

**QUEEN'S UNIVERSITY FINAL EXAMINATION**  
**FACULTY OF ARTS AND SCIENCE**  
**DEPARTMENT OF ECONOMICS**

Econ 110 – Barber

Econ 111 - Berkok

December 13th, 2024

**INSTRUCTIONS TO STUDENTS:**

This examination is 3 HOURS in length.

There are 2 sections to this examination.

Please answer all questions on the exam paper

**The following aids are allowed:**

Casio FX-991 calculator

**GOOD LUCK!**

**PLEASE NOTE:**

**Proctors are unable to respond to queries about the interpretation of exam questions.**

**Do your best to answer exam questions as written.**

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PG 2 of 18

First name (please write as legibly as possible within the boxes)

Last name

Student ID number

Please circle the class you are in:

ECON 110 (Instructor - Barber)

ECON 111 (Instructor - Berkok)

**Question A.1: Externalities (16 Marks Total)**

1. Sports Utility Vehicles (SUVs) have several externalities. For example, they get fewer kilometers per litre of gas, they cause significant wear and tear on roads, and they are much more likely to cause considerable injury when involved in an accident.
  - (a) Assume the market for SUVs is perfectly competitive. Draw a carefully labeled diagram of the market for SUVs, including both the private and social curves. Is the amount of SUVs produced in the private market maximizing efficiency? Carefully explain, and draw consumer and producer surplus, as well as any deadweight loss on your diagram. **8 marks**

- (b) What are two ways for the government to intervene and ensure the market is efficient? Discuss and draw a diagram of both a price-based government intervention as well as a quantity-based government intervention. How should the government choose between these policies? **8 marks**

**Question A.2: Taco Restaurants (18 Marks Total)**

2. Imagine the market for taco restaurants in Kingston, Ontario is a monopolistic competitive market, with no barriers to entry. Firms face the usual "u-shaped" cost curves.
- (a) Draw a carefully labeled diagram of a typical firm in this market if it was in long-run equilibrium. What would happen in the short run if tariffs on Mexican imports meant that the cost of ingredients increased substantially? Carefully show this on your diagram. What happens to prices and quantity for a firm in this market? **6 marks**

- (b) What would happen to this market in the long run? Carefully describe the process. Is this market efficient at long-run equilibrium? Carefully explain, including a diagram showing consumer surplus, and any deadweight loss in this market. **6 marks**

- (c) Imagine the market is again at long-run equilibrium. What would happen in the short run if rent paid by restaurants increased significantly? Carefully show this on your diagram including a discussion of any differences in the effects between what happened in (a) and what is happening in this question. **6 marks**

**Question A.3: Game Theory (16 Marks Total)**

3. Suppose Canada and the United States are both interested in regulating air pollution, and the decisions by one country influence the outcomes in the other country. Suppose there are three levels of regulation: strong (S), medium (M) and weak (W).

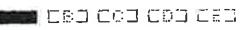
(a) Below is a payoff matrix (assume higher numbers represent stronger economies). Find the Nash equilibrium in the below game, and explain why it is a Nash equilibrium. What is the cooperative outcome that maximizes joint payoffs? Why is this not a Nash equilibrium? **8 marks**

		United States			
		W	M	S	
Canada		W	(6, 6)	(8, 4)	(9, 2)
		M	(4, 8)	(7, 7)	(8, 5)
		S	(2, 9)	(5, 8)	(6, 6)

- (b) In a sequential game where the United States makes the first move, and then Canada responds, what would be the Nash equilibrium? Draw a game tree for this two-period sequential game and solve for the Nash equilibrium. **8 marks**

Name: \_\_\_\_\_

Student ID Number: \_\_\_\_\_

**Instructions:**Please completely fill in the rectangle associated with your response. Example: 

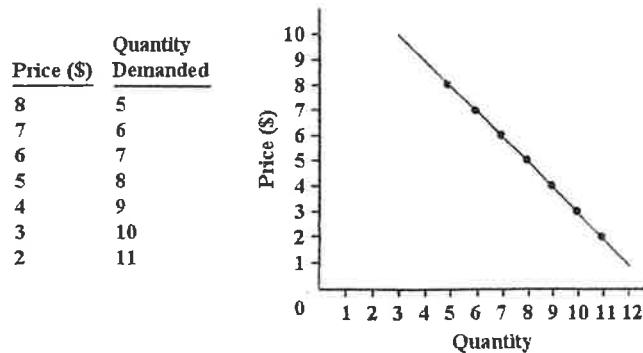
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15	CAD CBD CDD CDD CED	40	CAD CBD CDD CDD CED	65	CAD CBD CDD CDD CED	90	CAD CBD CDD CDD CED	115	CAD CBD CDD CDD CED										
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17	CAD CBD CDD CDD CED	42	CAD CBD CDD CDD CED	67	CAD CBD CDD CDD CED	92	CAD CBD CDD CDD CED	117	CAD CBD CDD CDD CED										
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**PART B: Multiple Choice** Answer the following multiple-choice questions (2 mark each). Indicate your answers in the Crowdmark sheet provided with your short-answer.

1. a firm produces a good and its consumption generates external benefits, then at the competitive market equilibrium
  - (a) the marginal social benefit is less than the marginal cost of producing the last unit.
  - (b) the firm will not produce an additional amount if it can internalize the external benefits.
  - (c) the output would be more than the socially optimal amount.
  - (d) the government could subsidize the production of this good to improve efficiency.
  - (e) the marginal private benefit is greater than the marginal cost of producing the last unit.
2. Consider a profit-maximizing single-price monopolist that faces a linear demand curve. The firm sets price where the price elasticity of demand is
  - (a) less than one.
  - (b) greater than one.
  - (c) zero.
  - (d) one.
  - (e) infinite.
3. Refer to the figure below. Suppose this single-price monopolist is initially selling 5 units at \$8 each and then reduces the price of the product to \$6. By making this change, the discount effect is \_\_\_\_\_ and the output effect is \_\_\_\_\_. Its marginal revenue between these quantities is therefore \_\_\_\_\_. (All figures are dollars.)

*The figure below shows the demand schedule and demand curve for a product produced by a single-price monopolist.*



- (a) 14; 14; 0
- (b) 38; 40; 2
- (c) 10; 12; 2
- (d) 5; 7; -2
- (e) 8; 6; 2

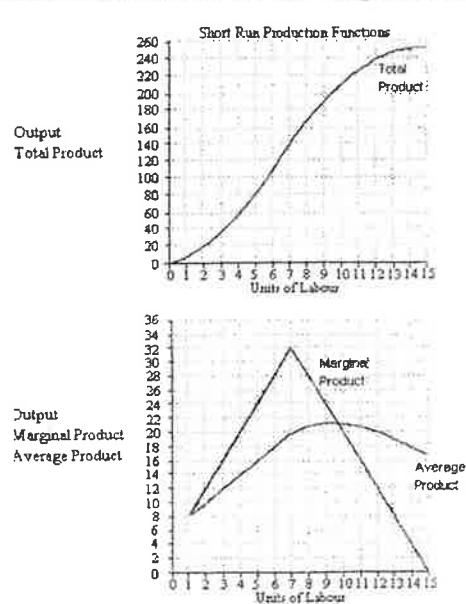
4. Suppose the government has imposed a price ceiling on laptop computers. Which of the following events could transform the price ceiling from one that is not binding into one that is binding?
- (a) Improvements in production technology reduce the costs of producing laptop computers.
  - (b) The number of firms selling laptop computers decreases.
  - (c) The number of consumers increases.
  - (d) Consumers' income decreases, and laptop computers are a normal good.
  - (e) The number of consumers buying laptop computers decreases.
5. Holding all else constant, an increase in the price of hot dogs would cause the:
- (a) marginal revenue curve in the market for hot dog buns to increase.
  - (b) marginal revenue curve in the market for hot dogs to decrease.
  - (c) average total cost curve in the market for hot dog buns to increase.
  - (d) profits in the market for hot dog buns to increase.
  - (e) marginal revenue curve in the market for hot dog buns to decrease.
6. Breaking up a company that has a natural monopoly would:
- (a) result in higher production costs.
  - (b) result in lower production costs.
  - (c) benefit society.
  - (d) result in lower prices for consumers.
  - (e) increase government tax revenue.
7. If you were told that a firm earns positive accounting profit and nothing else, what would you know is true about its economic profit?
- (a) It is positive because whenever accounting profit is positive, so is economic profit.
  - (b) It cannot be determined without knowing the firms implicit costs.
  - (c) It is zero because all firms earn zero economic profit regardless of the industry.
  - (d) It is equal to its accounting profit.
  - (e) It is negative because its accounting profit is probably not high enough to earn positive economic profit.
8. Which is NOT an example of price discrimination through the hurdle method?
- (a) All senior citizens are eligible to receive a 10% discount.
  - (b) Those who present a manufacturer's coupon get \$5 off the price.
  - (c) Those who are willing to wait for periodic sales get lower prices.
  - (d) Slightly different product versions are available at different prices.
  - (e) All of the above are examples of the hurdle method.

9. Cassie runs a door-to-door window-washing service. When she identifies that some of her current customers are high-income customers to whom she can profitably raise prices, she does so while keeping the price for her other customers unchanged. Some of her existing consumers, now paying the higher price, stop enlisting her services or use them more sparingly, while others continue to use her services as before but at the higher price. Her remaining customers continue to use Cassie's services in the same quantity at the pre-existing price. In terms of economic surplus, who wins and who loses in this scenario?
- (a) Existing customers who pay a higher price lose, existing customers who pay the same price neither win nor lose, and Cassie's company wins.
  - (b) Existing customers who pay a higher price win, existing customers who pay the same price lose, and Cassie's company wins.
  - (c) Existing customers neither win nor lose, new customers win, and Cassie's company wins.
  - (d) Existing customers lose, new customers win, and Cassie's company wins.
  - (e) No one wins or loses.
10. Consider the market for online video streaming services (Netflix, Apple TV, Amazon Prime, HULU, to name a few). Which statement would cause the equilibrium price of online streaming services to rise with certainty?
- (a) an increase in both demand and supply
  - (b) a decrease in both demand and supply
  - (c) an increase in demand combined with a decrease in supply
  - (d) a decrease in demand combined with an increase in supply
  - (e) None of the above.
11. The demand for frozen burritos is very inelastic compared to the supply of frozen burritos, so if a tax is imposed on consumers of frozen burritos, the tax incidence:
- (a) will fall on consumers more than producers.
  - (b) will fall on producers more than consumers.
  - (c) will fall equally on consumers and producers.
  - (d) will only fall on the producers.
  - (e) cannot be determined without more information.
12. Consider a remote village with a limited, freely available water supply and no government intervention in the allocation of water. Economic theory predicts that the water will be
- (a) overexploited because users will tend to use the water until the marginal cost of providing the water is zero.
  - (b) located efficiently because users will tend to use the water until marginal cost and marginal benefit are both equal to zero.
  - (c) allocated efficiently because users will tend to use the water as though it were a public good.
  - (d) overexploited because users will tend to use the water until their marginal benefit is zero.
  - (e) allocated efficiently because users will tend to use the water until the supply and demand are in equilibrium.

13. Suppose that the market for cab rides is initially in long-run equilibrium. Subsequently, an increase in population increases the demand for cab rides. In the long run, cab drivers will \_\_\_\_\_ the market, driving the price of cab rides \_\_\_\_\_ and the economic profit of individual drivers \_\_\_\_\_.
- (a) enter; up; back to zero
  - (b) enter; down; back to zero
  - (c) enter; down; are positive.
  - (d) leave; up; up
  - (e) leave; up; back to zero
14. A government uses taxes to build and maintain a museum, and citizens can visit the museum without paying an admission fee. Which consideration implies that visiting a museum is NOT a public good?
- (a) Although admittance is nonexcludable, it is rival because other museums are vying for consumers to visit them instead.
  - (b) Visiting a museum is both nonexcludable and nonrival, which means it is not a public good.
  - (c) Visiting a museum is both excludable and rival, which means it is not a public good.
  - (d) Although enjoying the exhibits might be nonrival, the experience is excludable because admittance could easily be limited to those who pay.
  - (e) All of the above.
15. In a perfectly competitive market, a company's marginal revenue equals \_\_\_\_\_. For a company with market power, marginal revenue is \_\_\_\_\_.
- (a) price; price
  - (b) price; less than price
  - (c) price; greater than price
  - (d) marginal cost; greater than marginal cost
  - (e) marginal cost; less than marginal cost
16. Three carriers account for 90% of wireless subscriptions in Canada: Bell, Rogers, and Telus. Rogers' market share in this market is 33%. The cell phone carrier market structure is \_\_\_\_\_, a form of \_\_\_\_\_. Rogers' firm demand curve is relatively \_\_\_\_\_.
- (a) oligopoly; imperfect competition; elastic
  - (b) oligopoly; imperfect competition; inelastic
  - (c) monopolistic competition; imperfect competition; elastic
  - (d) oligopoly; perfect competition; elastic
  - (e) monopoly; perfect competition; inelastic
17. Suppose a firm is producing 250 units of output. At this level of output, average fixed costs are \$20 per unit and average variable costs are \$80 per unit. It can be concluded that total cost is
- (a) \$100.
  - (b) \$25 000.
  - (c) \$0.40 per unit.
  - (d) \$2500.
  - (e) \$40 per unit.

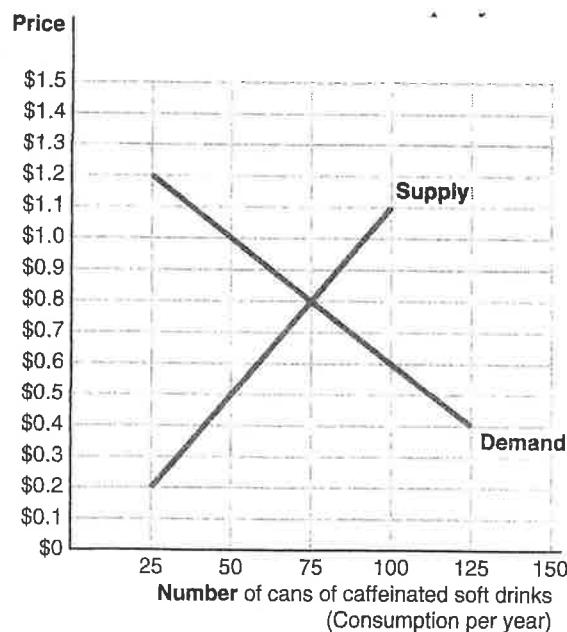
18. Suppose a production process confers benefits to third parties not involved in the transaction. In this case,
- marginal social benefit is less than marginal private benefit.
  - without government intervention the market will produce too much of this good.
  - a per unit tax could be imposed on the producer to achieve the socially optimal level of production.
  - marginal social cost is more than marginal private cost.
  - a subsidy to producers could increase production to the socially optimal level.

19. Refer to the figure above below. Marginal product is decreasing at a decreasing rate



- from 0 to 32 units of output.
- from 0 to 140 units of output.
- for all levels of output.
- between 140 and 200 units of output.
- between 200 and 250 units of output.

20. The government wants to reduce caffeine consumption among children, who mainly consume caffeine in the form of soft drinks. Suppose the government seeks to cut the average number of caffeinated soft drinks consumed per year to 50.



Given the market for soft drinks depicted in the accompanying diagram, the government can achieve its goal through:

- (a) a tax of \$1 per can.
  - (b) a price floor \$0.50.
  - (c) a price ceiling \$0.50.
  - (d) a subsidy of \$0.50 a can.
  - (e) none of the above.
21. TrustedHousesitters.com links pet owners and pet sitters. Pet owners who wish to go on a trip but can't bring their pets with them can hire a pet sitter whose profile is available on the TrustedHousesitters website. In exchange for room and board and the opportunity to live in a different place for a time, the individual hired takes responsibility for a pet. Suppose there were an upstart competing service, say, PetSitters.com, that was trying to take market share from TrustedHousesitters.com. What problem might PetSitters.com encounter?
- (a) There's no real consumer demand for these types of apps, so PetSitters.com will have difficulty becoming viable.
  - (b) TrustedHousesitters.com is valuable because it already has a large base of subscribers, whereas PetSitters.com, lacking many subscribers, will be at a competitive disadvantage from the start.
  - (c) The technology that links people involved in transactions of this type is very advanced and so probably not replicable.
  - (d) Barriers to entry in the form of massive capital infrastructure would make it very difficult for any company to compete with TrustedHousesitter.com.
  - (e) All of the above.

22. Beatrice loves to work in her magnolia garden, which provides pleasure to everyone in her neighborhood. To improve social welfare, the government could \_\_\_\_\_ Beatrice's gardening activities, since the market quantity of magnolias is \_\_\_\_\_ than the socially optimal quantity.
- (a) subsidize; greater
  - (b) tax; less
  - (c) subsidize; less
  - (d) tax; greater
  - (e) none of the above
23. Some economists assert that homeownership creates more community stability and higher property values than renting. The federal government sponsors special mortgage programs to subsidize first-time homebuyers because homeownership generates a \_\_\_\_\_ externality for the community that is typically \_\_\_\_\_ by the free market.
- (a) positive; underprovided
  - (b) positive; overprovided
  - (c) negative; underprovided
  - (d) negative; overprovided
  - (e) none of the above.
24. Suppose the government levies a \$6 per month tax on cell phone usage. If the demand for cell phone service is relatively (but not perfectly) inelastic, and the supply is relatively (but not perfectly) elastic, then the price of cell phone usage paid by consumers will:
- (a) increase by more than \$6.
  - (b) increase by exactly \$6.
  - (c) increase by less than \$6.
  - (d) remain constant.
  - (e) none of the above.
25. My favourite holiday movie is:
- (a) Die Hard
  - (b) Die Hard
  - (c) Die Hard
  - (d) Die Hard
  - (e) Die Hard

