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

ECON 111 – Professor: Kaveh Sanjabi Malayeri
July 31, 2024

INSTRUCTIONS TO STUDENTS:

This examination is 3 HOURS in length.

There are 2 sections to this examination. Section A consists of multiple-choice questions. You should answer all 40 of them. Each question is worth 1.5 mark for a total of 60 marks. Section B consists of a long question with multiple parts for a total of 40 marks. You should answer all parts of the long question. Marks will be awarded on the basis of the logical arguments given to support your answers.

Please record multiple choice answers on the provided scantron, and long answers in the distributed answer booklets.

Put your student number on all pages of all answer booklets, including the front.

The following aids are allowed:

Casio 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.

Part A Multiple Choice Questions (60 Points)

Question 1 (1.5 points)
Which of the following statements provides the best definition of *economics*?
A) The study of the most equitable distribution of scarce resources.
B) The study of the use of scarce resources to satisfy unlimited human wants.
C) The study of the production of goods and services.
D) The study of the productive capacity of a nation's factors of production.
E) The study of production and increasing its efficiency.

Question 2 (1.5 points)
2) A positive statement is one that states
A) what is, was, or will be.
B) what is and what should be.
C) what should be but is not.
D) what is desirable.
E) non-negative numbers.

Question 3 (1.5 points)
Choose the statement that best describes how endogenous variables differ from exogenous variables.
A) An endogenous variable is a flow, while an exogenous variable is a stock.
B) An endogenous variable is explained outside the theory and influences an exogenous variable while an exogenous variable is explained within the theory.
C) An exogenous variable is a function of the endogenous variable, and both are flow variables.
D) An endogenous variable is a function of the exogenous variable, and both are stock variables.
E) An endogenous variable is explained within the theory, while an exogenous variable influences the endogenous variables but is determined outside the theory.

Question 4 (1.5 points)
The increases in a nation's output and consumption that result from specialization and trade are called
A) the terms of trade.
B) the gains from trade.
C) autarky.
D) absolute advantage.
E) comparative advantage.

Question 5 (1.5 points)
The following production possibilities schedule shows the quantities of wheat and barley that can each be produced in Canada and India with one unit of equivalent resources.

	Wheat (bushels)	**Barley (bushels)**
Canada	13	5
India	6	13

Refer to the table. If Canada were to transfer one unit of resources from barley to wheat production and if one unit of Indian resources were switched from wheat to barley production,
A) *total* wheat production would increase by 7 bushels.
B) *total* barley production would increase by 18 bushels.
C) *total* wheat production would decrease by 13 bushels.
D) *total* barley output would decrease by 8 bushels.
E) both *total* wheat and *total* barley production would increase by 7 bushels.

Question 6 (1.5 points)
Consider the following equations for the demand for good A, where Q_A denotes quantity demanded, P_A denotes price, and M denotes income:
1. $Q_A = 120 + 3.5\ P_A + 14M$
2. $Q_A = 120 - 3.5\ P_A + 14M$
3. $Q_A = 120 - 3.5\ P_A - 14M$
Which of these equations represents a downward-sloping demand curve for an inferior good?
A) 1 only
B) 2 only
C) 3 only
D) 1 and 2
E) none of the equations

Question 7 (1.5 points)
The positive slope of a supply curve indicates that
A) as price goes up, quantity supplied will decrease.
B) consumers will want to buy less at higher prices.
C) as price goes up, quantity supplied will increase.
D) if the costs of production increase, the quantity supplied will increase.
E) as price goes up, quantity supplied will remain constant.

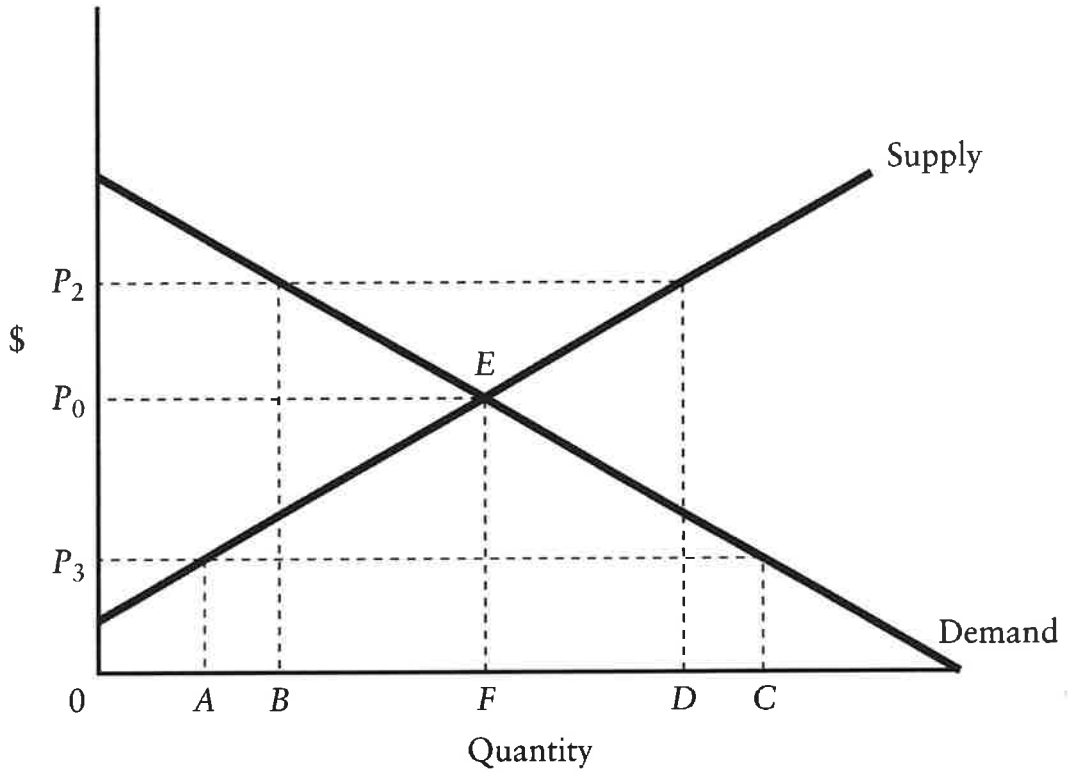
Question 8 (1.5 points)
Consider two linear, downward-sloping demand curves, A and B, that intersect each other at point X with positive price and quantity. Demand curve A is steeper than demand curve B. We can conclude that
A) curve A is less elastic than curve B at any point.
B) curve B is less elastic than curve A at any point.
C) curve A is less elastic than curve B at point X.
D) curve A is less elastic than curve B at any price above point X.
E) curve B is less elastic than curve A at any price above point X.

Question 9 (1.5 points)
If the demand for a product has an income elasticity of -3.4, we can conclude that
A) an increase in income will lead to an increase in demand for the product.
B) the product is certainly a necessity.
C) the product is a normal good.
D) the product has a rising income-consumption curve.
E) a decrease in income will lead to an increase in demand for the product.

Question 10 (1.5 points)
In the presence of binding rent controls, the shortage of housing is smaller
A) the higher is the elasticity of demand for housing.
B) the lower is the elasticity of supply of housing.
C) the longer is the length of time the rent controls are in place.
D) the greater is the difference between the equilibrium price and the rent-controlled price.
E) the more elastic is the long-run supply of housing.

Question 11 (1.5 points)
Which of the explanations below best describes why a government might choose to impose binding rent controls?
A) To prevent landlords from making excess profits and to protect low-income tenants from increases in the cost of housing.
B) To prevent landlords from making excess profits and to reduce the long-term quantity of rental housing.
C) To increase the demand for rental housing and to discourage private ownership of low-cost rental housing developments.
D) To stabilize volatile rents, and thus to make the investment climate less uncertain for prospective investors in this sector.
E) To stimulate employment in the construction industry through the increased demand for new houses.

Question 12 (1.5 points)
Refer to the following Figure



Caption: The diagram shows demand and supply in a market for rental housing.

If the diagram applies to the market for rental housing and $P3$ represents the maximum rent that can be charged, then
A) there will be an excess supply of rental units equal to BD.
B) units supplied will be reduced relative to the competitive equilibrium by AF rental units.
C) windfall profits will be earned by landlords.
D) there will be excess demand for rental units equal to FC.
E) there will be excess demand for rental units equal to AF.

Question 13 (1.5 points)
The table below shows the quantities of good X a consumer could consume over a 1-week period.

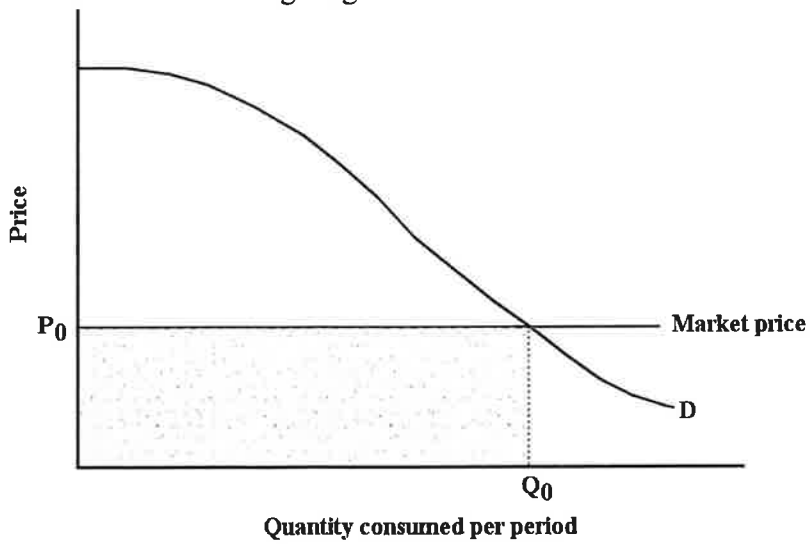
Units	TOTAL Utility of X
0	–
1	31
2	56
3	75
4	91
5	104
6	115
7	123
8	129

Refer to the Table. If this consumer buys 5 units of X per week, the marginal utility of the 5th unit will be
A) 0.
B) 5.
C) 13.
D) 91.
E) 104.

Question 14 (1.5 points)
The condition required for a consumer to be maximizing utility, for any pair of products, X and Y, is
A) $P_X(MU_X) = P_Y(MU_Y)$.
B) $MU_X = MU_Y$.
C) $MU_X/P_X = MU_Y/P_Y$.
D) $MU_X/P_Y = MU_Y/P_X$.
E) $P_X = P_Y$.

Question 15 (1.5 points)
The substitution effect of a price change leads consumers to _____ their demand for goods whose prices have risen. The income effect leads consumers to buy less of all _____ goods whose prices have risen.
A) reduce; normal
B) increase; inferior
C) increase; normal
D) reduce; Giffen
E) reduce; complement

Question 16 (1.5 points)
Consider the following diagram



Caption: the diagram shows the demand curve and price levels in a market.

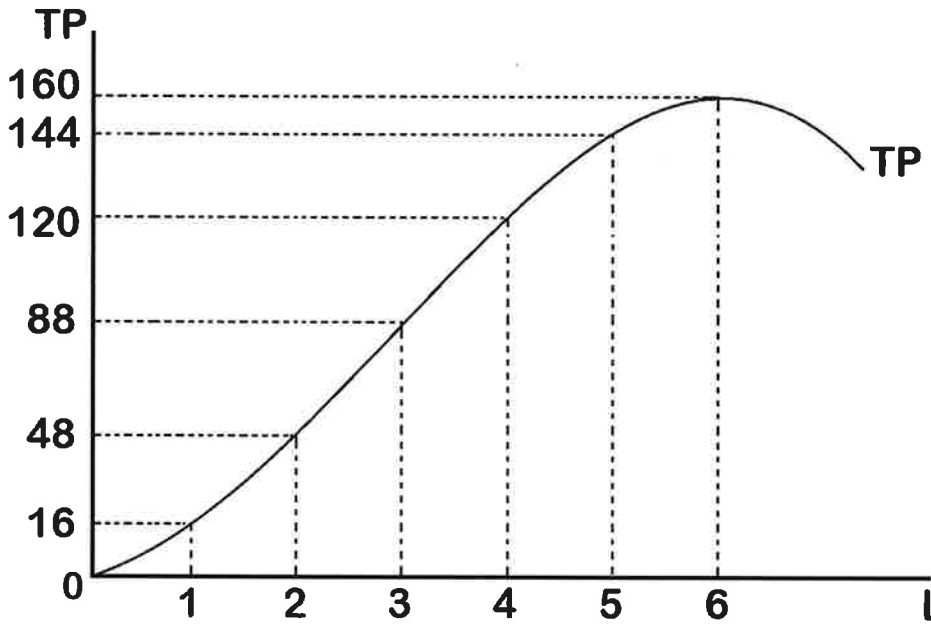
Suppose that price is P_0. The total value placed on all units of the commodity consumed is given by the area
A) under the demand curve to the left of Q_0.
B) under the demand curve to the left of Q_0, but above P_0.
C) below P_0 and to the left of Q_0.
D) under the demand curve and above P_0.
E) under the demand curve and to the right of Q_0.

Question 17 (1.5 points)
It is assumed in standard economic theory that a firm makes decisions in an effort to
A) become as large as possible.
B) have a highly diversified product.
C) be favoured politically.
D) maximize its revenue.
E) maximize its profits.

Question 18 (1.5 points)
Suppose a production function for a firm takes the following algebraic form: $Q = 2KL - (0.2)L^2$, where Q is the output of sweaters per day. Now suppose the firm is operating with 8 units of capital (K = 8) and 10 units of labour (L = 10). What is the output of sweaters?
A) 30 sweaters per day
B) 60 sweaters per day
C) 80 sweaters per day
D) 140 sweaters per day
E) 155 sweaters per day

Question 19 (1.5 points)
Consider the total, average, and marginal product curves for a firm in the short run. When a firm's total-product curve is increasing at a decreasing rate,
A) average product is zero.
B) marginal product is positive but declining.
C) the marginal-product curve lies below the average-product curve.
D) marginal product is negative and decreasing.
E) average product is falling.

Question 20 (1.5 points)
Consider the following diagram

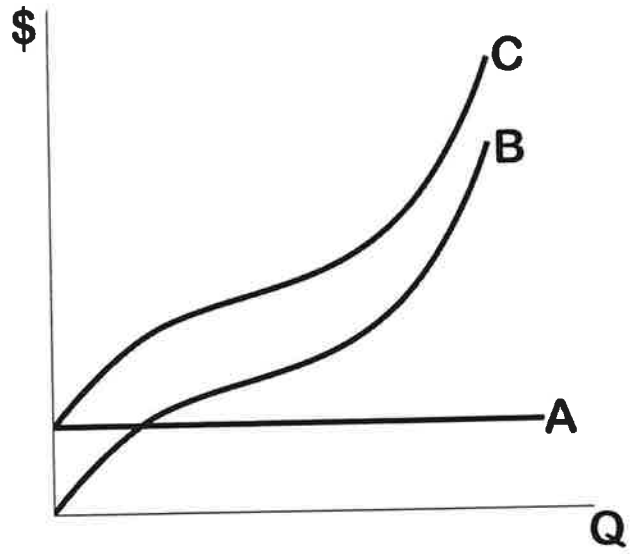


Caption: The figure presents **Total Product** as a function of **Labour** (workers per day) hired.

Refer to the Figure. The marginal product of the **fourth** worker is
A) 30 units.
B) 32 units.
C) 88 units.
D) 120 units.
E) 144 units.

Question 21 (1.5 points)
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) $0.40 per unit.
C) $40 per unit.
D) $2500.
E) $25 000.

Question 22 (1.5 points)
Consider the following diagram



Caption: The diagram shows some short-run cost curves for a firm.

Refer to the Figure. In the figure above, the total fixed cost curve is
A) A
B) B
C) C
D) A + C
E) B - A

Question 23 (1.5 points)
The table below shows the number of units of labour and capital used in 4 alternative production techniques for producing 1000 widgets per month.

Technique	A	B	C	D
Labour	25	35	50	30
Capital	50	35	25	60

Refer to the Table. If the price of both labour and capital is $10, which production technique minimizes the costs of producing 1000 units of output?
A) A
B) B
C) C
D) D
E) Any of the techniques have the same cost.

Question 24 (1.5 points)
If a firm in a perfectly competitive market were to raise its price, its
A) revenue would decrease only if market demand were elastic.
B) revenue would increase only if market demand were inelastic.
C) total costs would increase.
D) revenue would fall dramatically.
E) profits would increase as long as costs remained constant.

Question 25 (1.5 points)
Suppose XYZ Corp. is producing and selling disposable wooden chopsticks in a perfectly competitive market. The market price is $0.05 per unit and the firm is currently producing 600,000 units per month. What is the firm's average revenue?
A) $3000
B) $30 000
C) $0.01
D) $0.05
E) $0.10

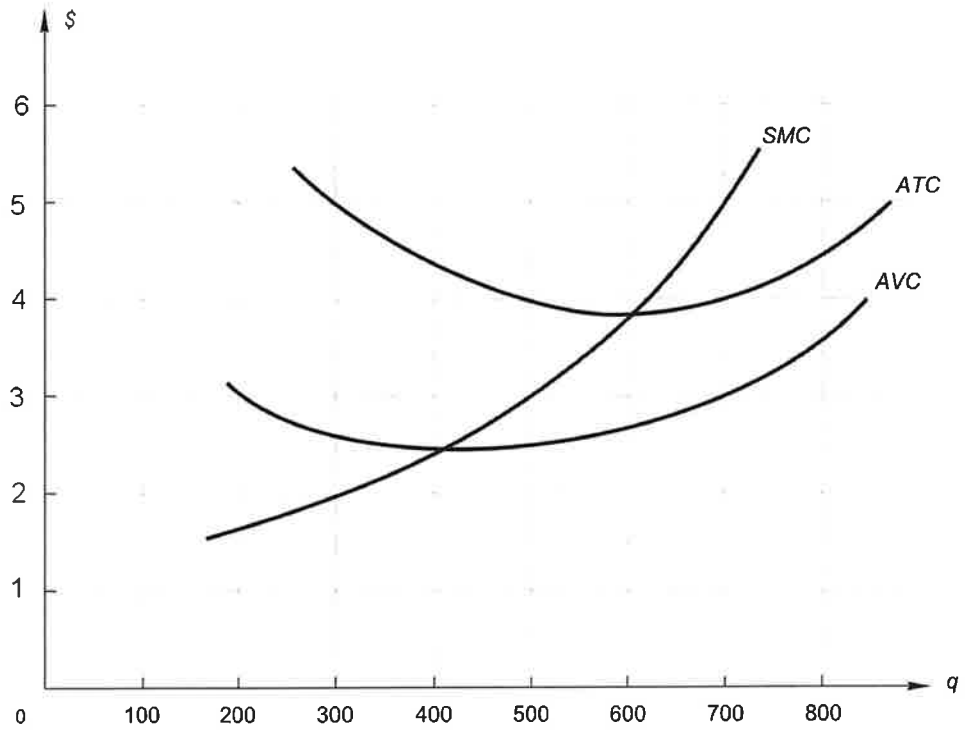
Question 26 (1.5 points)
Consider the following total cost schedule for a perfectly competitive firm producing ball-point pens.

Output per period	TVC ($)	TFC ($)
0	0	5
10	2	5
20	3	5
30	6	5
40	10	5
50	15	5

Refer to Table. Suppose the prevailing market price for this firm's product is $0.40. The profit-maximizing level of output for this firm is between
A) 0 and 10 units.
B) 10 and 20 units.
C) 20 and 30 units.
D) 30 and 40 units.
E) 40 and 50 units.

Question 27 (1.5 points)
Canada has a much lower population density than Japan. Therefore, the price of land, relative to the price of labour, is lower in Canada than in Japan. Consider a Canadian firm and a Japanese firm, both producing rice, both having access to the same technologies, and both striving to minimize their costs. The Canadian firm will use the two inputs, land and labour, in such a way that its land/labour ratio is
A) equal to that of the Japanese firm.
B) lower than that of the Japanese firm.
C) higher than that of the Japanese firm.
D) equal to one.
E) indeterminate as there is insufficient information to know.

Question 28 (1.5 points)
Consider the following diagram

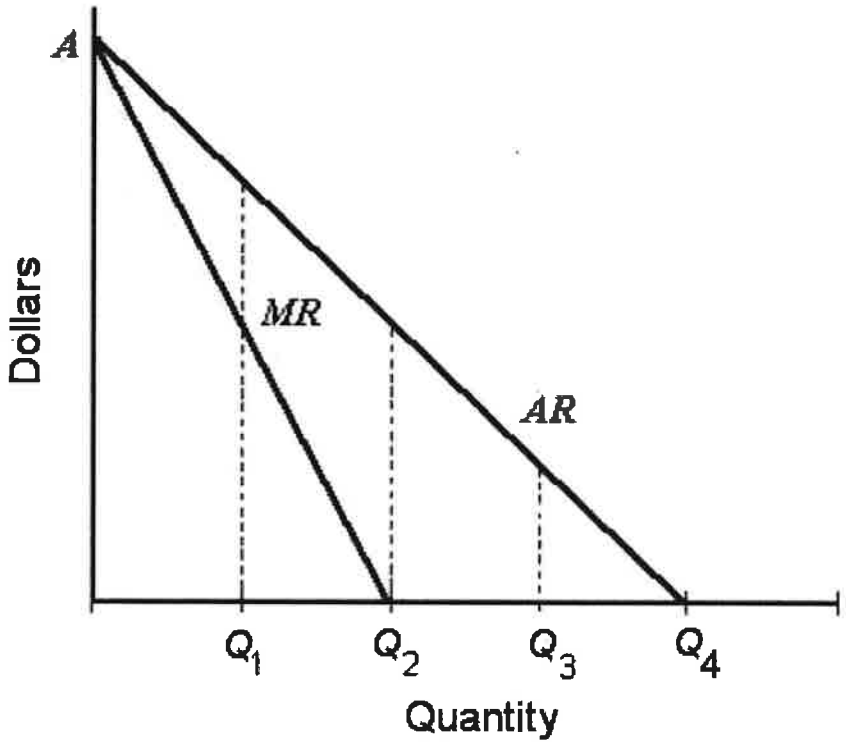


Caption: The diagram shows the short-run cost curves for a profit-maximizing firm in a perfectly competitive industry.

Refer to the Figure. If the market price is **$5**, the profit-maximizing level of output is
A) 400 units.
B) 500 units.
C) 600 units.
D) 700 units.
E) 800 units.

Question 29 (1.5 points)
Consider a single-price monopolist that is operating in the inelastic range of its linear demand curve. This firm
A) would be operating where its AR is negative.
B) would be operating where marginal revenue is negative.
C) would be operating where marginal revenue is negative but its total revenues would be at a maximum.
D) could raise its total revenue by lowering its price.
E) would be operating at its profit-maximizing position.

Question 30 (1.5 points)
Consider the following diagram.



Caption: The diagram shows the AR and MR curves for a single-price monopolist.

Refer to the Figure. If marginal costs were zero, the profit-maximizing output for this single-price monopolist would be
A) 0.
B) Q_1.
C) Q_2.
D) Q_3.
E) Q_4.

Question 31 (1.5 points)
At the profit-maximizing level of output for a single-price monopolist, price
A) always exceeds average total cost.
B) equals marginal cost.
C) exceeds marginal cost.
D) equals marginal revenue.
E) is below marginal revenue.

Question 32 (1.5 points)
As a seller of labour services, a labour union is a form of
A) monopoly.
B) monopsony.
C) oligopoly.
D) monopolistic competitor.
E) illegal cartel.

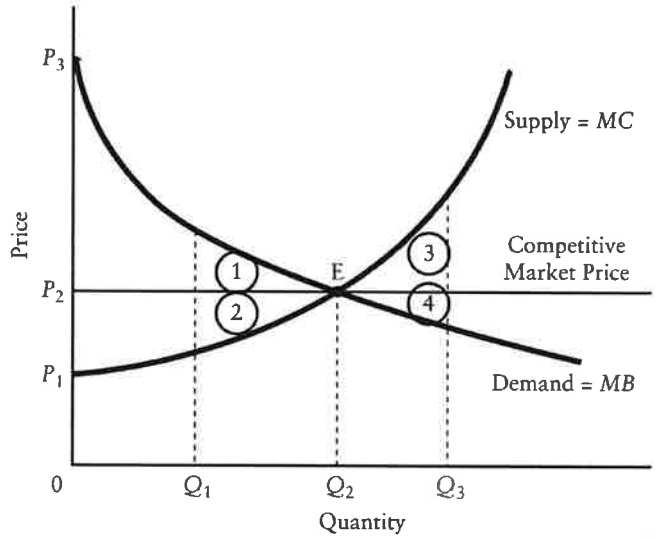
Question 33 (1.5 points)
An imperfectly competitive industry is often allocatively inefficient when compared to the performance of a competitive industry, because imperfect competitors
A) maximize profits.
B) make profits.
C) obtain economies of scale.
D) operate in the global economy.
E) set price above the marginal cost.

Question 34 (1.5 points)
Suppose the market for gasoline retailing (gas stations) in an island economy has 12 firms. The two largest firms each account for 30% of sales, the third accounts for 15%, the fourth for 7%, the fifth for 4% and the remaining firms for 2% each. Which of the following statements best describes the structure of this local industry?
A) This industry is an oligopoly.
B) This industry is perfectly competitive.
C) This industry is a monopoly.
D) This industry is monopolistically competitive.
E) Either A or D could be correct.

Question 35 (1.5 points)
Which of the following is most characteristic of a monopolistically competitive market structure?
A) Each firm's marginal revenue curve lies above its demand curve.
B) The firms in the industry engage in strategic, non-price competition.
C) Entry into the industry is difficult.
D) Each firm faces a downward-sloping demand curve.
E) The firms sell an identical product.

Question 36 (1.5 points)
Which of the following is required for an entire economy to be allocatively efficient?
A) Goods are allocated equitably across markets.
B) Marginal cost equals price for all goods.
C) *MRP* is equated for all factors of production.
D) Price equals average cost for all goods.
E) Price is greater than marginal cost for all goods.

Question 37 (1.5 points)
Consider the following diagram

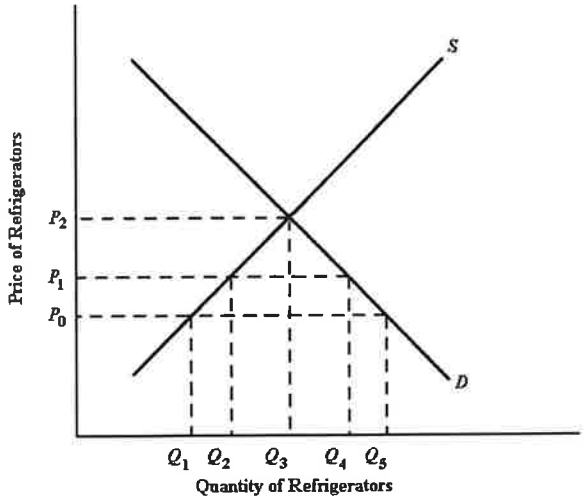


Caption: The diagram shows the demand and supply curves in a perfectly competitive market.

Refer to the Figure. At the free-market equilibrium, consumer surplus is represented by the area
A) P_2P_3E.
B) P_1P_2E.
C) P_1P_3E.
D) 1 + 2.
E) 1 + 2 + 3 + 4.

Question 38 (1.5 points)

Consider the following diagram



Caption: The diagram above shows the demand and supply curves for refrigerators in Canada.

Refer to the Figure. At the price P_0, the quantity of refrigerators supplied to the Canadian market by domestic Canadian producers is

A) Q_1.
B) Q_2.
C) Q_3.
D) Q_4.
E) Q_5.

Question 39 (1.5 points)

Continued tariff protection for industries that have already attained all potential economies of scale and possibilities for learning by doing is likely to

A) increase employment in the protected industries.
B) reduce average real income for the country's residents.
C) redistribute income away from the factors used in the protected industries.
D) decrease prices to consumers of the products produced in the protected industries.
E) Both A and B are correct.

Question 40 (1.5 points)

Wage differentials due to cross-worker differences in human capital exist in labour markets. These differentials

A) are not justifiable on efficiency grounds.
B) will persist in competitive equilibrium.
C) are not an important source of observed wage differentials.
D) are an example of economic distortions due to monopoly power.
E) exist because of distortions in labour markets.

Part B Problem Solving (40 points)

This question requires you to solve a supply-and-demand model algebraically. Letting $\boldsymbol{p}$ be the price of the product, suppose the demand and supply functions for some product are given by

$$\boldsymbol{Q^D = 100 - 3p}$$
$$\boldsymbol{Q^S = 10 + 2p}$$

a. Plot both the demand curve and the supply curve. Remember to plot p on the vertical axis and Q on the horizontal axis. **(8 points).**

b. What is the condition for equilibrium in this market? **(4 points).**

c. By imposing the condition for equilibrium, solve for the equilibrium price. **(6 points).**

d. Substitute the equilibrium price into either the demand or the supply function to solve for the equilibrium quantity. Check to make sure you get the same answer whether you use the demand function or the supply function (**6 points**).

e. Now suppose there is an increase in demand so that the new demand function is given by

$$\boldsymbol{Q^D = 180 - 3p}$$

Compute the new equilibrium price and quantity **(8 points).**

f. Now suppose that with the new demand curve in place, there is an increase in supply so that the new supply function is given by

$$\boldsymbol{Q^S = 90 + 2p}$$

Compute the new equilibrium price and quantity **(8 points).**