y) = 40000y$ and $C_{II}(y) = 20000y$. Assume that both the workers and the firms are risk-neutral. Then show that the workers of Group II can signal successfully by choosing an education level, lying between 2.5 and 5.   (3)

    f) Why do people often want to insure fully against uncertain situations even when the premium of insurance exceeds the expected value of loss insured against?   (4)

2. Answer **any one** question of the following : [1×8]

   a) i) In the context of social decision making, please elaborate on some of the problems for different kinds of voting with the help of suitable examples.

   ii) State Arrow's impossibility Theorem and relate it to your answer in the previous part. (5+3)

   b) Consider the following principal-agent problem. The utility function of the agent is $U(w,e) = \sqrt{w} - (e-1)$ where w is the wage rate and e is the effort level. The effort level can be either 1 or 2 i.e. $e \in \{1,2\}$. Assume that the agent's reservation utility is 1. Suppose that the agent's action can result in revenue of either 10 or 30 for the principal. The agent can influence the probability associated with these revenues by choosing her effort level. When she works hard, the probability of the revenue being 30 is 2/3 and when she shirks, it is 1/3.

   i) Suppose e is observable and the principal is risk-neutral. Then what effort level does the principal want to induce and what is the optimal wage contract that the principal would offer? (2)

   ii) Suppose e is unobservable and the principal is risk-neutral and he wants to induce $e=2$. Write down the incentive-compatibility constraint and participation constraint. (2+2)

   iii) Solve for the optimal wage contract in (ii). (2)

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

   a) Suppose a firm's production function is given by $Q=12L-L^2$, for L=0 to 6, where L is the labour input and Q is output per day. Derive and draw the firm's demand curve for labour if the firm's output sells for Rs. 10 in the competitive market. How many workers will the firm hire when the wage rate is Rs. 30 per day? Rs. 60 per day? (5+5+5)

   b) An economy consists of two types of people, males (indexed by M) and females (indexed by F). There are four males, all identical to each other, while there are eight females who are identical to each other. There are two goods, x and y. The price of y is normalized to \$1; the price of x is p. The table below shows the type, utility, endowment, and demands for x and y for each type of person.

Type i	u^i	ω^i	x^i	y^i
M	$x^M y^M$	(4,0)	$m^M/(2p)$	$m^M/2$
F	$x^F(y^F)^3$	(0,12)	$m^F/(4p)$	$3m^F/4$

   At a Walras allocation, each male will consume the same bundle, while each female will consume a different bundle. Calculate the Walras equilibrium price $\hat{p}$ and Walras

(2)

consumption bundle $(\hat{x}^M, \hat{y}^M)$ for a male, and the bundle $(\hat{x}^F, \hat{y}^F)$ for a female. Check that the Walras allocation is Pareto efficient. (8+7)

c) i) Suppose the utility function is given by $U(W) = aW - bW^2$ (with a and b *both positive*). Does the function exhibit increasing or decreasing risk aversion? (4)

ii) If the rate of return on risky assets is a random variable R with mean $\bar{R} > 0$ and variance σ_R^2, and the individual's initial wealth is W, then what is the optimal amount of investment in risky assets? (Assume utility of wealth to be the same as is given in part (i).) (7)

iii) Show that the optimal amount of risky investment is a decreasing function of wealth. (4)

d) i) Why and how can asymmetric information between buyers and sellers lead to market failure when a market is otherwise perfectly competitive?

ii) Explain the difference between adverse selection and moral hazard in insurance markets. Can one exist without the other? (7+6+2)

Group – B

4. Answer **any three** questions of the following : [3×4]

a) How is the Human Development Index calculated?

b) Define economic development in terms of 'Capability'.

c) Explain Kuznets' inverted-U hypothesis.

d) Explain the three core values of Economic Development.

e) When is an inequality measure said to be Lorenz-consistent?

f) Explain the difference between absolute and relative notions of poverty and mention two indices to measure them.

5. Answer **any one** question of the following : [1×8]

a) "Companies can fail due to bad marketing, even if the product design and manufacturing are excellent. Your local restaurant does not hire famous chefs, and the Grand Hotel does not hire teenage waiters." Which model of development do you think can better explain such phenomena? Discuss, in detail, the model and explain further implications of the model you are referring to.

b) Discuss the situations where a labour-surplus economy may choose a capital-intensive technology instead of a labour-intensive technology.

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

a) i) Explain the concepts of 'youth-dependency ratio' and 'infant-mortality rate'.

   ii) Point out the indivisibilities in the 'Big Push Theory'.

   iii) Discuss, in detail, the issue of coordination failure using multiple equilibrium and S-curve analysis. (4+4+7)

b) i) Discuss the several conflicts faced by a developing country. Also show that a developing county may face a conflict between present employment and savings.

   ii) Distinguish between a balanced and an unbalanced growth strategy. Which one do you think is more appropriate for a developing country? (6+6+3)

c) i) 'Economic Development is something more than Economic Growth' - Explain.

   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)

d) i) Discuss the process of demographic transition and its implications in the economic development of a country.

   ii) Can population pressure inevitably result in Low-level Equilibrium Trap in any less developed country? Explain. (8+7)

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