RAMAKRISHNA MISSION VIDYAMANDIRA

(Residential Autonomous College affiliated to University of Calcutta)

B.A./B.Sc. SECOND SEMESTER EXAMINATION, MAY 2019

FIRST YEAR [BATCH 2018-21]

Date : 16/05/2019 **ECONOMICS (Honours)**

Time : 11 am – 3 pm **Paper :** II Full Marks : 100

[Use a separate Answer Book for each group]

Group – A

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

a) Suppose we are discussing about a monopoly market. And government interventions play a crucial role in this market. Now as per which pricing rule do you think the government should provide subsidy to the monopolist?
i) Average cost pricing
ii) Marginal cost pricing
iii) Monopoly equilibrium pricing
Explain your answer graphically.

b) In a perfectly competitive market, which of the following is true at the shutdown point?
i) Price > average variable costs
ii) Revenue > variable costs
iii) Total losses of the firm > fixed costs of production
iv) None of the above.
Explain your answer graphically.

c) Does the imposition of price ceiling necessarily lead to a shortage in a monopoly?

d) Consider the duopoly model of price competition where firms 1 and 2 produce similar goods and sell them at p_1 and p_2. The demand for each firm's product is given by $q_1 = 120 - p_1 + sp_2$ and $q_2 = 120 + sp_1 - p_2$, where s is a parameter that governs how similar the products are and $|s| < 1$. Marginal costs of producing either good are assumed to be zero.
i) If s = 0, what market structure are we looking at?
ii) Suppose s = 0.8. Calculate the symmetric Nash Equilibrium prices, quantities, and profits. [1+3]

e) The makers of Crocin pain reliever do a lot of advertising and have loyal customers. In contrast, the makers of generic paracetamol do no advertising, and their customers shop only for the lowest price. Assume that the marginal costs of Crocin and generic paracetamol are the same and constant. Assume all the firms are operating in the long run.
i) Draw a diagram showing Crocin's demand, marginal-revenue, and marginal-cost curves. Repeat the same for a producer of generic paracetamol. How do the diagrams differ?
ii) Which company has the bigger markup (a positive markup implies a price exceeding the marginal cost) and which company has the bigger incentive for careful quality control? Why? [2+2]

f) i) Why is a firm's demand curve flatter than the total market demand curve in the monopolistic competition?
ii) Suppose a monopolistically competitive firm is making a profit in the short run. What happens to the equilibrium price and quantity in such a market if one firm introduces a new, improved product?

iii) Discuss if a monopolistic competitor produces too much or too little output compared to the most efficient level. [1+1+2]

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

a) A monopolist faces a linear demand curve $p = a - bq,\ a, b > 0$, for its product, and it has constant marginal cost. A quantity tax at the rate t is imposed on the output.

i) How do the marginal cost, price and output change? [1+2+2]

ii) How does the Lerner Index of market power change? [3]

b) A two firm industry has the market demand curve $p = 12 - (q_1 + q_2)$, and the total cost function facing firm i is $C_i = 4q_i \ , i = 1, 2$

i) What will be the outputs and market price in a Cournot-Nash equilibrium?

ii) If firm 1 acts as the leader and firm 2 as the follower, what quantities will the two firms produce? What profits will they earn? [4+4]

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

a) i) Explain the notion of shut down point under perfect competition.

ii) With the help of sketches, show that the loss or the abnormal profit accruing to a competitive firm in the short-run is driven to zero by the free exit and free entry of the firms. [8+7]

b) A monopolist has the cost function $C = Q^2$ and faces a demand function $Q = 120 - P$.

i) What are the profit-maximising price and quantity?

ii) What is the consumer surplus? Monopoly profit?

iii) Now suppose the monopolist has to follow a marginal cost pricing policy. What is her price and output?

iv) How are consumer surplus and monopoly profit affected?

v) How will her output and price be affected if a quantity tax at the rate Rs.20 per unit is imposed? What will her post-tax profit be? [2+3+3+3+4]

c) i) Explain the first mover advantage using Stackelberg duopoly model. Is Stackelberg equilibrium a Nash equilibrium? [6+2]

ii) Examine the usefulness of the kinked demand curve model in explaining price rigidity in oligopoly. [7]

d) There are 20 identical firms, each with a cost function $C(q) = 0.5q^2 + 30q$. The inverse market demand is $p = 250 - Q$, where $Q = (q_1 + \ldots + q_{20})$. Suppose 10 of the firms receive a Rs 22 per-unit subsidy; call these the low-cost (l) firms. An l-type firm now has a cost function $C_l(q_l) = 0.5q_l^2 + 8q_l$. The remaining 10 firms who do not receive a subsidy are the high-cost (h) firms with the same cost function as before. Calculate the Nash equilibrium where all the l-type firms produce q_l^0 , and the type h firms produce q_h^0. Calculate the market equilibrium price, p^0.

Now consider two identical firms, A and B in a Cournot duopoly with constant average and marginal cost of 30 face the demand curve $P = 100 - (Q_A + Q_B)$.

i) If they form a cartel to maximize joint profits, how much quantity will each produce and what will each firm's profits be?

ii) Suppose Firm A abides by the agreement while Firm B cheats by increasing production. Determine the new output and profit levels for each firm.

iii) Find the range of interest rates for which Firm A is unable to punish Firm B in the following way: "If Firm B continues to stay at the production level that maximizes joint

industry profits, then Firm A abides by the agreement. But if Firm B produces more than this agreed amount, Firm A will continue to produce Cournot level of output forever." [6+(3+3+3)]

Group – B

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

   a) Consider an economy in the long run. How is the amount of output determined in the economy? How is the value of output distributed between the factors of production? [2+2]

   b) For an economy in the long run explain the effectiveness of fiscal policy. [4]

   c) In a Solow model, how does the rate of population growth affect the steady-state level of income? How does it affect the steady state of growth? [2+2]

   d) Distinguish between real and nominal interest rates. Discuss the Fisher effect. [2+2]

   e) Show that the Philips curve is nothing but an extended version of Aggregate supply curve. [4]

   f) What is money multiplier? What are the factors that may determine its value? Establish your argument.

   g) Briefly mention the major instruments of monetary control that are at a central bank's disposal.

5. Answer **any one** question: [1×8]

   a) Consider the production function $Y = K^{1/3}L^{2/3}$.

      i) What is the per worker production function?

      ii) Suppose there are two countries A and B. Assume that neither country experiences population growth or technical progress. Assume further that country A saves 10% of output each year and country B saves 20 % of output each year. Find the steady-state levels of income per worker and consumption per worker.

      iii) How much will their steady-state growth differ? [1+5+2]

   b) How do the Real Business Cycle theorists establish that the observed unemployment in the economy is entirely voluntary? [8]

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

   a) i) In the Solow growth model, explain how an increase in savings rate influences the steady-state levels of per capita capital, per capita output and equilibrium growth rate of the economy.

      ii) Explain, in brief, the notion of Golden Rule level of savings. [8+7]

   b) Briefly analyse the motives behind the demand for cash holding. What is logic of interest elastic transaction demand for money? Set up a simple model to establish that the transaction demand for money may be inversely related to interest rate and also there may be economics of scale in cash holding. Briefly examine the implications of your model. What is the role of 'integer constraint' in your model? [2+2+6+4+1]

   c) i) How can even small menu cost lead to price stickiness?

      ii) Explain how co-ordination failure may lead to recession. [7+8]

   d) i) What do you mean by Sacrifice ratio? What is the value of Sacrifice ratio in the long run?

      ii) What type of expectations generates a positive Sacrifice ratio in the short run? What happens if we use rational expectations instead? — Explain. [(2+1)+(2+10)

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