

Theory of Consumer theory and Demand



Theory of consumer Behavior and Demand

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The Cardinal Utility Approach

Consumers are one of the four economic agents in economic systems. The remaining agents are business firms, government and the entrepreneurs. These agents pursue their own goals. Consumers, for instance, aim to maximize satisfaction from what they consume given their limited resources.

Utility refers to the level of satisfaction or happiness that consumers get from the Consumption of goods and services.

◆ **Cardinal utility** theory is based on measurement of Utility or satisfaction in absolute numbers.

◆ **Marginal utility (MU)** is the additional satisfaction that a consumer gets because of changing consumption by one unit. It is an extra utility due to a change in consumption. The law of diminishing marginal utility says that as the amount of a good consumed increases, the marginal utility of the good decreases.

→ **Commodities** are desired because of their ability to satisfy wants. Goods and services however, differ in their ability to satisfy wants. For example, an individual may choose coffee rather than tea. Another person may choose tea rather than coffee but both consumers will derive some level of satisfaction by consuming the good they have chosen. Given any two consumption bundles, the consumer can compare and decide that one of consumption bundles

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is better than another, or that they lead to the same satisfaction. The consumer is expected to state his/her preference.

♦ **cardinal utility** assumes that utility is measurable in absolute or cardinal numbers. The unit of measurement is called “utils”. We use the concept of marginal utility, which is an extra utility or satisfaction from new consumption to show consumer optimum.

The Law of Diminishing Marginal Utility states that if the consumption of a good or service increases, the satisfaction derived gradually increases but at a decreasing rate, to the point where it reaches zero



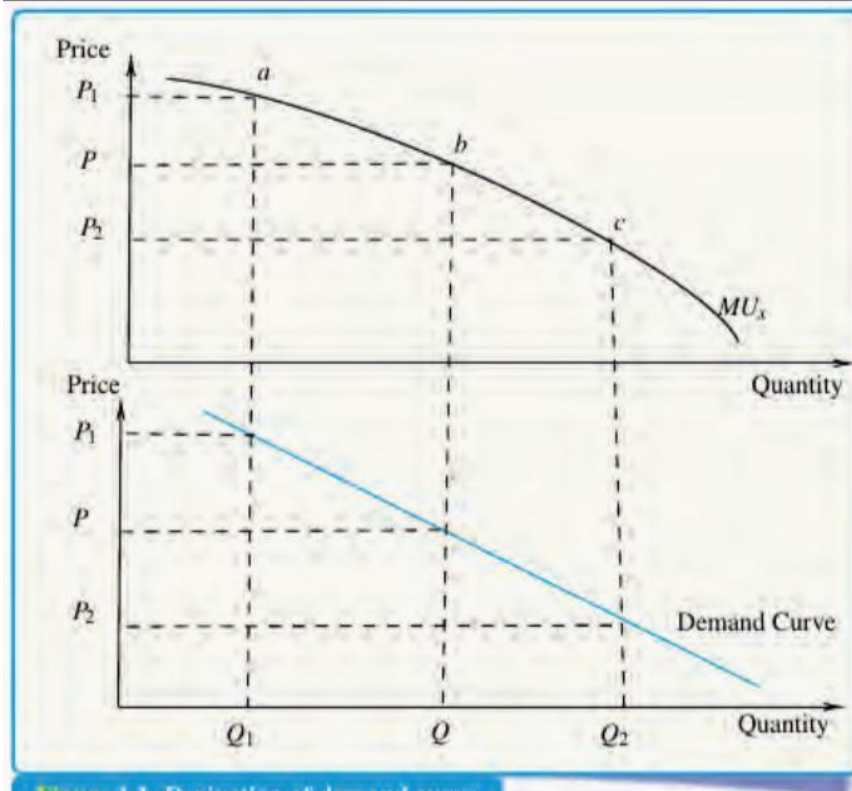
Law of Diminishing Marginal Utility

[lə əv də-ˈmi-nish-ɪŋ ˈmɑːr-j-nəl yū-ˈti-lə-tē]

An economic law that states that, all else being equal, as consumption increases, the satisfaction derived from each additional unit decreases.

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Total satisfaction is maximised when marginal utility is zero



The Ordinal Utility Theory and Preferences

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◆ **Preference** is simply the ability of the consumer to state or express choices given alternatives. If a consumer faces two consumption bundles, say, X and Y, three things might happen. He/she may prefer

X to Y, or Y to X or get same level of satisfaction from both X and Y. The first case is where the consumer prefers X to Y, and we can write it as $X > Y$. In the second case, the consumer prefers Y to X and hence, we can write the choice as $Y > X$.

Finally, when a consumer gets the same level of satisfaction from any two combinations of goods, we say that the consumer is **indifferent** between the two goods or is unable to make choice of one good over another. This case is written as $X \sim Y$. When a consumer prefers a consumption bundle (x) to a bundle (y), it means that the x-bundle gives the consumer higher utility than the y-bundle. A bundle (x) is preferred to (y) if and only if the utility of (x) is larger than the utility of (y).

◆ **The ordinal utility** approach argues that utility cannot be measured in cardinal numbers as suggested by the cardinalist approach. The consumer is expected to rank different consumption bundles according to his/her preferences. The ordinal utility concept is based on the fact that it may not be possible for consumers to express the utility of various commodities that they consume in absolute terms, like, 1 util, 2 utils, or 3 utils, but it is always possible for the consumers to express the utility in relative terms.

Consumers would also be able to rank commodities in the order of their preference as 1st, 2nd, 3rd and so on. This utility approach is based on some assumptions. We use indifference curves (ICs) to show satisfaction levels of consumers. ICs are locus of points showing alternative combination of two goods leading to the same utility of satisfaction. We will study properties of ICs in the next sections after we discuss the assumption used in this approach.

Note

The **ordinal utility theory** assumes that the consumer can rank or order commodities according to his/her choice or preference.

Assumptions of Ordinal Utility Theory

This approach is based on simplifying assumptions most of which are indicated here under:

- ✓ **The consumers are rational:** the goal of the consumers is maximization of their satisfaction or utility given their limited income and market prices.
- ✓ **Ordinal measurement of utility:** utility is not absolutely (cardinally) measurable. This is because consumers are required only to order or rank their preference for various bundles of commodities.
- ✓ **Diminishing marginal rate of substitution (MRS):** the marginal rate of substitution is the rate at which a consumer is willing to substitute one commodity (x) for another commodity (y) without affecting the total satisfaction of the consumer. Marginal rate of substitution is the slope of the indifference curve.
- ✓ **Complete ordering:** all possible combinations of goods can be ordered into preferred, indifferent or inferior combinations when compared to a given combination of the goods.

The total utility (U) of the consumer depends on the quantities of the commodities consumed, i.e. $U = f(x_1, x_2, x_3, \dots, x_n)$.

Preferences are transitive or consistent: it is transitive in the senses that if the consumer prefers market basket X to market basket Y, and prefers Y to Z, and then he/she must also prefer X to Z.

- ✓ **Consistency of preference** implies that if market basket X is preferred to market basket Y ($X \succ Y$) then, Y cannot be preferred to X at another time ($Y \not\succ X$) for the same consumer.
- ✓ **Limited money income:** the consumer is confronted with limited money income so that optimization is mandatory. This assumption is used to show the scarcity concept in economics.
- ✓ **Non – satiation assumption:** consumers always prefer more of a good to less and

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◆ The ordinal utility approach is based on two very important tools or instruments. One is the indifference curve while the other is budget line.

◆ **An indifference curve (IC)** is a concept used to represent an ordinal measure of the tastes and preferences of the consumer. Since it uses ICs to study the consumer's behavior, the ordinal utility theory is also known as indifference curve analysis. There are three interrelated terminologies which are linked with concept of indifference: the indifference schedule (set), curve and map.

→ **Indifference set (schedule)**: this is a tabular presentation of the various combinations of goods from which the consumer derives the same level of utility. It is a combination of goods for which the consumer is indifferent, preferring none of the consumption bundles. An indifference schedule is a list of combinations of two commodities that yields equal satisfaction.

→ **Indifference curves**: an indifference curve is a line that shows various combinations of two goods that provide the consumer with the same level of utility or satisfaction. It is the locus of points (combinations or bundles of goods), which yield the same utility (level of satisfaction) to the consumer, so that the consumer is indifferent between the combinations. An indifference curve is an iso-utility curve.

Note

An indifference curve is an iso-utility curve. It shows different ways of combining two goods X and Y that give the buyer the same level of satisfaction.

→ **Indifference map**: this is a set or a collection of indifference curves with different levels of satisfactions. It is the entire set of indifference curves, which reflects the complete set of tastes and preferences of the consumer.

Properties Of Indifference Curve

1. Indifference Curves are always convex to the origin.
2. Indifference curve slope downwards
3. Higher Indifference curve represents higher level of satisfaction
4. Indifference curves can never intersect with each other
5. An indifference curve never touch X-axis or Y-axis

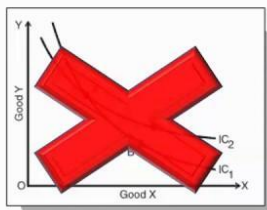
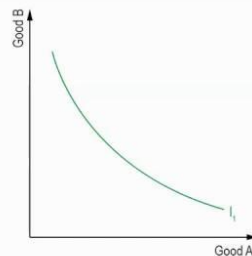


Fig. 3 : Intersecting Indifference Curves

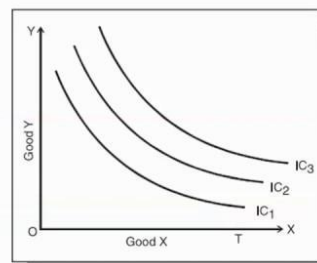
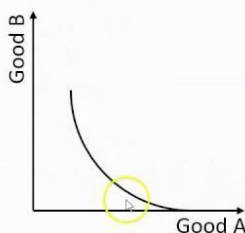
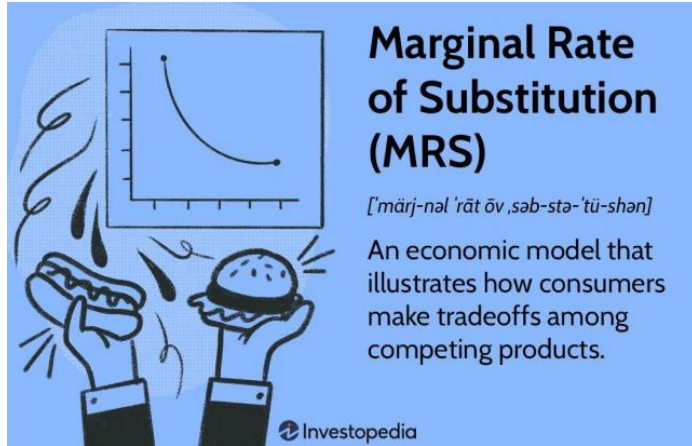


Fig. 2 : Indifference Map

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❖ The **marginal rate of substitution (MRS)** is the rate at which a consumer would be willing to forgo a specific quantity of one good for more units of another good at the same utility level. MRS, along with the indifference curve, is used by economists to analyze consumer's spending behavior.



Marginal Rate of Substitution

$$\text{Marginal Rate of Substitution (MRS}_{xy}) = \frac{\Delta Y}{\Delta X}$$

Calculator icon | Bar chart icon | Wallstreetprep logo

✪ In summary **Marginal utility** shows how your utility changes when you consume more unit of a given good. Marginal rate of substitution shows how much you have to give up of one good if you want to consume more of another good keeping the utility at the same level.

Special types of indifference curve

☞ **Perfect substitutes** refer to products that are identical, and a consumer is, therefore, indifferent between them. These are goods which can be substituted for one another at a constant rate. The two goods are essentially the same. If two commodities are perfect substitutes, the indifference curve becomes a straight line with a negative slope. MRS for perfect substitutes is constant. All that matters to the consumer is the total number of the goods. Perfect substitutes have linear indifference curves.

Perfect complements refer to goods that can't be consumed without each other. Perfect complements' indifference curves are right-angled.

☞ **A perfect complement** is a good that must be consumed with another good. These are goods which are to be consumed always jointly at a constant rate. A typical example is where a consumer wears a left shoe with a right shoe. The indifference curve of a perfect complement exhibits a right angle, as illustrated by the figure. Such preferences can be represented by a Leontief utility function.

❖ The main difference between a substitute and a complement is that substitute goods are consumed in place of each other, whereas complements are consumed together. If the cross-price elasticity of demand of the two goods is positive, then the goods are substitutes.

The Budget Line or the Price line

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Budget line is a graphical representation of all possible combinations of two goods which can be purchased with given income and prices, such that the cost of each of these combinations is equal to the money income of the consumer. In economics we study demand of a consumer but not wish of a consumer. A consumer needs some amount of income to buy goods and services. Demand is wish backed by purchasing power. The budget line gives a summary of the buying ability of a consumer.

→ **A budget line** is a line or a graph which indicates different combinations of two goods that a consumer can buy with a given income at a given prices. In other words, the budget line shows that the basket of goods that consumers can purchase, given their income and prevailing market prices. Together with an indifference curve, a budget line is an important function which is required to derive consumer optimum. Next, we will study the assumptions and properties of a budget line.

→ A budget line shows combinations of two goods a consumer is able to consume, given a budget constraint. An indifference curve shows combinations of two goods that yield equal satisfaction. To maximize utility, a consumer chooses a combination of two goods at which an indifference curve is tangent to the budget line.

Budget Line Equation

Budget line is also termed as a budget constraint due to the fact that even though a consumer will strive to achieve maximum utility across the indifference curve, he or she faces two very robust constraints - market price of commodities and limited income.

❖ Income acts as a major constraint because there is only a particular height which may be reached in the indifference curve, given the income. It is this budgetary constraint that is exhibited in the budget line equation below.

$$P_X \times Q_X + P_Y \times Q_Y = S$$

Here,

P_X = Price of commodity X

P_Y = Price of commodity Y

Q_X = Quantity of commodity X

Q_Y = Quantity of commodity Y

S = Consumer income

The equation indicated above shows that the expenditure incurred by a consumer for purchasing commodity X and Y can never exceed his or her income (S).

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Example of Budget Line

Suppose a consumer has an income of Rs.50, and it will be used to buy commodities X and Y. To derive maximum utility from the said income, only the following options are available.

	Commodity X (Rs.10 each)	Commodity Y (Rs.5 each)	Budgetary allocation
Option A	0	10	$(10 \times 0) + (5 \times 10) = 50$
Option B	1	8	$(10 \times 1) + (5 \times 8) = 50$
Option C	2	6	$(10 \times 2) + (5 \times 6) = 50$
Option D	3	4	$(10 \times 3) + (5 \times 4) = 50$
Option E	4	2	$(10 \times 4) + (5 \times 2) = 50$
Option F	5	0	$(10 \times 5) + (5 \times 0) = 50$

The required budget line is obtained by plotting the above budget against the following graph. In the graph, the X-axis represents commodity X, and Y-axis represents commodity Y.

Features of Budget Line

The features or properties of the budget line have been indicated below.

- **Real Income Line** - The real income line is dependent on the aspect of income and expenditure capacity of an individual.
- **Straight Line** - The straight line indicated in the budget line signifies the existing market exchange rate for every combination shown.
- **Negative Slope** - The negative downward slope of the budget line shows the inverse relationship between the purchase of two commodities.
For example - Consider A and B are two commodities, and both are to be purchased in 10 units each within an income of Rs.200. If 15 units of A is purchased, then only 5 units of B can be purchased. It is due to the fact that income remains constant at Rs.200.
- **Indifference Curve Tangent** - The indifference curve creates consumer's equilibrium in the point that it touches the budget line.

Requirements of a Budget Line

The concept of the budget line, like most economic theories, is based on assumptions in order to produce simplified and clear analytic results. Some of them are:

- A consumer's income is spent solely on the purchase of two commodities.
- A consumer's total monetary earnings are constrained and known.
- Both products' market prices are known to the customer.
- A consumer's total spending equals his or her total income.

What is meant by a Shift in the Budget Line?

The consistency in budget line is controlled by the following factors –

- ✓ Income of consumer
- ✓ Prices of the two commodities
- ✓ Volume of the two commodities purchased

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While the quantity of the commodities purchased is, to a certain extent, in the control of the consumer, its price and consumer income changes with time. It is this change that leads to the shift in the budget line.

Impact of Change in Income - Reduction in income means contraction of his or her purchasing power and vice versa, causing the budget line to shift.

Impact of Change in Price - Commodity price experiences volatility, and that it is inversely proportional to the purchases made by the consumer. If the commodity prices reduce, it is likely that it may be purchased in greater quantities.

Different Premises of Budget Line

➤ Determination of Market Prices of Commodities

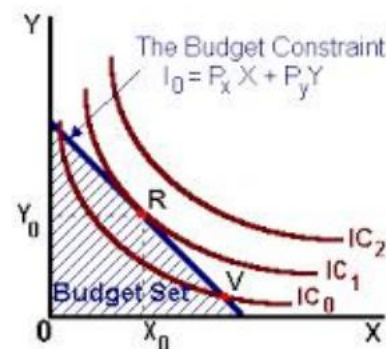
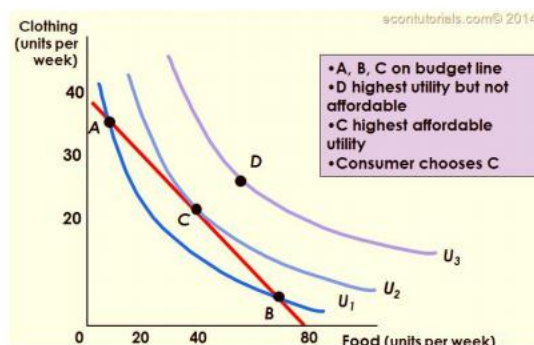
The budget line assumes that the market prices of the two commodities taken into consideration will always be in the knowledge of the consumer. Any alterations in that regard will make the line infeasible.

➤ Information on Consumer Income

It presumes that the income of the consumer pertains to a limited amount and that it is known accurately. Also, the allocation of resources is undertaken only for a known number of commodities.

Optimum of consumer

Consumer optimum occurs at the point where the highest indifference curve and the budget constraint are tangent. The consumer chooses consumption of the two goods so that the marginal rate of substitution equals the relative price.



Consumer's Equilibrium means a state of maximum satisfaction. A situation where a consumer spends his given income purchasing one or more commodities so that he gets maximum satisfaction and has no urge to change this level of consumption, given the prices of commodities, is known as the consumer's equilibrium.

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Equilibrium of the consumer takes place at the point of tangency between the budget line and the indifference curve. At this point of tangency, the marginal rate of substitution (MRS) is the same as the price ratios of the two commodities. Mathematically,

$$MRS_{x,y} = \frac{\Delta Y}{\Delta X} = -\frac{MU_x}{MU_y} = -\frac{P_x}{P_y}$$

Income consumption curve shows the optimal combination of two goods that the consumer can buy when his/her income changes. **Price consumption curve** shows the optimal combination of two goods that the consumer can buy when the price of one of the two goods changes. **Demand curve** is derived from the consumer optimum combinations under both the cardinal and ordinal approaches.

❖ **The income effect** says that after the price decline, the consumer could purchase the same goods as before, and still have money left over to purchase more. For both reasons, a decrease in price causes an increase in quantity demanded. This is a negative income effect.

A price-consumption curve represents how consumers' consumption bundles change as the price of one good change while holding income, preferences, and the price of the other good constant.

➔ **The demand curve** can be derived (found) by looking at the optimal bundle from the indifference curve graph. Example: Let's say the consumer's income is \$100. and the quantity consumed of X at the optimal bundle increased from 6 to 12 units. This can be seen on the demand curve in the second diagram.

Worksheet

Multiple Choice Questions (50)

1. **What is the primary goal of consumers in an economic system?**
 - a) Minimize expenditure
 - b) Maximize satisfaction from consumption
 - c) Increase savings
 - d) Reduce debt
2. **Utility in economics refers to:**
 - a) The price of a good
 - b) The level of satisfaction from consuming goods/services
 - c) The cost of production
 - d) The quantity demanded

3. **Cardinal utility theory assumes utility can be measured in:**
 - a) Ordinal rankings
 - b) Relative terms (e.g., 1st, 2nd)
 - c) Absolute numbers (e.g., utils)
 - d) Indifference curves
4. **Marginal Utility (MU) is defined as:**
 - a) Total satisfaction from consumption
 - b) The additional satisfaction from consuming one more unit
 - c) The rate of substitution between goods
 - d) The budget constraint
5. **The law of diminishing marginal utility states that:**
 - a) MU increases with consumption
 - b) MU decreases as consumption increases
 - c) MU remains constant
 - d) MU is negative initially
6. **In ordinal utility theory, consumers:**
 - a) Measure utility in utils
 - b) Rank consumption bundles by preference
 - c) Ignore budget constraints
 - d) Focus only on cardinal measurements
7. **If a consumer is indifferent between bundles X and Y, it is denoted as:**
 - a) $X > Y$
 - b) $Y > X$
 - c) $X \sim Y$
 - d) $X \neq Y$
8. **An indifference curve shows combinations of two goods that:**
 - a) Cost the same
 - b) Yield different utility levels

- c) Yield equal satisfaction
- d) Are unaffordable

9. The Marginal Rate of Substitution (MRS) is:

- a) The slope of the budget line
- b) The rate at which a consumer will give up one good for another at the same utility level
- c) The ratio of prices
- d) The change in total utility

10. Perfect substitutes have indifference curves that are:

- a) Right-angled
- b) Linear (straight lines)
- c) Circular
- d) Vertical

11. Perfect complements (e.g., left/right shoes) have indifference curves that are:

- a) Linear
- b) Curved
- c) Right-angled
- d) Horizontal

12. The budget line represents:

- a) Combinations of goods with equal utility
- b) Combinations affordable with given income/prices
- c) Consumer preferences
- d) Production costs

13. The slope of the budget line equals:

- a) MRS
- b) The ratio of marginal utilities
- c) The ratio of prices (P_x/P_y)
- d) Total utility

14. A consumer's budget line shifts outward due to:

- a) A price increase

- b) A decrease in income
- c) An increase in income
- d) A decrease in utility

15. **Consumer optimum occurs where:**

- a) The budget line intersects the X-axis
- b) $MRS < P_x/P_y$
- c) The indifference curve is tangent to the budget line
- d) Marginal utility is zero

16. **The income effect describes how a price change affects consumption via:**

- a) Shifts in preferences
- b) Changes in purchasing power
- c) Substitution between goods
- d) Utility measurements

17. **The Price Consumption Curve (PCC) shows how consumption changes when:**

- a) Income changes
- b) Preferences change
- c) The price of one good changes
- d) Utility is constant

18. **A demand curve is derived from:**

- a) The budget line
- b) The PCC
- c) Indifference curves
- d) Total utility

19. **Which is NOT an assumption of the budget line?**

- a) Fixed consumer income
- b) Constant prices
- c) Cardinal utility measurement
- d) Consumer spends all income

20. If $P_x = \$2$, $P_y = \$4$, and income = \$40, the maximum quantity of X a consumer can buy is:

- a) 10 units
- b) 20 units
- c) 40 units
- d) 5 units

21. The equation of a budget line is:

- a) $MU_x/P_x = MU_y/P_y$
- b) $P_x \cdot Q_x + P_y \cdot Q_y = \text{Income}$
- c) $MRS = P_x/P_y$
- d) $U = f(Q_x, Q_y)$

22. If two goods are perfect complements, a consumer will:

- a) Substitute one for another at a constant rate
- b) Only consume them in fixed proportions
- c) Prioritize one over the other
- d) Ignore price changes

23. An indifference map consists of:

- a) A single indifference curve
- b) Multiple budget lines
- c) A set of indifference curves
- d) Utility functions

24. MRS diminishes along an indifference curve due to:

- a) Increasing marginal utility
- b) The law of diminishing marginal utility
- c) Constant prices
- d) Income effects

25. When the price of a good falls, the substitution effect leads to:

- a) Reduced consumption
- b) Increased consumption of the cheaper good

- c) No change in consumption
- d) Higher savings

26. **Cardinal utility theory uses "utils" to:**

- a) Rank preferences
- b) Quantify satisfaction numerically
- c) Draw indifference curves
- d) Measure budget constraints

27. **A consumer prefers bundle X to Y. This implies:**

- a) $U(X) < U(Y)$
- b) $U(X) = U(Y)$
- c) $U(X) > U(Y)$
- d) $MRS = 0$

28. **The "optimum" in consumer theory maximizes:**

- a) Expenditure
- b) Savings
- c) Utility subject to budget
- d) Production

29. **If $MRS > P_x/P_y$, the consumer should:**

- a) Buy more X and less Y
- b) Buy more Y and less X
- c) Not change consumption
- d) Save more

30. **A rightward shift in the budget line can result from:**

- a) Higher P_x
- b) Lower income
- c) Lower P_y
- d) Lower P_x

31. **The slope of an indifference curve represents:**

- a) The price ratio

- b) MRS
- c) Marginal utility
- d) Income level

32. **For perfect substitutes, MRS is:**

- a) Increasing
- b) Decreasing
- c) Constant
- d) Zero

33. **A consumer equilibrium requires:**

- a) $MRS = MU_x/MU_y$
- b) $MRS = P_x/P_y$
- c) $MU_x = MU_y$
- d) $P_x = P_y$

34. **The income effect of a price increase for a normal good leads to:**

- a) Increased consumption
- b) Decreased consumption
- c) No change
- d) Higher savings

35. **Deriving a demand curve involves varying:**

- a) Income
- b) Preferences
- c) Price of the good
- d) Price of related goods

36. **If the cross-price elasticity of demand is positive, the goods are:**

- a) Complements
- b) Substitutes
- c) Unrelated
- d) Inferior

37. A budget line has a negative slope because:

- a) Utility diminishes
- b) To consume more of one good, less of the other must be given up
- c) Prices are constant
- d) Income is fixed

38. The "real income line" depends on:

- a) Nominal income and prices
- b) Utility levels
- c) MRS
- d) Production costs

39. In consumer equilibrium, the tangency condition ensures:

- a) Minimum expenditure
- b) Maximum utility for given budget
- c) Zero savings
- d) Linear indifference curves

40. A decrease in P_x causes the budget line to:

- a) Pivot outward on the X-axis
- b) Pivot inward on the X-axis
- c) Shift parallel outward
- d) Become steeper

41. The ordinal utility approach is also called:

- a) Cardinal analysis
- b) Indifference curve analysis
- c) Budget analysis
- d) Demand analysis

42. An indifference schedule is a:

- a) Graphical curve
- b) Tabular list of equal-utility combinations

c) Budget equation

d) Utility function

43. **MRS is calculated as:**

a) $\Delta Y/\Delta X$

b) $\Delta X/\Delta Y$

c) MU_x/MU_y

d) P_x/P_y

44. **For a consumer to reach a higher indifference curve, they need:**

a) Lower prices

b) Higher income

c) Better preferences

d) More substitutes

45. **The PCC for good X traces changes in:**

a) Income

b) Quantity demanded of X as its price changes

c) Quantity demanded of Y

d) Utility

46. **If tea and coffee are perfect substitutes, their indifference curves are:**

a) Linear

b) Right-angled

c) Convex

d) Vertical

47. **A consumer's ability to buy goods is summarized by the:**

a) Indifference curve

b) Budget line

c) MRS

d) Utility function

48. **The "utils" concept is associated with:**

a) Ordinal utility

- b) Cardinal utility
- c) Indifference curves
- d) Budget constraints

49. A price decrease increases quantity demanded due to:

- a) Only the substitution effect
- b) Only the income effect
- c) Both substitution and income effects
- d) Neither effect

50. The demand curve slopes downward because of:

- a) Diminishing marginal utility
- b) Increasing returns
- c) Fixed income
- d) Constant prices

True or False Questions (40)

1. Utility is measurable in cardinal numbers under ordinal utility theory.
2. Marginal utility is the extra satisfaction from consuming an additional unit.
3. Indifference curves slope upward to the right.
4. Perfect substitutes have linear indifference curves.
5. The budget line equation is $P_x \cdot Q_x + P_y \cdot Q_y = \text{Income}$.
6. MRS is constant for perfect complements.
7. An increase in income shifts the budget line parallel outward.
8. Consumer equilibrium occurs where $MRS = MU_x/MU_y$.
9. The income effect for a normal good is negative when price rises.
10. The PCC is derived by changing income.
11. Cardinal utility uses rankings like 1st, 2nd, 3rd.
12. A bundle X is preferred to Y if $U(X) > U(Y)$.
13. Indifference curves can intersect.
14. MRS diminishes due to increasing marginal utility.

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15. The slope of the budget line is P_x/P_y .
16. Right-angled indifference curves represent perfect substitutes.
17. A price decrease pivots the budget line inward on the axis of the cheaper good.
18. Demand is a wish backed by purchasing power.
19. The ordinal approach assumes utility is measurable in utils.
20. The budget line is also called the price line.
21. Consumer optimum requires tangency between budget line and indifference curve.
22. An indifference map shows one indifference curve.
23. For perfect complements, MRS is undefined at the kink.
24. The income effect always reinforces the substitution effect.
25. The demand curve is derived from the PCC.
26. If cross-price elasticity is negative, goods are substitutes.
27. A consumer spends all income in the budget line model.
28. Higher indifference curves represent lower utility.
29. Diminishing MRS implies convex indifference curves.
30. A change in preferences shifts the budget line.
31. Cardinal utility theory is based on indifference curves.
32. The law of diminishing marginal utility applies to both cardinal and ordinal approaches.
33. MRS equals the absolute value of the indifference curve slope.
34. If P_x rises, the budget line becomes steeper.
35. The substitution effect depends on the shape of indifference curves.
36. A Giffen good has a positively sloped demand curve.
37. The budget line assumes known prices and income.
38. Indifference curves are thick for perfect substitutes.
39. Consumer surplus is derived from indifference curves.
40. The PCC for good X plots price against quantity demanded.

Fill in the Blank Questions (40)

1. The four economic agents are consumers, firms, government, and **entrepreneurs**.

Theory of Consumer theory and Demand

2. **Utility** is the satisfaction from consuming goods/services.
3. Cardinal utility measures satisfaction in **utils**.
4. The **law of diminishing marginal utility** states that MU falls as consumption increases.
5. In ordinal theory, consumers **rank** bundles by preference.
6. If a consumer is indifferent, it is denoted by $\sim$.
7. An **indifference curve** shows equal-satisfaction combinations.
8. The **marginal rate of substitution (MRS)** is the rate of trade-off between goods.
9. Perfect substitutes have **constant** MRS.
10. Perfect complements have **right-angled** indifference curves.
11. The **budget line** shows affordable combinations given income and prices.
12. The slope of the budget line equals P_x/P_y .
13. An increase in income causes a **parallel shift** of the budget line.
14. Consumer equilibrium requires $MRS = P_x/P_y$.
15. The **income effect** arises from changes in purchasing power.
16. The **Price Consumption Curve (PCC)** shows how consumption changes with price.
17. The demand curve is derived from the **PCC**.
18. For normal goods, the income effect reinforces the **substitution** effect.
19. If two goods are substitutes, cross-price elasticity is **positive**.
20. The budget constraint equation is $P_x \cdot Q_x + P_y \cdot Q_y = \text{Income}$.
21. **Indifference map** shows multiple indifference curves.
22. MRS diminishes due to **diminishing marginal utility**.
23. At consumer optimum, indifference curves are **tangent** to the budget line.
24. A price decrease pivots the budget line **outward** on the axis of the good.
25. **Leontief utility function** represents perfect complements.
26. Ordinal utility theory is also called **indifference curve analysis**.
27. Cardinal utility assumes **measurable** utility.
28. A consumer maximizes **satisfaction/utility** subject to budget.
29. If $MRS > P_x/P_y$, consume more of good X.
30. The real income line depends on **income and prices**.

Theory of Consumer theory and Demand

31. **Demand** is a wish backed by purchasing power.
32. The PCC holds **income, preferences, and other prices** constant.
33. Diminishing MRS implies **convex** indifference curves.
34. For perfect substitutes, indifference curves are **linear**.
35. The budget line has a **negative** slope.
36. An indifference schedule is a **tabular** presentation.
37. A change in P_x rotates the budget line around the **Y-intercept**.
38. The income effect for inferior goods opposes the **substitution** effect.
39. **Giffen goods** have upward-sloping demand curves.
40. The optimal bundle is where the highest indifference curve is **tangent** to the budget line.

Answer Key

Multiple Choices

1. b
2. b
3. c
4. b
5. b
6. b
7. c
8. c
9. b
10. b
11. c
12. b
13. c
14. c
15. c
16. b

- 17. c
- 18. b
- 19. c
- 20. b
- 21. b
- 22. b
- 23. c
- 24. b
- 25. b
- 26. b
- 27. c
- 28. c
- 29. a
- 30. d
- 31. b
- 32. c
- 33. b
- 34. b
- 35. c
- 36. b
- 37. b
- 38. a
- 39. b
- 40. a
- 41. b
- 42. b
- 43. a
- 44. b
- 45. b

46. a

47. b

48. b

49. c

50. a

True/False

1. F

2. T

3. F

4. T

5. T

6. F

7. T

8. F

9. T

10. F

11. F

12. T

13. F

14. F

15. T

16. F

17. F

18. T

19. F

20. T

21. T

22. F

23. T

- 24. F
- 25. T
- 26. F
- 27. T
- 28. F
- 29. T
- 30. F
- 31. F
- 32. T
- 33. T
- 34. T
- 35. T
- 36. T
- 37. T
- 38. F
- 39. F
- 40. F

Fill in the Blank

- 1. entrepreneurs
- 2. Utility
- 3. utils
- 4. law of diminishing marginal utility
- 5. rank
- 6. ~
- 7. indifference curve
- 8. marginal rate of substitution (MRS)
- 9. constant
- 10. right-angled
- 11. budget line

12. P_x/P_y
13. parallel shift
14. P_x/P_y
15. income effect
16. Price Consumption Curve (PCC)
17. PCC
18. substitution
19. positive
20. $P_x \cdot Q_x + P_y \cdot Q_y = \text{Income}$
21. Indifference map
22. diminishing marginal utility
23. tangent
24. outward
25. Leontief
26. indifference curve analysis
27. measurable
28. satisfaction/utility
29. X
30. income and prices
31. Demand
32. income, preferences, and other prices
33. convex
34. linear
35. negative
36. tabular
37. Y-intercept
38. substitution
39. Giffen goods
40. tangent