CHAPTER 1 – THE ART AND SCIENCE OF ECONOMIC ANALYSIS

I. The Economic Problem: Scarce Resources, Unlimited Wants

The problem is that wants or desires are virtually unlimited while the resources available to satisfy these wants are scarce. A resource is scarce when it is not freely available, when its price exceeds zero.

A. Resources: The inputs, or factors of production, used to produce goods and services
   - Labor
   - Capital: physical and human
   - Natural resources:
   - Entrepreneurial ability

B. Goods and Services:
   - A good is tangible and requires scarce resources to produce.
   - A service is intangible but requires scarce resources to produce.
   - A good or service is scarce if the amount people demand exceeds the amount available at a price of zero

C. Economic Decision Makers
   - Households
   - Firms
   - Governments
   - The rest of the world

II. The Art of Economic Analysis

A. Rational Self-Interest
   - Economics assumes that individuals make rational choices, selecting alternatives they perceive to be in their best interests
   - Rational refers to people trying to make the best choices they can, given the available information.
• Each individual tries to minimize the expected cost of achieving a given benefit or to maximize the expected benefit achieved with a given cost.

B. Economic Analysis Is Marginal Analysis
• Economic choice is based on the comparison of expected marginal cost and the expected marginal benefit.
• Marginal means incremental or additional.
• A rational decision maker changes the status quo if the expected marginal benefit from the information is greater than its expected marginal cost.

CHAPTER 2 – ECONOMIC TOOLS AND ECONOMIC SYSTEMS

I. Choice and Opportunity Cost and Sunk Cost
   A. Opportunity Cost: The value of the best alternative that is forgone. Because of scarcity, whenever people make a choice, another opportunity is forgone. Only the individual making the choice can identify the most attractive alternative.
   B. Sunk Cost: A cost that has already been incurred and cannot be recovered. Economic decision makers should ignore sunk costs and consider only those costs that are affected by the choice.

II. Comparative Advantage, Specialization, and Exchange
   A. The Law of Comparative Advantage: The individual, firm, region or country with the lower opportunity cost of producing a particular output should specialize in producing that output.
   B. Absolute advantage versus Comparative advantage:
      • Absolute advantage: The ability to produce a product with fewer resources than other producers require.
      • Comparative advantage: The ability to produce a product at a lower opportunity cost than other producers face. Resources are allocated most efficiently when production and trade conform to the law of comparative advantage.
      • Absolute advantage focuses on who uses the fewest resources and Comparative advantage focuses on what else those resources could produce.
   C. Specialization and Exchange
      • Barter: A system of exchange in which products are traded directly for other products.
      • Money: A medium of exchange in economies with extensive specialization
   D. Division of Labor and Gains from Specialization
      • Specialization of labor
• Takes advantage of individual preferences and natural abilities
• Allows workers to develop more experience at a task
• Reduces the need to shift between tasks
• Permits the introduction of labor-saving machinery
• May be tedious and injury prone due to repetitive motion

III. The Economy’s Production Possibilities

A. Efficiency and the Production Possibilities Frontier

• The Production Possibilities Frontier (PPF) depicts the production capabilities of an economy, given current resources.
• The PPF assumes the following:
  o Output is limited to two classes of products: consumer goods and capital goods.
  o Production takes place over a given time period.
  o The economy’s resources are fixed in quantity and quality over this period.
  o The available technology does not change during the period.
  o The “rules of the game” are also assumed fixed.

B. Inefficient and unattainable production:

The PPF identifies possible combinations of consumer and capital goods that can be produced when all available resources are employed efficiently. Resources are employed efficiently when there is no change that could increase the production of one good without decreasing the production of the other good.

• Efficient production: getting the most from available resources, indicated by points on or along the production possibilities frontier.
• Inefficient production: points inside the PPF
• Unattainable production: points outside the PPF

C. Shape of the Production Possibilities Frontier:

• The PPF derives its concave shape from the law of increasing opportunity cost.
• Opportunity cost increases as the economy produces more of one good and less of the other because resources in the economy are not all perfectly adaptable to the production of both types of goods.
• If all resources were perfectly adaptable to alternative uses, the PPF would be a straight line, reflecting a constant opportunity cost along the PPF.

D. What Can Shift the Production Possibilities Frontier:

• Economic Growth: is reflected by an outward shift of the PPF.
• Changes in resource availability: people working longer hours, war
• Capital stock: more capital goods produced during this period shifts the PPF outward the next period
• Technology: discoveries that employ resources more efficiently
• Rules of the Game: improvements in the formal and informal institutions that support the economy shift the PPF outward.

IV. Economic Systems
A. Three Questions Every Economic System Must Answer:
   1. **What** goods and services are to be produced?
   2. **How** are goods and services to be produced?
   3. **For whom** are goods and services to be produced?

B. Pure Capitalism:
   - Private ownership of all resources.
   - Market prices generated in free markets guide resources to their most productive use.
   - Goods and services are channeled to consumers who value them the most.
   - Flaws of a pure market system:
     - No central authority protects property rights, enforces contracts, or ensures that rules of the game are followed.
     - People with no resources to sell could starve.
     - Some producers may try to monopolize markets by eliminating the competition.
     - Production or consumption of some goods involves damaging byproducts
     - Private firms have no incentive to produce public goods.
     - Because of these limitations, government has been given some role in most market economies.

C. Pure Command System:
   - Resources are directed and production is coordinated not by market forces but by the “command” or central plan, of government.
   - In theory, property is owned communally; central plans spell out answers to **what, for whom, and how much**; and individual choices are incorporated into central plans.
   - Flaws of a pure command system:
     - Running an economy is so complicated that some resources are used inefficiently.
     - Because no one in particular owns resources, each person has less incentive to employ them in their highest-valued use, so some resources are wasted.
     - Central plans may reflect more the preferences of central planners than those of society.
     - Because government is responsible for all production, the variety of products tends to be more limited than in a capitalist economy.
     - Each individual has less personal freedom in making economic choices.

D. Mixed and Transitional Economies
   - No country exemplifies either type of economic system in its pure form.
   - The United States represents a mixed system, with government directly accounting for about one third of all economic activity. In addition, government regulates the private sector in a variety of ways.

E. Economies Based on Custom or Religion:
   - Molded largely by custom or religion
CHAPTER 3 – ECONOMIC DECISION MARKETS

I. The Household: Households play the starring role in the economy.

A. Households Maximize Utility: The satisfaction derived from consumption.

B. Households as Resource Suppliers
   • Use limited resources: Labor, capital, natural resources, and entrepreneurial ability to satisfy unlimited wants
   • Use these resources to produce goods and services in the home
   • Sell these resources in the resource market to earn income
   • Households with few resources can receive transfer payments, also known as grants, from the government

C. Households as Demanders of Goods and Services
   • Durable goods (expected to last three years or more)
   • Nondurable goods
   • Services

II. The Firm

A. Evolution of the Firm
   • Cottage industry system: “Putting out” raw material to rural households that turned it into finished goods
   • Industrial Revolution: Development of large-scale factory production that:
     o promoted more efficient division of labor
     o allowed for the direct supervision of production
     o reduced transportation costs
     o facilitated the use of machines far bigger than anything used in the home

B. Types of Firms
   ▪ Sole Proprietorships
   ▪ Partnerships
   ▪ Corporations

C. Cooperatives

D. Not-for-Profit Organization

III. The Government

A. The Role of Government: Enters the market in cases of market failure
   • Establishing and Enforcing the Rules of the Game
   • Promoting Competition
   • Regulating Natural Monopolies
• Providing Public Goods:
  o Private goods are rival in consumption (the amount consumed by one person is unavailable for others) and exclusive (those who fail to pay can be excluded from consumption).
  o Public goods are nonrival and are nonexclusive.
• Dealing With Externalities: Costs or benefits that fall on third parties
• A More Equal Distribution of Income
• Full Employment, Price Stability, and Economic Growth
  o Fiscal policy: Taxing and spending
  o Monetary policy: Regulating the money supply

B. Government’s Structure and Objectives: Federal system of government; responsibilities are shared across levels of government.
   ▪ Difficulty in Defining Government Objectives
   ▪ Voluntary Exchange Versus Coercion
   ▪ No Market Prices

C. Tax Principles and Tax Incidence:
   • Tax incidence: Who actually bears the burden of the tax
   • Proportional taxation: all income levels pay same percent of income in taxes.
   • Marginal tax rate: Percentage of each additional dollar of income that goes to taxes
   • Progressive taxation: percentage of income paid in taxes increases as income increases
   • Regressive taxation: Percentage of income paid in taxes decreases as income increases

IV. The Rest of the World

A. International Trade: Occurs because the opportunity cost of producing specific goods differs across countries.
   • Merchandise trade balance: The value of exported goods minus the value of imported goods
   • Balance of payments: Record of all economic transactions between a country and the rest of the world

B. Exchange Rate: The price of one currency in terms of another.

C. Trade Restrictions: Interfere with free flow of products across borders and hurt overall economy
   • Tariffs: Taxes on imports
   • Quotas: Legal limits on the quantity of a particular good that can be imported
CHAPTER 4 – DEMAND, SUPPLY AND MARKETS

I. Demand:
The demand curve shows the relation between the price of a good and the quantity demanded when other factors remain unchanged. Demand indicates the quantity consumers are both willing and able to buy at each possible price during a given time period, other things constant.

A. The Law of Demand
• The Law of Demand states the quantity of a good demanded varies inversely with its price, other things constant. More is demanded when the price decreases. Less is demanded when the price increases.
• Demand, Wants, and Needs are not the same
• The Substitution Effect of a Price Change: Caused by a change in the relative price of a good. If the price of one good falls relative to the prices of other goods, consumers tend to substitute the lower-priced good for the other goods.
• The Income Effect of a Price Change: Caused by a change in a consumer's real income. If the price of a good falls, other things constant, the consumer’s purchasing power (real income) rises, increasing his ability to purchase all goods.

B. The Demand Schedule and Demand Curve
• Demand Schedule: Lists possible prices, along with the quantity demanded at each price.
• Demand Curve: A plot of the demand schedule. It slopes downward, reflecting the law of demand.
• Quantity demanded: One point on the demand curve that shows the quantity demanded at a particular price.
• Movement along the demand curve: Reflects a change in quantity demanded caused by a change in price.
• Individual versus Market Demand: The market demand curve shows the quantity demand by all consumers at a variety of prices.

II. Shifts of the Demand Curve
Other variables that may affect demand include the money income of consumers, prices of other goods, consumer expectations, number of consumers, and consumer tastes. Changes in these factors lead to shifts in the demand curve.

A. Changes in Consumer Income
• Demand for normal goods increases as money income increases.
• Demand for inferior goods decreases as money income increases.
• Increase in demand: A shift to the right of the demand curve; consumers are willing and able to buy more units at each price and to pay more per unit at each quantity.
• Decrease in demand: A shift to the left of the demand curve; consumers are willing and able to buy fewer units at each price, to pay less per unit at each quantity.
B. Changes in the Prices of Other Goods
   • **Substitutes**: Goods that are related in such a way that an increase in the price of one increases demand for the other, shifting that demand curve rightward
   • **Complements**: Goods that are related in such a way that an increase in the price of one decreases demand for the other, shifting that demand curve leftward

C. Changes in Consumer Expectations
   • Consumers expecting increased future income may increase their current demand for a good.
   • Consumers expecting a future price increase may increase their current demand for the good.

D. Changes in the Number or Composition of Consumers:
   • Market demand is the sum of individual demands. If the number of consumers in the market changes, the demand curve will shift.

E. Changes in Consumer Tastes:
   • Tastes: A change in consumer likes and dislikes for a particular good would shift that good’s demand curve.

III. Supply:
   The supply curve shows the relation between the price of a good and the quantity supplied when other factors remain unchanged. Supply indicates how much producers are willing and able to offer for sale per period at each possible price, other things constant.

A. Law of supply:
   • The quantity supplied is usually directly related to its price, other things constant. The lower the price, the smaller the quantity supplied and the higher the price, the higher the quantity supplied. As the price of a good increases, producers become more willing and able to supply the good. The higher price provides producers with a profit incentive to shift some resources from lower-valued uses to the higher-valued use. A higher price makes producers more willing and able to increase quantity supplied of a good.

B. The Supply Schedule and Supply Curve
   • Supply Schedule: Lists possible prices, along with the quantity supplied at each price.
   • Supply Curve: A plot of the supply schedule. It slopes upward, reflecting the law of supply.
   • Quantity supplied: One point on the supply curve that shows the quantity supplied at a particular price.
   • Movement along the supply curve: Reflects a change in quantity supplied caused by a change in price.
   • Individual versus Market Supply:

IV. Shifts of the Supply Curve
Other variables that may affect supply include state of technology, the prices of resources, the prices of other goods, producer expectations, and the number of producers in the market. Changes in these factors lead to shifts in the supply curve.

A. Changes in Technology:
   • If a better technology is discovered, production costs will fall. Quantity supplied at each price will increase, and the supply curve will shift to the right.
   • Increase in Supply: A shift of the supply curve to the right
   • Decrease in supply: A shift of the supply curve to the left

B. Changes in the Prices of Resources
   • Those resources employed in the production of the good.
   • If the price of a important resource decreases, costs of production fall and the supply curve shifts to the right.
   • If the price of a important resource increases, costs of production increase and the supply curve shifts to the left.

C. Changes in the Prices of Other Goods
   • Other goods: Those that use some of the same resources as are employed to produce the good under consideration.
   • A rise in the price of another good will cause the supply of the good in question to decrease, or shift to the left because some producers will opt to produce the other good.

D. Changes in Producer Expectations:
   • If a producer expects the future price of a good to be higher than today's price, she or he may decrease or increase the current supply, depending on the good under consideration.

E. Changes in the Number of Producers:
   • If the number of producers increases, supply will increase, or shift to the right.

V. Demand and Supply Create a Market

A. Markets: Arrangements made by individuals to buy and sell goods and services.
   • Reduces the transaction costs of exchange.
   • Coordinates the independent intentions of buyers and sellers.

B. Market Equilibrium
   • Surplus: Excess quantity supplied; puts downward pressure on the price.
   • Shortage: Excess quantity demanded; puts upward pressure on the price.
   • Equilibrium (Slides 38-40): Occurs when the quantity consumers are willing and able to buy equals the quantity producers are willing and able to sell. There is no pressure to change price or quantity.
   • Impersonal market forces synchronize the personal and independent decisions of many individual buyers and sellers to achieve equilibrium price and quantity.
VI. Changes in Equilibrium Price and Quantity

A. Factors that Shift the Demand Curve
   • Given an upward-sloping supply curve, a rightward shift of the demand curve increases both equilibrium price and quantity. Given an upward-sloping supply curve, a leftward shift of the demand curve decreases both equilibrium price and quantity.

B. Factors that shift the Supply Curve
   • Given a downward-sloping demand curve, a leftward shift of the supply curve decreases equilibrium quantity but increases equilibrium price. Given a downward-sloping demand curve, a rightward shift of the supply curve increases equilibrium quantity but decreases equilibrium price.

C. Simultaneous Shifts of Demand and Supply Curves
   • If both curves shift, the results are less obvious but can be approximated by drawing the demand and supply diagram, shifting the curves appropriately, and interpreting the new equilibrium point.

VII. Disequilibrium Prices
   Represent a temporary phase while the market seeks equilibrium.
   • Price Floor: A minimum selling price above the equilibrium price. To have an impact, the price floor must be set above the equilibrium price.
   • Price Ceilings: A maximum selling price for goods and services set by public officials. To have an impact, the price ceiling must be set below the equilibrium price.

CHAPTER 5 – ELASTICITY OF DEMAND AND SUPPLY

I. Price Elasticity of Demand
   A tool used to measure how responsive consumers are to price changes.

A. Calculating Price Elasticity of Demand
   • Price elasticity of demand = \( \frac{\% \Delta \text{ in quantity demanded}}{\% \Delta \text{ in price}} \)
   • \( E_D = \left\{ \frac{\Delta q/[(q+q')/2]}{\Delta p/[(p+p')/2]} \right\} \) (Use absolute values)

B. Categories of Price Elasticity of Demand
   • Inelastic: Percentage change in price has relatively little effect on quantity demanded; elasticity > 0 and <1.
   • Unit elastic: Percentage change in quantity demanded equals the percent change in price; elasticity = 1.
   • Elastic: Percentage change in quantity demanded exceeds the percent change in price; elasticity > 1.
C. Elasticity and Total Revenue:
A price decline causes total revenue to:
• Increase if demand is elastic.
• Remain the same if demand is unit elastic.
• Decrease if demand is inelastic.

D. Price Elasticity and the Linear Demand Curve:
Price declines along a downward-sloping linear demand curve cause total revenue to:
• Increase until the halfway point of the linear demand curve.
• Reach a maximum at the halfway point.
• Decrease below the halfway point of the demand curve.

E. Constant-Elasticity Demand Curves:
Occurs along demand curves that are:
• Perfectly Elastic: Horizontal line; $E_D = \infty$.
• Perfectly Inelastic: Vertical line; $E_D = 0$.
• Unit Elastic: Demand curves for which total revenue remains the same for every price-quantity combination.

II. Determinants of Price Elasticity of Demand

A. Availability of Substitutes
The greater the availability of substitutes and the more similar the substitutes are to the original good, the greater the good’s price elasticity of demand. The narrower the definition of the good, the greater the number of substitutes and the greater the elasticity.

B. Share of the Consumer’s Budget Spent on the Good —
The more important the item is as a share of the consumer’s budget, other things constant, the greater is the income effect of a change in price, so the more price elastic is the demand for the item.

C. Duration of the Adjustment Period:
Period in which consumers adjust to a change in price. The longer the adjustment period, the more responsive the change in quantity demanded is to a given change in price.

D. Elasticity Estimates:
$E_D$ is greater in the long run than in the short run because consumers have more time to adjust to changes in price.

III. Price Elasticity of Supply:
Measures how responsive producers are to a price change.

A. Constant Elasticity Supply Curves
• Perfectly Elastic Supply: Horizontal line; $E_s = \infty$.
• Perfectly Inelastic Supply: Vertical line; $E_s = 0$.
• **Unit Elastic Supply:** The supply curve is a straight line through the origin; $E^s = 1$.

**B. Determinants of Supply Elasticity:**
The longer the adjustment period under consideration, the more able producers are to adapt to a price change, thus $E_s$ is greater.

**IV. Other Elasticity Measures**

**A. Income Elasticity of Demand:**
How responsive demand is to a change in consumer income. ($\% \Delta$ in demand / $\% \Delta$ in income).
- *Inferior goods:* Income elasticity of demand is negative.
- *Normal goods:* Income elasticity of demand is positive.
- *Necessities:* Income inelastic; income elasticity of demand is less than 1.
- *Luxuries:* Income elastic; income elasticity of demand is greater than 1.

**B. Cross-Price Elasticity of Demand:**
- Responsiveness of the demand for one good to changes in the price of another good.
- Cross-price elasticity of demand is:
  - *Positive for substitutes:* An increase in the price of one good causes an increase in demand for another good.
  - *Negative for complements:* An increase in the price of one good causes a decrease in demand for another good.
  - *Zero for unrelated goods.*

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**CHAPTER 6 — CONSUMER CHOICE AND DEMAND**

**I. Utility Analysis:**

**A. Tastes and Preferences:**
- Utility is subjective. Different people have different tastes.
- Economists argue tastes are given and relatively stable – they aren’t in a constant state of flux.

**B. The Law of Diminishing Marginal Utility:**
- The more of a good an individual consumes per time period, other things constant, the smaller the increase in total utility from additional consumption.
- **Total Utility:** The total satisfaction derived from consumption
- **Marginal utility:** Change in total utility resulting from a one-unit change in consumption

**II. Measuring Utility:**
Developing numerical values for utility allows analysis about the utility from consumption.

A. **Units of Utility:** Each person has a uniquely subjective utility scale. (See an example in Exhibit 1)

B. **Utility Maximization in a World without Scarcity:** If a good is free, individuals increase consumption as long as marginal utility is positive.

C. **Utility Maximization in a World with Scarcity:** Is achieved when the budget is exhausted and the last dollar spent on each good yields the same marginal utility.

D. **Utility-Maximizing Conditions:** Consumer equilibrium is achieved when the budget is exhausted and \( \frac{MU_p}{P_p} = \frac{MU_m}{P_m} \)
   - Higher priced goods must yield more marginal utility than lower priced goods to compensate for their higher prices.

E. **Marginal Utility and the Law of Demand:** By changing the price of one good and observing the utility-maximizing levels of consumption, points along the demand curve can be generated.

III. **Applications of Utility Analysis:**

A. **Consumer Surplus**
   - **Marginal Valuation:** the dollar value to an individual of the marginal utility derived from consuming each additional unit of a good

B. **Market Demand and Consumer Surplus:** At any point on the demand curve, the price reflects the dollar value of the marginal utility derived from consuming an additional unit.
   - **Market demand curve:** The horizontal sum of the individual demand curves for all consumers in the market
   - **Consumer surplus:** At a given price, the difference between the most consumers would pay for that quantity of the good and the amount they do pay

C. **The Role of Time in Demand:** People with a higher opportunity cost of time are more willing to pay a higher money price for goods that save time.
   - **Cost of Consumption:** The money price plus the time price of a good

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**CHAPTER 7 - PRODUCTION AND COST IN THE FIRM**

I. **Cost and Profit:**
   Producers try to maximize profit, the difference between total revenue and the opportunity cost of resources.
A. Explicit and Implicit Costs
   • **Explicit costs**: Actual cash payments for resources purchased in resource markets.
   • **Implicit costs**: Opportunity costs of using resources owned by the firm or provided by the firm’s owners.

B. Alternative Measures of Profit
   • **Accounting Profit**: Total revenue minus explicit costs.
   • **Economic profit**: Total revenue minus all costs, both implicit and explicit.
   • **Normal profit**: The accounting profit earned when all resources used by the firm earn their opportunity cost.

II. Production in the Short Run

A. Fixed and Variable Resources
   • **Variable resources**: Can be varied quickly to change the output rate.
   • **Fixed resources**: Resources that cannot easily be altered.
   • **Short run**: At least one resource is fixed; the size or scale of the firm is fixed.
   • **Long run**: No resource is fixed; all resources can vary.

B. The Law of Diminishing Marginal Returns
   • **Production function**: The relationship between the amount of resources employed and total product or output.
   • **Marginal product**: The change in total product resulting from an additional unit of labor.
   • **Increasing Marginal Returns**: As marginal product increases, the firm experiences increasing marginal returns from labor because additional workers can specialize and make more efficient use of the fixed resources.
   • **Diminishing Marginal Returns**: As more of a variable resource is added to a given amount of a fixed resource, the marginal product eventually declines and could become negative.

C. The Total and Marginal Product Curves:
   - When marginal product
     o Rises, total product increases at an increasing rate.
     o Decreases, total product increases at a decreasing rate.
     o Is negative, total product is decreasing.

III. Costs in the Short Run:
   • **Fixed cost**: Costs that are independent of output and must be paid even if no output is produced.
   • **Variable cost**: Cost of variable resources

A. Total Cost and Marginal Cost in the Short Run:
   • **Total Cost**: The sum of fixed cost and variable cost. \( TC = FC + VC \).
   • **Marginal Cost**: The change in total cost divided by the change in output. 
     \( MC = \Delta TC / \Delta q \).
Changes in marginal cost ($MC$) reflect changes in the marginal productivity ($MP$) of the variable resource. When marginal returns are increasing, the marginal cost of output decreases.

- When marginal returns are diminishing, the marginal cost of output increases.
  
  **Total and Marginal Cost Curves:** The slope of the total cost curve at each rate of output equals the marginal cost at that rate of output. Review Exhibit 5 in text.

**B. Average Cost in the Short Run**

- **Average Variable Cost:** Variable cost divided by output or $VC/q$
- **Average Fixed Cost:** Fixed cost divided by output or $FC/q$
- **Average Total Cost:** Total cost divided by output or $TC/q$

**C. The Relationship Between Marginal Cost and Average Cost:** Marginal cost pulls down average cost where marginal cost is below average cost and pulls up average cost where marginal cost is above average cost.

**D. Summary of Short-Run Cost Curves:** The law of diminishing marginal returns determines the shape of short-run cost curves:

- When the marginal product of labor increases, the marginal cost of output falls.
- When marginal cost is less than average cost, average cost falls.
- When marginal cost is above average cost, average cost rises.

**IV. Costs in the Long Run:** Long-run is best thought of as a planning horizon.

**A. Economies of Scale**

- Long-run average cost curves are U-shaped because of economies and diseconomies of scale.
- Forces that reduce a firm’s long run average cost as the scale of operation increases.

**B. Diseconomies of Scale:**

- Forces that increase a firm’s long run average cost as the scale of operation increases.

**C. The Long-Run Average Cost Curve:** The curve indicating the lowest average cost of production at each rate of output as the firm size is varied.

- Each short-run average cost curve is tangent to the long-run average cost curve.
- **Constant Long-Run Average Cost:** Long-run average cost neither increases nor decreases with changes in firm size.
- **Minimum Efficient Scale:** The lowest rate of output at which a firm takes full advantage of economies of scale.

**D. Economies and Diseconomies of Scale at the Firm Level**
CHAPTER 1

1. The scarcity problem arises from the conflict between having relatively unlimited resources and relatively limited wants.
   True  False

2. If the marginal benefits are greater than the marginal cost of an activity, then society is overallocating resources to this activity.
   True  False

3. An economic system:
   A. Can eliminate scarcity
   B. Must solve the questions of what to produce, how to produce and for whom to produce
   C. Requires government planning of production and distribution
   D. Must meet the needs of all individuals

4. The logical implication of the principle of scarcity is that:
   A. one will never be satisfied with what one has.
   B. as wealth increases, making choices becomes less necessary.
   C. as wealth decreases, making choices becomes less necessary.
   D. choices must be made.

5. At the very least, Joe Average and Bill Gates are both identically limited by:
   A. their wealth.
   B. the 24 hours that comprise a day.
   C. their knowledge.
   D. their influence.
6. When thinking at the margin, one should consider:
   A. the lowest cost activity usually gives the lowest benefit.
   B. a person should always choose the activity with the lowest cost.
   C. a person should always choose the activity with the greatest benefit.
   D. the extra costs and benefits of an activity are more important considerations than the total costs and benefits.

CHAPTER 2

7. The opportunity cost of undertaking an activity includes any sunk cost.
   True   False

8. If a country has a comparative advantage in the production of a good, its resources are better suited to the production of that good than are the resources of other countries.
   True   False

9. A point inside the production possibilities curve illustrates that resources are not being used as efficiently as possible.
   True   False

10. The concave, or bowed-out, shape of the production possibilities curve illustrates the law of increasing opportunity costs.
    True   False

11. Property rights have a positive effect in a market economy because they encourage owners to maintain their property.
    True   False
12. Jen spends her afternoon at the beach, paying $1 to rent a beach umbrella and $11 for food and drinks rather than spending an equal amount of money to go to a movie. The opportunity cost of going to the beach is:

A. the $12 she spent on the umbrella, food and drinks.

B. only $1 because she would have spent the money on food and drinks whether or not she went to the beach.

C. the movie she missed seeing.

D. the movie she missed seeing plus the $12 she spent on the umbrella, food and drinks.

13. For a given benefit, a rational person chooses the option that has:

A. the lowest opportunity cost.

B. the highest opportunity cost.

C. the average opportunity cost.

D. no opportunity cost.

14. Your opportunity cost of taking this course is:

A. the tuition you paid for the course.

B. the net benefit of the activity you would have chosen if you had not taken the course.

C. the net benefit of taking this course.

D. the cost of the activity you would have chosen if you had not taken the course.

15. Economic choice would argue that there is an opportunity cost to:

A. all choices.

B. more choices.

C. only choices that involve money.

D. only choices that do not involve money.
16. Suppose you paid $300 to take this economics course, which meets 30 times for one hour a class during the course of the semester. Instead of attending class you could have either flipped hamburgers for $8 an hour or waited tables for $5 an hour. Given this information, the opportunity cost of attending each class session is:
   A. $30.
   B. $8.
   C. $5.
   D. $13.

17. Opportunity cost:
   A. includes only monetary outlays.
   B. is the net benefit forgone by not undertaking the next best alternative.
   C. is nonexistent for some choices.
   D. is the same as sunk cost.

18. The opportunity cost of attending college is likely to be highest for a high school graduate:
   A. whose next-best option is to flip hamburgers and who has access to no student loans.
   B. whose next-best option is to be a retail salesperson and whose family is extremely wealthy.
   C. whose next-best option is to drive a school bus but who has the promise of a six-figure salary after college.
   D. who is capable of competing successfully in professional tennis.

19. Sunk costs:
   A. are essential parts of economic decisions.
   B. are irrelevant to economic decisions.
   C. should be considered, but only when marginal cost is less than marginal benefit.
   D. should be considered only when there is no information about marginal cost and marginal benefit.
20. A movie costs you and your friend $15 each. After one hour of watching the movie, you have struggled to stay awake while your friend has been on Facebook and is also bored with the movie. You suggest that you and your friend leave the movie and go to the park. Your friend responds by stating that he is not going to waste his $15 that was previously spent on the movie. Your friend is considering:

A. an opportunity cost of the movie.

B. a sunk cost.

C. the marginal benefit.

D. depreciation.

21. If no resources had a comparative advantage in the production of any good, the production possibility curve would be:

A. bowed outward.

B. bowed inward.

C. a horizontal line.

D. a downward-sloping straight line.

22. | First Bakery | Second Bakery |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cookies</td>
<td>Pies</td>
</tr>
<tr>
<td>0</td>
<td>18</td>
</tr>
<tr>
<td>10</td>
<td>12</td>
</tr>
<tr>
<td>20</td>
<td>6</td>
</tr>
<tr>
<td>30</td>
<td>0</td>
</tr>
</tbody>
</table>

Given the production possibility tables for the First and Second Bakeries shown, we know that the opportunity cost of producing cookies:

A. is higher at First Bakery.

B. is higher at Second Bakery.

C. is the same at both bakeries.

D. cannot be computed without further information.
23. Suppose New Zealand uses 2 units of labor to produce a kiwi and one unit of labor to produce an apple. Suppose Australia uses one unit of labor to produce a kiwi and 2 units of labor to produce an apple. In this case, New Zealand:

A. Has a comparative advantage in producing apples
B. Has a comparative advantage in producing kiwis
C. Has a comparative advantage in producing both goods
D. Does not have a comparative advantage in producing either good

24. Two countries with different comparative advantages that trade with one another will produce:

A. And consume more if trade is based on comparative advantage
B. More and consume less if trade is based on comparative advantage
C. Less and consume more if trade is based on comparative advantage
D. And consume less if trade is based on comparative advantage

25. Suppose that in Slovakia, one unit of labor can produce either 10 tons of wheat or 40 tons of soy while in Poland, one unit of labor can produce either 40 tons of wheat or 10 tons of soy. If each country has 2 units of labor, which of the following consumption combinations can be attained only with specialization and trade?

A. Slovakia consumes 80 tons of soy
B. Slovakia consumes 40 tons of soy and 40 tons of wheat
C. Poland consumes 80 tons of wheat
D. Poland consumes 40 tons of wheat and 10 tons of soy
26. Refer to the graph below.

Given the production possibility curve, which point is unattainable?
A. A
B. B
C. C
D. D

27. Refer to the graph shown. Destruction of some of the resources necessary to produce both guns and butter would result in what movement?
A. From A to B to C to D in diagram a.
B. From C to D to A to B in diagram a.
C. From X to Y to X to Z in diagram b.
D. From X to Z to X to Y in diagram b.
28. The private ownership of property resources and use of prices to direct and coordinate economic activity is characteristic of:

A. a command system.

B. a market system.

C. communism.

D. socialism.

29. Which statement best describes a capitalist economy?

A. The production of goods and services is determined primarily by markets, but the allocation of goods and services is determined primarily by government.

B. The production of goods and services is determined primarily by government, but the allocation of goods and services is determined primarily by markets.

C. The production and allocation of goods and services is determined primarily through markets.

D. The production and allocation of goods and services is determined primarily through government.

30. Which statement best describes a command economy?

A. The production of goods and services is determined primarily by markets, but the allocation of goods and services is determined primarily by government.

B. The production of goods and services is determined primarily by government, but the allocation of goods and services is determined primarily by markets.

C. The production and allocation of goods and services is determined primarily through markets.

D. The production and allocation of goods and services is determined primarily through government.

31. Externalities can be either positive or negative.

True    False
32. Although state and local taxes are highly progressive, federal taxation is predominantly regressive.
   True   False

33. Market failures occur when:
   A. the government sets price floors and ceilings.
   B. the competitive market system under- or overallocates resources to production of goods.
   C. there are no externalities.
   D. goods are rival in consumption.

34. From the economist's perspective, "market failures" basically arise when:
   A. the quantity demanded for a good or service is greater than the quantity supplied of the good or service.
   B. the quantity supplied of a good or service is greater than the quantity demanded for a good or service.
   C. demand and supply do not accurately reflect all the benefits and all the costs of production.
   D. the market system is unable to adapt to or to accommodate change.

35. Economists generally call the effect of an agreement on others that is not taken into account by the parties making the agreement:
   A. excess burden.
   B. welfare loss.
   C. Pareto optimality.
   D. an externality.

36. Alex is playing his music at full volume in his dorm room. The other people living on his floor find this to be nuisance, but Alex does not care. Alex's music playing is an example of a:
   A. negative externality.
   B. positive externality.
   C. normative externality.
   D. Pareto externality.
37. College education provides higher income for the individual but also a more productive and more educated person who will contribute to society in many ways. Higher education is an example of:
   A. a positive externality.
   B. a negative externality.
   C. a non-excludable service.
   D. adverse selection.

38. The benefits-received principle of taxation is most evident in:
   A. inheritance taxes.
   B. excise taxes on gasoline.
   C. personal income taxes.
   D. corporate income taxes.

39. Which of the following best reflects the ability-to-pay philosophy of taxation?
   A. Taxes on residential property.
   B. Progressive income taxes.
   C. Excise taxes on gasoline.
   D. Excise taxes on coffee.

40. A tax that takes a larger proportion of income from low-income groups than from high-income groups is a:
   A. stabilizing tax.
   B. regressive tax.
   C. progressive tax.
   D. proportional tax.
41. Which of the following best reflects the ability-to-pay philosophy of taxation?
   A. Taxes on residential property.
   B. Progressive income taxes.
   C. Excise taxes on gasoline.
   D. Excise taxes on coffee.

CHAPTER 4

42. A change in the price of carrots will cause a movement along the demand for carrots curve and a shift in the demand for substitute vegetables.
   True   False

43. An increase in demand causes equilibrium price and quantity to rise, other things constant.
   True   False

44. The minimum wage is an example of a price floor.
   True   False

45. The law of demand states that the quantity demanded of a good is inversely related to the price of that good. Therefore, as the price of a good goes:
   A. up, the quantity demanded also goes up.
   B. up, the quantity demanded goes down.
   C. down, the quantity demanded goes down.
   D. down, the quantity demanded stays the same.
46. Which of the following situations best demonstrates the law of demand?
   A. Movie-goers react to an increase in the price of a theater ticket by seeing fewer movies per year.

   B. Movie-goers see fewer movies per year due to an overall decrease in the quality of newly released motion pictures.

   C. A drought causes a decrease in the availability of pumpkins, resulting in fewer jack-o-lanterns displayed on Halloween.

   D. An increase in the number of people writing Economics textbooks results in a decrease in average textbook prices.

47. If the price of movies on DVD rises while the price of movies purchased on demand through the Internet remains the same, the law of demand predicts that consumers will:
   A. substitute movies on DVD for movies on the Internet.

   B. substitute movies on the Internet for movies on DVD.

   C. buy only movies on DVD.

   D. buy only movies on the Internet.

48. To derive a market demand curve from individual demand curves, it would be necessary to:
   A. take the maximum quantity of each demand curve as the market quantity demanded at each price.

   B. sum the curves horizontally, adding quantities demanded at each price.

   C. take the demand curve that is the furthest to the right as the market demand curve.

   D. multiply the quantities demanded on each demand curve at each price to find the market quantity demanded at each price.
Refer to the table that presents Mike and Janet's demand for apples by the peck. If they are the only two in the market, which of the following represents a point on the market demand curve?

A. price = $1, quantity = 18
B. price = $2, quantity = 21
C. price = $4, quantity = 0
D. price = $4, quantity = 21

Refer to the graphs shown. The effect of an increase in price is best shown by which arrow?
A. A
B. B
C. C
D. D
51. The distinction between demand and the quantity demanded is best made by saying that:
   A. demand is represented graphically by a curve and quantity demanded as a point on that curve.
   
   B. the quantity demanded is represented graphically by a curve and demand as a point on that curve.
   
   C. the quantity demanded is in a direct relation with prices, whereas demand is in an inverse relation.
   
   D. the quantity demanded is in an inverse relation with prices, whereas demand is in a direct relation.

52. The effect of higher gasoline prices is most likely to:
   A. increase the demand for hybrid cars and increase the demand for the gas guzzler Hummer.
   
   B. decrease the demand for hybrid cars and decrease the demand for the gas guzzler Hummer.
   
   C. increase the demand for hybrid cars and decrease the demand for the gas guzzler Hummer.
   
   D. decrease the demand for hybrid cars and increase the demand for the gas guzzler Hummer.
Refer to the graph shown. A movement from point E to point D is caused by:
A. an increase in the price of CDs from $12.00 to $16.00.
B. a decrease in the price of CDs from $16.00 to $12.00.
C. an increase in consumer income.
D. an increase in the price of DVDs.

54. The law of supply states that, other things constant, there is:
A. an inverse relation between price and the quantity supplied.
B. an inverse relation between price and supply.
C. a direct relation between price and the quantity supplied.
D. a direct relation between price and supply.

55. The theory that quantity supplied and price are positively related, other things constant, is referred to as the law of:
A. opportunity cost.
B. profit maximization.
C. supply.
D. demand.
56. If the price of steel rises, the law of supply predicts that, other things constant, the:
   A. supply of steel will increase.
   B. supply of steel will decrease.
   C. quantity supplied of steel will increase.
   D. quantity supplied of steel will decrease.

57. The distinction between supply and the quantity supplied is best made by saying that:
   A. the quantity supplied is represented graphically by a curve and supply as a point on that curve.
   B. supply is represented graphically by a curve and quantity supplied as a point on that curve.
   C. the quantity supplied is in a direct relation with prices, whereas supply is in an inverse relation.
   D. the quantity supplied is in an inverse relation with prices, whereas supply is in a direct relation.

58. Suppose farmers can use their land to grow either wheat or corn. The law of supply predicts that an increase in the market price of wheat will cause:
   A. farmers to substitute wheat for the production of corn.
   B. farmers to substitute corn for the production of wheat.
   C. farmers to lower the production of corn and wheat.
   D. farmers to raise the production of wheat and corn.
59. Moore's Law states that the processing power of the latest computer chips doubles about every eighteen months. Assuming the graphs demonstrate the market for the latest computer chips, which of the following diagrams describe this situation?

A. a
B. b
C. c
D. d
Refer to the graph shown. At a price of $0.90 per dozen:
A. there is a shortage of 2,000 dozen eggs per week.
B. there is a surplus of 2,000 dozen eggs per week.
C. quantity demanded is just equal to quantity supplied.
D. there is a shortage of 1,000 dozen eggs per week.

Suppose the supply and demand tables shown reflect the supply and demand for milk per week. What is the equilibrium price and quantity of milk?
A. $1 per gallon and 2,000 gallons per week.
B. $2 per gallon and 1,500 gallons per week.
C. $3 per gallon and 2,000 gallons per week.
D. $4 per gallon and 2,000 gallons per week.
62. Refer to the graph shown. At a price of $0.60 per dozen:
A. there is a surplus of 2,000 dozen eggs per week.
B. the market is in equilibrium.
C. there is a shortage of 3,000 dozen eggs per week.
D. there is a shortage of 2,000 dozen eggs per week.

63. Suppose the above supply and demand tables reflect the supply and demand for milk per week. At a price of $1, there is a:
A. surplus of 500 gallons per week.
B. surplus of 1,000 gallons per week.
C. shortage of 2,500 gallons per week.
D. shortage of 1,000 gallons per week.

<table>
<thead>
<tr>
<th>Price (per gal.)</th>
<th>Quantity demanded (gallons per week)</th>
<th>Quantity Supplied (gallons per week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>$1</td>
<td>2000</td>
<td>1000</td>
</tr>
<tr>
<td>$2</td>
<td>1500</td>
<td>1500</td>
</tr>
<tr>
<td>$3</td>
<td>1000</td>
<td>2000</td>
</tr>
<tr>
<td>$4</td>
<td>500</td>
<td>2500</td>
</tr>
</tbody>
</table>

64. If quantity supplied exceeds quantity demanded, there is a tendency for:
A. price to fall to restore equilibrium.
B. price to rise to restore equilibrium.
C. the demand curve to shift to the left to restore equilibrium.
D. the demand curve to shift to the right to restore equilibrium.
65. The most likely impact of an effective price floor is:
   A. the supply curve will shift to the right.
   B. the demand curve will shift to the left.
   C. a surplus will develop.
   D. a shortage will develop.

66. Refer to the following graph.

A government-imposed price floor of $2 will result in:
   A. neither excess supply nor excess demand since it is binding.
   B. neither excess supply nor excess demand since it is not binding.
   C. an excess demand of 2.
   D. an excess supply of 2.
67. Refer to the graph shown. Which of the following wage rates would be an effective price floor?
A. $3.50
B. $4.50
C. $6.50
D. $7.25

68. An effective price ceiling is best defined as a price:
A. imposed by government below equilibrium price.
B. imposed by government above equilibrium price.
C. higher than any consumer is willing to pay.
D. lower than any supplier is willing to sell.
69. Which price ceiling will cause the greatest excess demand?

A. $1  
B. $2  
C. $3  
D. $4

CHAPTER 5

70. Price elasticity of demand is the percentage change in price divided by the percentage change in quantity demanded.

True   False

71. If the price of a good goes up by 20 percent and the quantity demanded falls by 40 percent, the price elasticity of demand is 2.

True   False

72. When demand is perfectly inelastic, there is no change in quantity demanded after a change in price.

True   False

73. Revenue remains unchanged along a straight-line demand curve.

True   False
74. Refer to the following graph.

If price is currently at B and rises, total revenue will rise.

True    False

75. Price elasticity of demand is the:
   A. change in the quantity of a good demanded divided by the change in the price of that good.
   B. change in the price of a good divided by the change in the quantity of that good demanded.
   C. percentage change in price of that good divided by the percentage change in the quantity of that good demanded.
   D. percentage change in quantity of a good demanded divided by the percentage change in the price of that good.

76. In general, the greater the elasticity, the:
   A. smaller the responsiveness of price to changes in quantity.
   B. smaller the responsiveness of quantity to changes in price.
   C. larger the responsiveness of price to changes in quantity.
   D. larger the responsiveness of quantity to changes in price.
77. If quantity demanded falls by 25 percent when price rises by 50 percent, demand is said to be:
   A. elastic.
   B. inelastic.
   C. proportional.
   D. responsive.

78. If average movie ticket prices rise by about 5 percent and attendance falls by about 2 percent, other things being equal, the elasticity of demand for movie tickets is about:
   A. 0.0.
   B. 0.4.
   C. 0.6.
   D. 2.5.

79. The price elasticity of supply is the:
   A. change in the quantity supplied divided by the change in price.
   B. percentage change in the quantity supplied divided by the percentage change in price.
   C. change in the price divided by the change in the quantity supplied.
   D. percentage change in the price divided by the percentage change in the quantity supplied.

80. If the percentage increase in the quantity supplied equals the percentage increase in the price, the supply:
   A. is elastic.
   B. is inelastic.
   C. has unit elasticity.
   D. is perfectly elastic.
81. If quantity demanded does not change when the price changes, the demand:
   A. is elastic.
   B. is inelastic.
   C. has unit elasticity.
   D. is perfectly inelastic.

82. If quantity demanded changes infinitely when the price changes, the demand:
   A. is slightly elastic.
   B. is inelastic.
   C. is unit elastic.
   D. is perfectly elastic.

83. High gasoline prices hit commuters who live far from their jobs in areas with little public transportation hard. With few alternatives, they just have to bear the higher cost. Based on this information, how would you characterize demand for gasoline by these commuters?
   A. Gasoline is a luxury good.
   B. Gasoline is an inferior good.
   C. Demand for gasoline is elastic.
   D. Demand for gasoline is inelastic.

84. Elizabeth Savoca estimated that for every 1 percent increase in tuition costs at a college, 2.4 percent fewer students applied to that college. This indicates that the price elasticity of demand for applying to college is:
   A. inelastic.
   B. elastic.
   C. perfectly inelastic.
   D. unit elastic.
85. Along a downward-sloping straight-line demand curve beginning at the price where demand intersects the price axis, as price declines, revenue:

A. declines.

B. rises.

C. declines and then rises.

D. rises and then declines.

86. Refer to the graph shown. Which of the following curves demonstrates a perfectly elastic demand curve?

A. A

B. B

C. C

D. None of the curves

87. Income elasticity is defined as the:

A. change in demand divided by the change in income.

B. percentage change in demand divided by the percentage change in income.

C. change in income divided by the change in demand.

D. percentage change in income divided by the percentage change in demand.
88. College students tend to eat more ramen noodles than do recent college graduates. A primary reason for this is that:
A. ramen noodles are a normal good.
B. ramen noodles are an inferior good.
C. ramen noodles are a luxury good.
D. ramen noodles are scarce.

89. Economics professors often use Starbucks as an example of a company whose product seems to have little price elasticity. What does this imply?
A. When Starbucks raises prices, its revenue increases.
B. When Starbucks raises prices, it loses many customers.
C. When the price of coffee sold by Starbucks' competitors changes, there is little effect on Starbucks' sales.
D. When the price of coffee sold by Starbucks' competitors changes, there is a big effect on Starbucks' sales.

CHAPTER 6

90. Which of the following statements is true about individuals and utility?
A. Individuals always seek to maximize utility.
B. Individuals always seek to maximize their income, not utility.
C. Individuals will either minimize or maximize utility depending on the situation.
D. Individuals rarely try to maximize their utility.
91. This table shows the different combinations of goods that Jack can consume, given that his income to spend on these two items is $10.

<table>
<thead>
<tr>
<th>Bundle</th>
<th>Number of popsicles</th>
<th>Utility from popsicles</th>
<th>Number of ice cream cones</th>
<th>Utility from ice cream cones</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>10</td>
<td>700</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>B</td>
<td>8</td>
<td>720</td>
<td>1</td>
<td>500</td>
</tr>
<tr>
<td>C</td>
<td>6</td>
<td>650</td>
<td>2</td>
<td>700</td>
</tr>
<tr>
<td>D</td>
<td>4</td>
<td>550</td>
<td>3</td>
<td>750</td>
</tr>
<tr>
<td>E</td>
<td>2</td>
<td>400</td>
<td>4</td>
<td>760</td>
</tr>
<tr>
<td>F</td>
<td>0</td>
<td>0</td>
<td>5</td>
<td>760</td>
</tr>
</tbody>
</table>

Considering the information in the table shown, the bundle of goods that will derive the highest total utility for Jack is:

A. E.

B. B.

C. C.

D. D.

92. The concept of marginal utility:

A. explains why individuals find it difficult to maximize their total utility.

B. is the change in total utility that comes from consuming one additional unit of a good or service.

C. can only be applied to situations in which individuals can choose among several goods or services.

D. All of these are true.

93. The concept of diminishing marginal utility:

A. explains why individuals rarely maximize their total utility.

B. is the change in total utility that comes from consuming one additional unit of a good or service.

C. is the principle that the additional utility gained from consuming successive units of a good or service tends to be smaller than the utility gained from the previous unit.

D. is the principle that the additional utility gained from consuming different bundles of goods and services tend to be smaller than the utility gained from consuming just one bundle of goods and services.
94. Sadie has just eaten a donut and received a utility of 6. If she chooses to eat another donut:
   A. we can assume she will get at least a utility of 6.
   B. we can assume she will get a utility of 6.
   C. we can assume she will get less than a utility of 6.
   D. we can assume Sadie’s total utility will fall because of diminishing marginal utility.

95. If a consumer purchases a good, the expected marginal value of that good to you:
   A. is greater than the price
   B. is less than the price
   C. may be less than or equal to the price
   D. may be greater than or equal to the price

96. A decrease in price along the elastic segment of a demand curve will:
   A. increase total utility, marginal utility, consumer surplus and consumer expenditure.
   B. decrease total utility, consumer surplus and consumer expenditure and increase marginal utility.
   C. decrease total utility and consumer surplus and increase and consumer expenditure and marginal utility.
   D. increase consumer surplus through a decrease in consumer expenditure.

97. Elvis values his first gravy sandwich at $5.00, the second sandwich at $4.50, the third sandwich at $4.00. If he buys three sandwiches for $4.00 each, his consumer surplus is:
   A. $5.00.
   B. $4.00.
   C. $1.50.
   D. $9.50.
98. When the price is P, the shaded area represents:
   A. a producer surplus.
   B. a price floor.
   C. consumer surplus.
   D. a price ceiling.

99. In the long run all inputs are variable; in the short run some inputs are fixed.
   True   False

100. The law of diminishing marginal productivity states that as more units of a variable input are added, holding other inputs constant (ceteris paribus), the additional output obtained from each new unit of the variable input eventually falls.
   True   False

101. When per-unit costs increase as output increases, there are economies of scale in production.
   True   False
102. Total revenue minus explicit measurable costs equals:
   A. economic profit.
   B. normal profit.
   C. accounting profit.
   D. average profit.

103. Normal profit is:
   A. determined by subtracting implicit costs from total revenue.
   B. determined by subtracting explicit costs from total revenue.
   C. the return to the entrepreneur when economic profits are zero.
   D. the average profitability of an industry over the preceding 10 years.

104. A business produces eight items and sells them for $25 each. The total cost of producing the items is $190 for explicit costs and $200 for implicit costs. Accounting profit is:
   A. -$190.
   B. $10.
   C. $20.
   D. $200.

105. A business produces 400 items and sells them for $15 each for a total of $6,000. The total cost of producing the items is $4,500 in explicit cost and $1,000 in implicit cost. Economic profit is:
   A. $0.
   B. $500.
   C. $1,000.
   D. $1,500.
106. *Implicit* cost refers to:
   A. the amount a firm receives for selling its product or service.
   B. any increase in the value of the assets owned by the firm.
   C. the opportunity cost of factors of production provided by the owners of the firm.
   D. explicit payments to the factors of production.

107. In the short run:
   A. all inputs are variable.
   B. firms can use any input combination they want.
   C. firms can choose among all possible production techniques.
   D. some inputs are fixed.

108. The long run is a period during which:
   A. no inputs can be varied and all inputs are fixed.
   B. some inputs can be varied and some inputs are fixed.
   C. some inputs can be varied and no inputs are fixed.
   D. all inputs can be varied and no inputs are fixed.

109. Which of the following is the best example of a long-run decision?
   A. An automobile manufacturing company is considering whether to invest in robotic equipment to develop a more cost-effective production technique.
   B. An automobile manufacturing company is considering whether to expand its existing workforce while keeping the same factory and equipment.
   C. A business consulting firm is considering whether to hire some interns to assist with research and data processing.
   D. A business consulting firm is considering whether to add new computers while maintaining the same number of employees.
110. Which of the following is an example of a short-run decision?
   A. An automobile manufacturing company is considering whether to invest in robotic equipment to develop a more cost-effective production technique.
   
   B. An automobile manufacturing company is considering whether to expand its existing workforce.
   
   C. A business consulting firm is considering whether to open a new office in another city where many of its clients are based.
   
   D. A business consulting firm is considering whether to hire new consultants, move to a larger space, and purchase additional equipment.

111. The increase in output obtained by hiring an additional worker is known as:
   A. the average product.
   B. the marginal product.
   C. the total product.
   D. value added.

112. When labor is the variable input, the average product equals the:
   A. marginal product divided by the number of workers.
   B. marginal product multiplied by the number of workers.
   C. number of workers divided by the quantity of output.
   D. quantity of output divided by the number of workers.
113. Number of workers | Total Output
---|---
1 | 4
2 | 10
3 | 18
4 | 28
5 | 35
6 | 41
7 | 45
8 | 48
9 | 50
10 | 49

Refer to the table shown. The marginal product of the sixth worker is:
A. 6.
B. 7.
C. 8.
D. 9.

114. Number of workers | Total Output
---|---
1 | 4
2 | 10
3 | 18
4 | 28
5 | 35
6 | 41
7 | 45
8 | 48
9 | 50
10 | 49

Refer to the table shown. At what level of employment is the marginal product of labor 7?
A. 2
B. 4
C. 5
D. 7
115. **Number of workers** | **Total Output**
---|---
1 | 4
2 | 10
3 | 18
4 | 28
5 | 35
6 | 41
7 | 45
8 | 48
9 | 50
10 | 49

Refer to the table shown. Diminishing marginal productivity begins when the:
A. third worker is hired.
B. fourth worker is hired.
C. fifth worker is hired.
D. sixth worker is hired.

116. The level of production that minimizes long-run average total costs is referred to as the:
A. technically efficient level of production.
B. economically efficient level of production.
C. minimum efficient level of production.
D. minimum profitable level of production.

117. At the minimum efficient level of production:
A. a firm will be at the only technically efficient level of production.
B. the market has expanded sufficiently to take advantage of all economies of scale.
C. production has expanded to make the firm profitable at any price.
D. a firm will be at the only short-run economically efficient level of production.
118. In the long run:
   A. all inputs are fixed.
   B. all inputs are variable.
   C. some inputs are not variable.
   D. per-unit costs are fixed.

119. Refer to the graph shown. If a firm wants to produce 300 units of output, it should use the plant size represented by:
   A. SATC₁.
   B. SATC₂.
   C. SATC₃.
   D. SATC₄.

120. Fixed cost is:
   A. the cost of producing one more unit of capital, say, machinery.
   B. any cost that does not change when the firm changes its output.
   C. average cost multiplied by the firm's output.
   D. usually zero in the short run.
121. If you operated a small bakery, which of the following would be a variable cost in the short run?
   A. Baking ovens
   B. Interest on business loans
   C. Annual lease payment for use of the building
   D. Baking supplies (flour, salt, etc.)

122. Marginal cost is the:
   A. rate of change in total fixed cost that results from producing one more unit of output.
   B. change in total cost that results from producing one more unit of output.
   C. change in average variable cost that results from producing one more unit of output.
   D. change in average total cost that results from producing one more unit of output.

123. Average fixed cost:
   A. equals marginal cost when average total cost is at its minimum.
   B. may be found for any output by adding average variable cost and average total cost.
   C. graphs as a U-shaped curve.
   D. declines continually as output increases.

124. Which of the following is correct as it relates to cost curves?
   A. Average variable cost intersects marginal cost at the latter's minimum point.
   B. Marginal cost intersects average total cost at the latter's minimum point.
   C. Average fixed cost intersects marginal cost at the latter's minimum point.
   D. Marginal cost intersects average fixed cost at the latter's minimum point.

125. If average total cost is declining, then:
   A. marginal cost must be greater than average total cost.
   B. the average fixed cost curve must lie above the average variable cost curve.
   C. marginal cost must be less than average total cost.
   D. total cost must also be declining.
126. Use the figure below to answer the following questions:

In the above figure, curves 1, 2, 3, and 4 represent the:
A. ATC, MC, AFC, and AVC curves respectively.
B. MC, AFC, AVC, and ATC curves respectively.
C. MC, ATC, AVC, and AFC curves respectively.
D. ATC, AVC, AFC, and MC curves respectively.
### Solutions to Practice Questions

#### CHAPTER 1
- 1. FALSE
- 2. FALSE
- 3. B
- 4. D
- 5. B
- 6. D

#### CHAPTER 2
- 7. FALSE
- 8. TRUE
- 9. TRUE
- 10. TRUE
- 11. TRUE
- 12. C
- 13. A
- 14. B
- 15. A
- 16. B
- 17. B
- 18. D
- 20. B
- 21. D
- 22. A
- 23. A
- 24. A
- 25. B
- 26. B
- 27. B
- 28. B
- 29. C
- 30. D

#### CHAPTER 3
- 31. TRUE
- 32. FALSE
- 33. B
- 34. C

#### CHAPTER 4
- 42. TRUE
- 43. TRUE
- 44. TRUE
- 45. B
- 46. A
- 47. B
- 48. B
- 49. B
- 50. D
- 51. A
- 52. C
- 53. B
- 54. C
- 55. C
- 56. C
- 57. B
- 58. A
- 59. B
- 60. C
- 61. B
- 62. D
- 63. D
- 64. A
- 65. C
- 66. B
- 67. D
- 68. A
- 69. A
- 70. TRUE
- 71. TRUE
- 72. TRUE
- 73. FALSE
- 74. FALSE
- 75. D
- 76. D
- 77. B
- 78. B
- 79. B
- 80. C
- 81. D
- 82. D
- 83. D
- 84. B
- 85. D
- 86. A
- 87. B
- 88. B
- 89. A
- 90. C
- 91. C
- 92. B
- 93. C
- 94. C
- 95. D
- 96. A
- 97. C
- 98. C
- 99. TRUE
- 100. TRUE
- 101. FALSE
- 102. C
- 103. C
- 104. B
- 105. B
- 106. C
- 107. D
- 108. D
- 109. A
- 110. B
- 111. B
- 112. D
- 113. A
- 114. C
- 115. C
- 116. C
- 117. B
- 118. B
- 119. A
- 120. B
- 121. D
- 122. B
- 123. D
- 124. B
- 125. C
- 126. C