FREE EDITION · NOTES + 3 SAMPLE MCQS

CUET · ECONOMICS · CLASS XII · CODE 309

Theory of Consumer Behaviour

CUET unit: Consumer Equilibrium and Demand

By **UniDrill** · NCERT-grounded study material

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📌 Snapshot

- The micro-foundations of demand run from utility (cardinal + ordinal) to indifference curves, the budget line, consumer's optimum, and finally the market demand curve and elasticity.
- Two parallel approaches apply — Cardinal Utility Analysis (utility measured in numbers, TU and MU, Law of Diminishing Marginal Utility) and Ordinal Utility Analysis (indifference curve + budget line tangency).
- The negatively-sloped demand curve follows from both diminishing marginal utility (cardinal route) and price-induced shifts in the budget line / consumption equilibrium (ordinal route).
- Price elasticity of demand has a formula, degrees (perfectly elastic / inelastic / unitary / elastic / inelastic), variation along a linear demand curve, a geometric measure, and a link to total expenditure.
- A high-yield chapter for CUET — definitional MCQs (budget set vs budget line), diagram-based questions (IC properties, shifts vs movement), and numerical Ed problems regularly appear.

📖 Detailed Notes

2.1 Core concepts

- **Utility = want-satisfying capacity of a commodity**; the stronger the desire to have it, the greater the utility derived. Utility is subjective — it differs across individuals and changes with place and time (e.g., a room heater in Ladakh vs Chennai) (NCERT §2.1, p. 8).
- **Cardinal Utility Analysis** assumes utility can be expressed in numbers (e.g., "this shirt gives me 50 units of utility") (NCERT §2.1.1, p. 9).
- **Total Utility (TU)** of n units = total satisfaction from consuming n units of commodity x. **Marginal Utility (MU)** = change in TU due to one additional unit, $MU_n = TU_n - TU_{n-1}$; and $TU_n = MU_1 + MU_2 + \cdots + MU_n$ (NCERT §2.1.1, p. 9).
- **Law of Diminishing Marginal Utility:** MU from each additional unit of a commodity declines as its consumption increases, keeping consumption of other commodities constant. When MU = 0, TU is at maximum; thereafter MU becomes negative and TU falls (NCERT §2.1.1, p. 10; Table 2.1).

- **Demand curve from cardinal utility:** Because each successive unit yields lower MU, the consumer will pay less for additional units — hence the demand curve slopes downward (NCERT §2.1.1, p. 10–11).
- **Ordinal Utility Analysis:** Consumer cannot measure utility in numbers but can rank bundles. Two-good bundles (x1 bananas, x2 mangoes) are compared via indifference curves (NCERT §2.1.2, p. 11).
- **Indifference curve (IC):** locus of all bundles giving the consumer the same level of satisfaction. **Marginal Rate of Substitution (MRS) = |ΔY/ΔX|** — quantity of mangoes the consumer foregoes for one extra banana, keeping utility constant (NCERT §2.1.2, p. 11).
- **Law of Diminishing MRS:** As bananas increase, MU of bananas falls and MU of mangoes rises, so the consumer sacrifices smaller and smaller amounts of mangoes for each additional banana (NCERT §2.1.2, p. 12, Table 2.2).
- **Shape of IC:** Diminishing MRS makes the IC **convex to the origin**. For perfect substitutes, MRS is constant and the IC is a straight line (NCERT §2.1.2, p. 12, Table 2.3).
- **Monotonic preferences:** Between two bundles, the consumer prefers the one with more of at least one good and no less of the other (NCERT §2.1.2, p. 13).
- **Features of IC:** (1) slopes downward (more of one good ⇒ less of the other to keep utility same); (2) higher IC = higher satisfaction (monotonicity); (3) two ICs never intersect — intersection produces contradictory rankings (NCERT §2.1.2, p. 13–14).
- **Budget constraint:** $p_1x_1 + p_2x_2 \leqslant M$. The **budget set** = all bundles satisfying this; the **budget line** $p_1x_1 + p_2x_2 = M$ = bundles costing exactly M (NCERT §2.2.1, p. 15).
- **Budget line geometry:** horizontal intercept M/p1, vertical intercept M/p2, **slope = −p1/p2** (the price ratio). Slope measures the rate at which the consumer can substitute bananas for mangoes in the market (NCERT §2.2.1, p. 16–17).
- **Shifts in budget line:** Income change ⇒ parallel shift (outward if M rises, inward if M falls). Price of one good changes ⇒ budget line pivots around the other good's intercept — steeper if p1 rises, flatter if p1 falls (NCERT §2.2.2, p. 17–18).
- **Consumer's optimum (ordinal):** highest IC attainable given the budget set — occurs where the **budget line is tangent to an IC**, i.e., **MRS = p1/p2** (slope of IC = slope of BL in absolute value). Optimum must lie on the budget line, not below it (NCERT §2.3, p. 19–20).
- **Demand:** quantity a consumer is willing to buy and is able to afford, given prices and income. Demand function X = f(P); graphical form = demand curve, generally downward-sloping (NCERT §2.4.1, p. 21–23).
- **Two effects behind negatively-sloped demand: Substitution effect** (cheaper good substituted for the other) and **Income effect** (price drop raises real purchasing power) (NCERT §2.4.2, p. 23–24).

- **Law of Demand:** other things equal, demand and price are negatively related (NCERT §2.4.2, p. 24).
- **Linear demand:** d(p) = a – bp for 0 ⩽ p ⩽ a/b; vertical intercept = a, slope = –b (NCERT §2.4.2, p. 24).
- **Normal vs Inferior goods:** for **normal** goods, demand moves in the **same** direction as income; for **inferior** goods, demand moves **opposite** to income (e.g., coarse cereals). **Giffen good:** income effect dominates substitution effect ⇒ demand rises with price (NCERT §2.4.3, p. 24–25).
- **Substitutes and Complements:** Demand for a good moves **in the direction** of the price of its **substitute** (tea–coffee) and **opposite** to the price of its **complement** (tea–sugar, pen–ink) (NCERT §2.4.4, p. 25).
- **Shift vs Movement:** a change in the good's own price ⇒ **movement along** the demand curve; change in income, prices of related goods or tastes ⇒ **shift** of the demand curve. Normal good + income rise ⇒ rightward shift; substitute's price rise ⇒ rightward shift; complement's price rise ⇒ leftward shift (NCERT §2.4.5–2.4.6, p. 25–26).
- **Market demand** = horizontal summation of individual demand curves at each price (NCERT §2.5, p. 26–27).
- **Price elasticity of demand:** eD = (% change in quantity demanded) / (% change in price) = $(\Delta Q/Q) \times (P/\Delta P)$. Always negative for a normal downward-sloping demand curve, but the **absolute value** is reported (NCERT §2.6, p. 27–28).
- **Degrees of elasticity:** |eD| < 1 → inelastic (essentials); |eD| > 1 → elastic (luxuries); |eD| = 1 → unitary elastic; vertical demand curve → perfectly inelastic (eD = 0); horizontal demand curve → perfectly elastic (eD = ∞); rectangular hyperbola → unitary elastic at every point (NCERT §2.6 + §2.6.1, p. 28–31).
- **Elasticity along a linear demand curve q = a − bp:** eD = –bp/(a–bp). At p = 0, eD = 0; at q = 0, eD = ∞; at p = a/(2b) (midpoint), eD = 1; elasticity > 1 above the midpoint, < 1 below the midpoint (NCERT §2.6.1, p. 29–30).
- **Geometric measure:** elasticity at a point on a straight-line demand curve = lower segment ÷ upper segment (eD = DA/DB) (NCERT §2.6.1, p. 30).
- **Determinants of elasticity:** (i) nature of the good — necessities are inelastic, luxuries are elastic; (ii) availability of close substitutes — easy substitutes ⇒ elastic; few substitutes ⇒ inelastic (NCERT §2.6.2, p. 31).
- **Elasticity and Expenditure (Total Revenue method):** When price rises — if good is **elastic**, expenditure **falls**; if **inelastic**, expenditure **rises**; if **unit-elastic**, expenditure **unchanged**. Expenditure moves opposite to price for elastic goods and same direction for inelastic goods (NCERT §2.6.3, p. 31–32, Table 2.5).

2.2 Definitions to memorise

Term	Definition	Page
Utility	Want-satisfying capacity of a commodity	8
Total Utility (TU)	Total satisfaction derived from consuming a given quantity of x	9
Marginal Utility (MU)	Change in TU from consumption of one additional unit	9
Law of Diminishing MU	MU from each additional unit declines as consumption rises, others held constant	10
Indifference Curve	Locus of bundles giving equal utility to the consumer	11
MRS	Quantity of Y the consumer forgoes for one extra unit of X, utility constant; $\|\Delta Y/\Delta X\|$	11
Monotonic preferences	Consumer prefers a bundle with more of at least one good and no less of the other	13
Budget set	All bundles satisfying $p_1x_1 + p_2x_2 \leqslant M$	15
Budget line	All bundles satisfying $p_1x_1 + p_2x_2 = M$; slope = $-p_1/p_2$	15–16
Consumer's optimum	Point on budget line tangent to highest attainable IC; MRS = p_1/p_2	19–20
Demand	Quantity a consumer is willing to buy and able to afford at given prices and income	21
Law of Demand	Negative relation between price and quantity demanded, ceteris paribus	24
Normal good	Demand moves in same direction as income	24
Inferior good	Demand moves in opposite direction to income	24
Giffen good	Income effect > substitution effect, so demand rises with price	24
Substitutes	Goods used in place of each other; demand for one rises with the other's price	25
Complements	Goods used together; demand for one falls with the other's price	25
Market demand	Horizontal sum of individual demands at each price	27
Price elasticity (eD)	$(\% \Delta Q) \div (\% \Delta P) = (\Delta Q/Q)(P/\Delta P)$	28
Perfectly inelastic	Vertical demand curve; $\|eD\| = 0$	30
Perfectly elastic	Horizontal demand curve; $\|eD\| = \infty$	30
Unitary elastic	Rectangular hyperbola demand curve; $\|eD\| = 1$ at every point	31

2.3 Diagrams / processes to remember

- **Figure 2.1 (p. 10):** TU and MU schedule — MU diminishes from 12 → 6 → 4 → 2 → 0 → –2; TU peaks when MU = 0.
- **Figure 2.2 (p. 10):** Downward-sloping individual demand curve derived from diminishing MU.
- **Figure 2.3 (p. 11):** Convex-to-origin indifference curve through bundles A, B, C, D.
- **Figure 2.4 (p. 13):** Straight-line IC for perfect substitutes (five-rupee notes vs coins).
- **Figure 2.5 (p. 13):** Indifference map — family of non-intersecting ICs; arrow points to higher IC = higher utility.
- **Figure 2.8 (p. 14):** Why two ICs cannot intersect — contradiction at the intersection point.
- **Figure 2.9 (p. 16):** Budget line $p_1x_1 + p_2x_2 = M$ with intercepts M/p_1 and M/p_2.
- **Figure 2.10 (p. 18):** Parallel shifts of the budget line with income changes.
- **Figure 2.11 (p. 19):** Pivot of the budget line when only p_1 changes.
- **Figure 2.12 (p. 20):** Consumer's optimum — tangency of budget line with highest attainable IC at (x_1, x_2).
- **Figure 2.14 (p. 23):** Derivation of demand curve from successive optima as p_1 falls.
- **Figure 2.16–2.17 (p. 26):** Shifts in demand vs movement along the demand curve.
- **Figure 2.18 (p. 27):** Horizontal summation of individual demand curves to get market demand.
- **Figure 2.19 (p. 29):** Variable elasticity along a linear demand curve — $e_D = 1$ at midpoint, > 1 above, < 1 below.
- **Figure 2.20 (p. 31):** Constant elasticity curves — (a) vertical (perfectly inelastic), (b) horizontal (perfectly elastic), (c) rectangular hyperbola (unitary elastic).

2.4 Common confusions / NTA trap points

- **Shift vs movement:** A change in the good's **own** price causes a movement along the demand curve, NOT a shift. NTA frequently plants "rise in price" as a shift-distractor.
- **MRS vs slope of BL:** MRS is the rate the consumer is **willing** to substitute (IC slope); price ratio is the rate the consumer is **able** to substitute (BL slope). Optimum equates the two.
- **Income elasticity sign for inferior good:** demand falls when income rises — students forget the "opposite direction" rule for inferior goods.

- **Sign convention of eD:** Strictly negative for a normal good, but NCERT uses the **absolute value** when classifying elastic / inelastic. Trap option often states a positive elasticity is wrong.
- **Linear demand curve elasticity:** A common mistake is to claim elasticity is constant along a linear demand curve. It is **not** — it varies from ∞ (price-axis end) through 1 (midpoint) to 0 (quantity-axis end).
- **Perfectly elastic ≠ unitary elastic:** Perfectly elastic = horizontal, eD = ∞. Unitary elastic = rectangular hyperbola, eD = 1.
- **Giffen vs inferior:** All Giffen goods are inferior, but not all inferior goods are Giffen — Giffen requires the income effect to **dominate** the substitution effect.

🎯 Practice MCQs

📊 PYQ Alignment

This chapter is a CUET Economics powerhouse — typically 10–12 MCQs per year are drawn from it, spanning definitional questions (budget set vs budget line, MRS, normal vs inferior goods), diagram/feature questions (IC properties, shift vs movement of the demand curve), and numerical computations of price elasticity using the $(\Delta Q/Q) \times (P/\Delta P)$ formula. Expect at least one geometric/midpoint-elasticity item on a linear demand curve and one Table 2.5-style expenditure-direction question every year.

CUET 2024 — Actual PYQs from this chapter

Q.2 (CUET 2024) Which of the following are correct statements? (A) Marginal Utility is the change in Total Utility due to consumption of one additional unit of commodity. (B) Two Indifference Curves intersect each other. (C) Marginal Utility becomes Zero at a level when Total Utility remains constant. (D) Diminishing Marginal Rate of Substitution does not affect Indifference Curve. (E) Indifference Curve slopes downwards from left to right. Options:

- A) (A), (B) and (E) only B) (A), (C) and (E) only C) (A), (D) and (E) only D) (B), (D) and (E) only Tests: Marginal utility and indifference curve properties Answer: Not in extracted key

Q.4 (CUET 2024) When elasticity of demand is 1 at every point, the demand curve is called:

- A) Perfectly inelastic demand curve B) Perfectly elastic demand curve C) Rectangular hyperbola D) Greater than unitary demand Tests: Price elasticity of demand - unitary elastic / rectangular hyperbola Answer: Not in extracted key

Q.5 (CUET 2024) According to consumer behaviour theory, inequality $p_1x_1 + p_2x_2 \leqslant M$ is called the consumer's:

- A) Budget B) Budget set C) Budget constraint D) Budget behaviour **Tests:** Budget constraint (§2.2 budget set) **Answer:** Not in extracted key