

ISLAMIC UNIVERSITY OF TECHNOLOGY (IUT)  
ORGANISATION OF ISLAMIC COOPERATION (OIC)

DEPARTMENT OF BUSINESS AND TECHNOLOGY MANAGEMENT

Semester Final Examination

Summer Semester, A. Y. 2021-2022

Course No. : BTM 4209

Time : 3 hours

Course Title : Micro Economics

Full Marks : 150

Answer all 6 (six) questions. All questions carry equal marks. Marks of each question and corresponding CO and PO are written in the right margin with brackets.

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- 1. a) Describe some of the trade-offs faced by each of the following: 5 (CO1)  
(PO1)
    - i. A family deciding whether to buy a new car,
    - ii. A member of Congress deciding how much to spend on national parks,
    - iii. A company president deciding whether to open a new factory,
    - iv. A professor deciding how much to prepare for class a recent college graduate deciding whether to go to graduate school
  - b) Suppose that in a year an American worker can produce 100 shirts, or 20 computers and a Chinese worker can produce 100 shirts or 10 computers. 20 (CO2)  
(PO2)
    - i. For each country, graph the production possibilities frontier. Suppose that without trade the workers in each country spend half their time producing each good. Identify this point in your graphs.
    - ii. If these countries were open to trade, which country would export shirts? Give a specific numerical example and show it on your graphs. Which country would benefit from trade? Explain.
    - iii. Explain at what price of computers (in terms of shirts) the two countries might trade.
    - iv. Suppose that China catches up with American productivity so that a Chinese worker can produce 100 shirts or 20 computers. What pattern of trade would you predict now? How does this advance in Chinese productivity affect the economic wellbeing of the two countries' citizens?
  - 2. a) What does the "invisible hand" of the marketplace do? 5 (CO1)  
(PO1)
  - b) Imagine a society that produces military goods and consumer goods, which we'll call "guns" and "butter." 20 (CO2)  
(PO2)
    - i. Draw a production possibilities frontier for guns and butter. Using the concept of opportunity cost, explain why it most likely has a bowed-out shape.
    - ii. Show a point that is impossible for the economy to achieve. Show a point that is feasible but inefficient.
    - iii. Imagine that the society has two political parties, called the Hawks (who want a strong military) and the Doves (who want a smaller military): Show a point on your production possibilities frontier that the Hawks might choose and a point that the Doves might choose.
    - iv. Imagine that an aggressive neighboring country reduces the size of its military. As a result, both the Hawks and the Doves reduce their desired production of guns by the same amount. Which party would get the bigger "peace dividend," measured by the increase in butter production? Explain.

3. a) Maya divides her income between coffee and croissants (both of which are normal goods). An early frost in Brazil causes a large increase in the price of coffee in the United States. 12 (CO1) (PO1)
- i. Show the effect of the frost on Maya's budget constraint.
  - ii. Show the effect of the frost on Maya's optimal consumption bundle assuming that the substitution effect outweighs the income effect for croissants.
  - iii. Show the effect of the frost on Maya's optimal consumption bundle assuming that the income effect outweighs the substitution effect for croissants.
- b) Anya is awake for 100 hours per week. Using one diagram, show Anya's budget constraints if she earns \$12 per hour, \$16 per hour, and \$20 per hour. Now draw indifference curves such that Anya's labor-supply curve is upward-sloping when the wage is between \$12 and \$16 per hour and backward-sloping when the wage is between \$16 and \$20 per hour. 8 (CO2) (PO2)
- c) Economist George Stigler once wrote that, according to consumer theory, "if consumers do not buy less of a commodity when their incomes rise, they will surely buy less when the price of the commodity rises." Explain this statement using the concepts of income and substitution effects. 5 (CO2) (PO2)
4. a) Assume the United States is an importer of televisions and there are no trade restrictions. U.S. consumers buy 1 million televisions per year, of which 400,000 are produced domestically and 600,000 are imported. 12 (CO2) (PO2)
- i. Suppose that a technological advance among Japanese television manufacturers causes the world price of televisions to fall by \$100. Draw a graph to show how this change affects the welfare of U.S. consumers and U.S. producers and how it affects total surplus in the United States.
  - ii. After the fall in price, consumers buy 1.2 million televisions, of which 200,000 are produced domestically and 1 million are imported. Calculate the change in consumer surplus, producer surplus, and total surplus from the price reduction.
  - iii. If the government responded by putting a \$100 tariff on imported televisions, what would this do? Calculate the revenue that would be raised and the deadweight loss. Would it be a good policy from the standpoint of U.S. welfare? Who might support the policy?
  - iv. Suppose that the fall in price is attributable not to technological advance but to a \$100 per television subsidy from the Japanese government to Japanese industry. How would this affect your analysis?
- b) Consider a small country that exports steel. Suppose that a "pro-trade" government decides to subsidize the export of steel by paying a certain amount for each ton sold abroad. How does this export subsidy affect the domestic price of steel, the quantity of steel produced, the quantity of steel consumed, and the quantity of steel exported? How does it affect consumer surplus, producer surplus, government revenue, and total surplus? Is it a good policy from the standpoint of economic efficiency? (Hint: The analysis of an export subsidy is similar to the analysis of a tariff.) 8 (CO2) (PO2)
- c) Draw the supply-and-demand diagram for an importing country. Identify consumer surplus and producer surplus before trade is allowed. Identify consumer surplus and producer surplus with free trade. What is the change in total surplus? 5 (CO1) (PO1)

5. a) Consider the market for fire extinguishers. 12 (CO1)  
(PO1)
- i. Why might fire extinguishers exhibit positive externalities?
  - ii. Draw a graph of the market for fire extinguishers, labeling the demand curve, the social-value curve, the supply curve, and the social-cost curve.
  - iii. Indicate the market equilibrium level of output and the efficient level of output. Give an intuitive explanation for why these quantities differ.
  - iv. If the external benefit is \$10 per extinguisher, describe a government policy that would yield the efficient outcome.
- b) Bruno loves playing rock 'n' roll music at high volume. Placido loves opera and hates rock 'n' roll. Unfortunately, they are next-door neighbors in an apartment building with paper-thin walls. 8 (CO1)  
(PO1)
- i. What is the externality here?
  - ii. What command-and-control policy might the landlord impose? Could such a policy lead to an inefficient outcome?
  - iii. Suppose the landlord lets the tenants do whatever they want. According to the Coase theorem, how might Bruno and Placido reach an efficient outcome on their own? What might prevent them from reaching an efficient outcome?
- c) Draw a supply-and-demand diagram to explain the effect of a negative externality that occurs as a result of a firm's production process. 5 (CO1)  
(PO1)
6. a) Suppose Honda's total cost of producing 4 cars is \$225,000 and its total cost of producing 5 cars is \$250,000. 8 (CO2)  
(PO2)
- i. What is the average total cost of producing 5 cars?
  - ii. What is the marginal cost of the fifth car?
  - iii. Draw the marginal-cost curve and the average-total-cost curve for a typical firm explain why these curves cross where they do.
- b) If Boeing produces 9 jets per month, its long-run total cost is \$9.0 million per month. If it produces 10 jets per month, its long-run total cost is \$9.5 million per month. Does Boeing exhibit economies or diseconomies of scale? 7 (CO2)  
(PO2)
- c) If Farmer Jones plants no seeds on her farm, she gets no harvest. If she plants 1 bag of seeds, she gets 3 bushels of wheat. If she plants 2 bags, she gets 5 bushels. If she plants 3 bags, she gets 6 bushels. A bag of seeds costs \$100, and seeds are her only cost. Use these data to graph the farmer's production function and total-cost curve. Explain their shapes. 5 (CO2)  
(PO2)
- d) Farmer McDonald gives banjo lessons for \$20 an hour. One day, he spends 10 hours planting \$100 worth of seeds on his farm. What opportunity cost has he incurred? What cost would his accountant measure? If these seeds yield \$200 worth of crops, does McDonald earn an accounting profit? Does he earn an economic profit? 5 (CO2)  
(PO2)