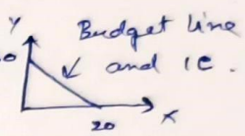
Quiz 2

HUL212: Microeconomics

Indian Institute of Technology Delhi
Semester-II: 2024-25
SET ACB

Name: _____ **Entry Number:** _____

1. (3 points) For Lisa, 2 chocolates (X) are as good as 3 candies (Y). Chocolates (X) are measured on the x-axis and candies on the y-axis (Y). Prices of chocolate and candy are Rs. 3 and Rs. 2 respectively and Lisa's income is Rs. 60.



   - Utility function is: $\frac{X}{2} + \frac{Y}{3}$ or, $U(X,Y) = 3X + 2Y$
   - Number of optimal bundles is: infinity, ($3X + 2Y = 60$) any point on this budget line

   $MRS_{XY} = \frac{3}{2}$ and slope of the budget line is $\frac{3}{2}$.

2. (3 points) How does a change in the price of good x_2 from \$2 to \$4 affect the optimal consumption bundle for the utility function $U(x_1, x_2) = \min\{x_1, x_2\}$ if the budget is \$40 and $p_1 = 5$?

   Initial budget line $2x_2 + 5x_1 = 40$. At the eqlm, $x_1 = x_2$, bundle was $(\frac{40}{7}, \frac{40}{7})$

   New budget line $4x_2 + 5x_1 = 40$. New bundle $(\frac{40}{9}, \frac{40}{9})$

3. (1 point) If two indifference curves intersect, then they violate which Axiom on preferences: transitivity

4. (1 point) If there are only two goods x_1 and x_2, and more x_1 is always preferred to less, and if less x_2 is always preferred to more, then the indifference curves

   A. will slope downward.

   ✓ B. will slope upward.

   C. may intersect.

   D. will be convex.

5. (2 points) If Rhea always prefers any amount of bitcoins over any amount of diamond such that she only considers higher quantity of diamond if two bundles have equal amount of bitcoin, suggest a name for Rhea's preferences: lexicographic preferences

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1. (3 points) How does a change in the price of good x_2 from \$2 to \$4 affect the optimal consumption bundle for the utility function $U(x_1, x_2) = \sqrt{x_1 x_2}$ if the budget is \$40, $p_1 = 5$?

$MRS_{xy} = \frac{x_2}{x_1}$. Initial price ratio $\frac{5}{2}$ $\therefore 2x_2 = 5x_1$ $2x_2 + 5x_1 = 40$

$x_1 = 4$

Later price ratio became $\frac{5}{4}$ $\therefore 5x_1 = 4x_2$ optimal bundle is $(4,5)$ $x_2 = 10$

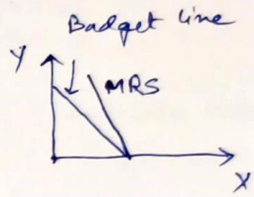
$\therefore (4, 10)$

2. (3 points) For Brian, four black pens (X) are as good as three blue pens (Y). Suppose that he has an income of Rs.100 and the price of a black pen is Rs. 5 and that of a blue pen is Rs. 10. Then his optimal consumption bundles are given by:

- Utility function is: $\frac{x}{4} + \frac{y}{3}$ ie, $U(X,Y) = 3X + 4Y$
- Optimal bundle is $(20, 0)$ $MRS = \frac{3}{4}$ price ratio $\frac{5}{10}$

MRS is steeper . $\therefore Y = 0$

$\therefore X = \frac{100}{5} = 20$



3. (1 point) If a person with utility function $U(x_1, x_2)$ consumes both goods in positive amounts when maximizing utility, the value of her Lagrange multiplier equals:

   A. ratio of marginal utility by price for both goods.

   B. ratio of marginal utility by price only for good 1.

   C. ratio of marginal utilities of two goods.

4. (1 point) If there are only two goods x_1 and x_2, and if less is always preferred to more for each of them, then the indifference curves

   A. will slope upward.

   B. will slope downward.

   C. may intersect.

   D. will be convex.

5. (2 points) If Celina always prefers any quantity of PS- 5 consoles over any quantity of Xbox- X consoles such that she only considers higher quantity of Xbox- X consoles if two bundles have equal number of PS- 5 consoles, suggest a name for Celina's preferences:_____ Lexicographic preferences.