2. The table shows Protecto's short-run cost schedule of producing helmets.

Quantity of Helmets	Total Cost ($)	Marginal Cost ($)
4	200	30
5	235	35
6	275	40
7	320	45
8	375	55
9	440	65
10	520	80

Protecto produces and sells as many helmets as it wants at a market price of $60 each, and Protecto's fixed cost is $80.

Part A

Identify the market structure in which Protecto sells helmets.

Part B

Calculate Protecto's average variable cost when it produces 4 helmets. Show your work.

Part C

Calculate Protecto's economic profit when it sells 5 helmets. Show your work.

Part D

Identify Protecto's profit-maximizing quantity of helmets. Explain your answer using marginal analysis and numbers.

Part E

Protecto is earning positive economic profit in the short run. As the market for helmets adjusts to long-run equilibrium, will the market price of helmets increase, decrease, or remain the same? Explain.

1. Deskward is a typical profit-maximizing firm that produces and sells wooden desks in a constant-cost, perfectly competitive market that is in long-run equilibrium.

A. Draw correctly labeled side-by-side graphs for the wooden desk market and for Deskward and show each of the following.

i. The market equilibrium price and quantity, labeled P_M and Q_M, respectively

ii. Deskward's profit-maximizing price and quantity, labeled P_F and Q_F, respectively

iii. Deskward's average total cost curve consistent with long-run equilibrium, labeled ATC

B. If the monthly rent, a fixed cost, on Deskward's factory building increases, what will happen to the firm's profit-maximizing quantity in the short run? Explain.

C. Suppose the government is considering granting a per-unit subsidy to producers of wooden desks. On your market graph in part A, show the short-run effect of a per-unit subsidy on each of the following.

i. The new market equilibrium price and quantity of wooden desks, labeled P* and Q*, respectively

ii. The area representing the total cost of the subsidy to the government, shaded completely

D. Instead of the per-unit subsidy, suppose the government imposes a binding price floor in the market for wooden desks. Will the price floor result in a shortage of wooden desks, a surplus of wooden desks, or neither? Explain.

E. Deskward also produces chairs. Deskward increases its production from 500 chairs to 600 chairs, and its long-run total cost increases from $80,000 to $108,000.

i. Calculate Deskward's long-run average total cost of producing 500 chairs. Show your work.

ii. As Deskward increases production from 500 chairs to 600 chairs, is Deskward experiencing economies of scale, diseconomies of scale, or the efficient scale? Explain using numbers.

1. Soja Farm is a typical profit-maximizing firm that produces and sells soybeans in a constant-cost, perfectly competitive market that is in long-run equilibrium. The market equilibrium price of soybeans is $14 per bushel.

(a) Draw correctly labeled side-by-side graphs for the soybean market and for Soja Farm, and show each of the following.

(i) The market equilibrium price and quantity, labeled $14 and Q_M, respectively
(ii) Soja Farm's profit-maximizing price and quantity, labeled P_F and Q_F, respectively
(iii) Soja Farm's average total cost curve consistent with a long-run equilibrium, labeled ATC

(b) If Soja Farm is the only firm in the market that chooses to increase its price of soybeans to $15 per bushel, will Soja Farm's total revenue increase by $1, remain the same, or decrease to $0 ? Explain.

(c) Soybeans are used as an input in the production of tofu. Tofu now becomes a more popular food option among consumers. On your graphs in part (a), show the short-run effect of the increased popularity of tofu on each of the following.

(i) The new market equilibrium price and quantity of soybeans, labeled P_2 and Q_2, respectively
(ii) Soja Farm's new profit-maximizing quantity, labeled Q*

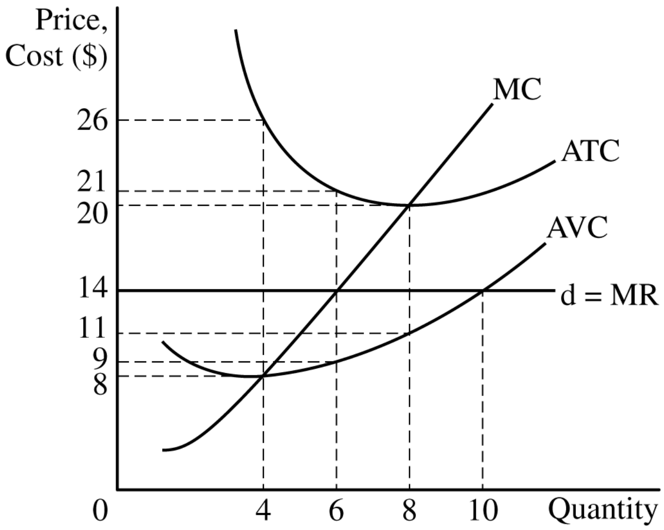
(d) Given the increase in popularity of tofu in part (c), what will happen to the number of firms in the soybean market in the long run? Explain.

(e) Suppose a 25% increase in the market price of quinoa causes a 5% decrease in the quantity demanded of quinoa and a 10% increase in the quantity demanded for tofu.

(i) Is the demand for quinoa elastic, inelastic, or unit elastic? Explain using numbers.
(ii) Calculate the cross-price elasticity of demand between quinoa and tofu. Show your work.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

3. The graph provided shows the demand (d), marginal revenue (MR), average total cost (ATC), average variable cost (AVC), and marginal cost (MC) curves for Hansel Hangout, a typical profit-maximizing firm in a perfectly competitive market producing Good X.



(a) Calculate Hansel Hangout's total fixed cost. Show your work.

(b) Identify the price and Hansel Hangout's profit-maximizing quantity of Good X.

(c) Calculate Hansel Hangout's economic profit at the quantity identified in part (b). Show your work.

(d) As the market for Good X adjusts to the long-run equilibrium, what will happen to the price of Good X? Explain.

(e) Assume the cross-price elasticity of demand between Good X and Good C is positive. Given the change in the long-run price of Good X in part (d), will the quantity demanded of Good C increase, decrease, or remain the same? Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

STOP

END OF EXAM

1. Anderson Company is a typical firm that manufactures Good G in a constant-cost, perfectly competitive market. Anderson Company is currently earning positive economic profit.

(a) What must be true about the relationship between accounting profit and economic profit if Anderson Company currently incurs both explicit and implicit costs in production?

(b) Draw correctly labeled side-by-side graphs for the market and Anderson Company and show each of the following.

(i) The market equilibrium price and quantity, labeled P_M and Q_M, respectively
(ii) The profit-maximizing price and quantity for Anderson Company, labeled P_F and Q_F, respectively
(iii) The area representing Anderson Company's positive economic profit, shaded completely

(c) On your graphs in part (b), show what will happen to each of the following if the market for Good G adjusts to long-run equilibrium.

(i) The market equilibrium price and quantity, labeled P_2 and Q_2, respectively
(ii) Anderson Company's profit-maximizing price and quantity, labeled P* and Q*, respectively

(d) Assume the production of Good G creates benefits for third parties.

(i) Given this situation, will the market equilibrium quantity be greater than, less than, or equal to the allocatively efficient quantity? Explain.
(ii) The government takes an action that corrects the externality in the market for Good G. As a result of the government's action, does total economic surplus increase, decrease, or stay the same? Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

1. Sugar is produced in a perfectly competitive market using inputs from perfectly competitive factor markets. Frank Sugar Co. is a representative firm in the sugar market.

(a) Assume Frank Sugar Co. is earning zero economic profit. Draw correctly labeled side-by-side graphs for the sugar market and Frank Sugar Co. and show each of the following.

(i) The market equilibrium price and quantity, labeled P_M and Q_M, respectively
(ii) The profit-maximizing price and quantity for Frank Sugar Co., labeled P_F and Q_F, respectively

(b) Assume the demand for sugar increases and sugar is produced in a constant-cost industry.

(i) On your graph in part (a), show the short-run effect of the increased demand for sugar on the market price, labeled P_2, and the quantity sold by Frank Sugar Co., labeled Q_N.
(ii) Compared to the equilibrium identified in part (a)(ii), what will happen to the short-run profit earned by Frank Sugar Co. as a result of the increased demand for sugar?
(iii) When the market adjusts to long-run equilibrium, how will the market price of sugar in the long run compare to P_2 ? Explain.

(c) Instead, assume sugar consumption has a negative impact on public health over time and the negative impact of sugar on health is underestimated by consumers. Draw a correctly labeled graph of the market, with the marginal social benefit (MSB), marginal private benefit (MPB), marginal social cost (MSC), and marginal private cost (MPC) curves, and show each of the following.

(i) The market equilibrium quantity, labeled Q_M
(ii) The socially optimal quantity, labeled Q_S

(d) Assume the government decides to intervene in the market to affect consumers' incentives and to address the negative impact of sugar consumption on public health. Which of the following policies would best achieve that objective in the short run: a lump-sum tax, a per-unit tax, a lump-sum subsidy, or a per-unit subsidy? Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

1. The government of an island nation grants SkyRunner Airlines exclusive monopoly rights to serve the island. SkyRunner is earning positive economic profits.

(a) Draw a correctly labeled graph for SkyRunner, and show each of the following.

(i) The profit-maximizing quantity of tickets, labeled Q_M
(ii) The profit-maximizing price of a ticket, labeled P_M
(iii) The area representing profits, shaded completely

Now the island's tourist bureau asks the government to consider the following two proposals.

- Proposal I: Set a price ceiling on tickets that eliminates all deadweight loss.
- Proposal II: Eliminate SkyRunner's monopoly rights, which will remove all barriers to entry.

(b) Suppose the government adopts proposal I. On your graph in part (a), indicate the quantity of tickets sold in the short run, labeled Q_C.

(c) Suppose instead the government adopts proposal II. How will each of the following be affected in the long run compared to the market conditions in part (a) ?

(i) The quantity of tickets sold by SkyRunner. Explain.
(ii) The price elasticity of demand for SkyRunner's airline service. Explain.
(iii) SkyRunner's profits
(iv) The deadweight loss in the market. Explain.

Begin your response to this question at the top of a new page in the separate Free Response booklet and fill in the appropriate circle at the top of each page to indicate the question number.

MICROECONOMICS
Section II
Total Time—60 minutes
Reading Period—10 minutes
Writing Period—50 minutes

Directions: You are advised to spend the first 10 minutes reading all of the questions and planning your answers. You will then have 50 minutes to answer all three of the following questions. You may begin writing your responses before the reading period is over. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. Use a pen with black or dark blue ink.

1. Corn is used as food and as an input in the production of ethanol, an alternative fuel. Assume corn is produced in a perfectly competitive market.

    (a) Draw correctly labeled side-by-side graphs for the corn market and a representative corn farmer. On your graphs show each of the following.

    (i) The equilibrium price and quantity in the corn market, labeled P_M and Q_M, respectively

    (ii) The profit-maximizing quantity of corn produced by the representative farmer earning zero economic profit, labeled Q_F

    (b) Assume the demand for ethanol increases. On your graphs in part (a) show what will happen to each of the following in the short run.

    (i) The market price and quantity of corn, labeled P^* and Q^*

    (ii) The area of the profit or loss earned by the representative corn farmer, shaded completely

    (c) Relative to your answer in part (b), state what will happen to the market equilibrium price and quantity of corn in the long run. Explain.

    (d) Soybeans are produced in a perfectly competitive market. Assume farmers can grow either corn or soybeans on the same land. What happens to the price of soybeans in the next planting season if the price of corn increases? Explain.

    (e) Assume instead that the government sets a binding price ceiling in the corn market. Draw a new correctly labeled graph for the corn market and show each of the following.

    (i) The binding price ceiling, labeled P_c

    (ii) The quantity purchased by consumers in the corn market, labeled Q_p

MICROECONOMICS
Section II
Planning time—10 minutes
Writing time—50 minutes

Directions: You have 10 minutes to read all of the questions in this booklet, to sketch graphs, to make notes, and to plan your answers. You will then have 50 minutes to answer all three of the following questions. It is suggested that you spend approximately half your time on the first question and divide the remaining time equally between the next two questions. Include correctly labeled diagrams, if useful or required, in explaining your answers. A correctly labeled diagram must have all axes and curves clearly labeled and must show directional changes. Use a pen with black or dark blue ink.

1. A typical profit-maximizing firm in a perfectly competitive constant-cost industry is earning a positive economic profit.

   (a) Is the market price greater than, less than, or equal to the firm's price? Explain.

   (b) Draw correctly labeled side-by-side graphs for both the market and a typical firm and show each of the following.

      (i) Market price and quantity, labeled P_m and Q_m

      (ii) The firm's quantity, labeled Q_f

      (iii) The firm's average revenue curve, labeled AR

      (iv) The firm's average total cost curve, labeled ATC

      (v) The area representing total cost, shaded completely

   (c) If one firm in the market were to raise its price, what will happen to its total revenue? Explain.

   (d) Now suppose the market is in long-run equilibrium. The government gives a lump-sum subsidy to each firm producing in the industry. Indicate whether each of the following will increase, decrease, or remain the same.

      (i) The firm's quantity in the short run. Explain.

      (ii) The market price and quantity in the long run. Explain.