

EXAMINATION #2 ANSWER KEY

Version A

I. MULTIPLE CHOICE

(1)b. (2)b. (3)c. (4)d. (5)d. (6)b. (7)d.

II. SHORT ANSWER

- (1) a. -0.5 b. 0.4 c. substitutes d. YES.
 (2) a. inelastic b. decrease c. 4% d. increase e. 1%.
 (3) a. luxury or superior good b. increase c. 5% d. increase e. 1%
 (4) a. -0.8 b. 10 pizzas c. \$100 d. 2 pizzas e. 8 pizzas.
 (5) a. \$10 b. 7 units c. \$20 d. 4 units e. -2 units f. -1 unit.
 (6) a. L=116 b. P = 104 c. $\sqrt{116 \times 104}$.
 (7) a. worse off b. \$12 c. \$14.

III. PROBLEMS

- (1) a. $120 = 5q_1 + 2q_2$ b. $MRS = 3q_1/q_2$ c. $q_1^*=6, q_2^*=45$.
 (2) a. $MRS = 2(q_1+5) / q_2$ b. $q_1^* = \frac{I}{3p_1} - \frac{10}{3}$. c. $q_2^* = \frac{2I}{3p_2} + \frac{10p_1}{3p_2}$.

IV. CRITICAL THINKING

- (1) To find the minimum amount of income that Carla must have, we must first find the optimal quantities of q_1 and q_2 . We need two equations in these two unknowns. The first equation is that Carla's utility must equal 500: $U = q_1 q_2 = 500$. The second equation is that Carla's bundle must be at a tangency point between her indifference curve and her budget line (whatever than budget line is): $MRS = MU_2 / MU_1 = p_2/p_1$ or $q_1/q_2 = 5/4$. Solving these two equations jointly yields $q_1^* = 25$ and $q_2^* = 20$. The cost of this bundle is $p_1 q_1^* + p_2 q_2^* = 4(25) + 5(20) = \200 . So the minimum amount of income that Carla must have to attain a target utility of $U=500$ utils is \$200.

- (2) All three of Derek's COL indices increase at the *same rate*.

Justification with algebraic proof:

Derek's Laspeyres COL index

$$= \frac{p_s^{new} q_s^{old} + p_g^{new} q_g^{old}}{p_s^{old} q_s^{old} + p_g^{old} q_g^{old}} \times 100 = \frac{1.5p_s^{old} q_s^{old} + 1.5p_g^{old} q_g^{old}}{p_s^{old} q_s^{old} + p_g^{old} q_g^{old}} \times 100 = 1.5 \times 100 = 150 .$$

Derek's Paasche COL index

$$= \frac{p_s^{new} q_s^{new} + p_g^{new} q_g^{new}}{p_s^{old} q_s^{new} + p_g^{old} q_g^{new}} \times 100 = \frac{1.5p_s^{old} q_s^{new} + 1.5p_g^{old} q_g^{new}}{p_s^{old} q_s^{new} + p_g^{old} q_g^{new}} \times 100 = 1.5 \times 100 = 150 .$$

$$\text{Derek's Fisher COL index} = \sqrt{\text{Laspeyres} \times \text{Paasche}} = \sqrt{150 \times 150} = 150 .$$

Version B

I. MULTIPLE CHOICE

(1)d. (2)e. (3)e. (4)b. (5)b. (6)e. (7)b.

II. SHORT ANSWER

- (1) a. -1.2 b. 0.9 c. complements d. NO.
(2) a. elastic b. decrease c. 6% d. decrease e. 2%.
(3) a. necessary good b. increase c. 3% d. decrease e. 1%
(4) a. -0.84 b. 6 pizzas c. \$50 d. 1 pizza e. 5 pizzas.
(5) a. \$5 b. 6 units c. \$15 d. 2 units e. -3 units f. -1 unit.
(6) a. $L=130$ b. $P = 125$ c. $\sqrt{130 \times 125}$.
(7) a. better off b. \$20 c. \$18.

III. PROBLEMS

- (1) a. $120 = 5 q_1 + 2 q_2$ b. $MRS = q_1/(2q_2)$ c. $q_1^*=16, q_2^*=20$.
(2) a. $MRS = \frac{q_1}{2(q_2-2)}$ b. $q_1^* = \frac{2I}{3p_1} - \frac{4p_2}{3p_1}$. c. $q_2^* = \frac{I}{3p_2} + \frac{4}{3}$.

IV. CRITICAL THINKING: Same as Version A.

[end of answer key]