

## Midterm 2 Answer Key

### Multiple Choice

- 1) A 2) D 3) A 4) B 5) D 6) B or C 7) C 8) A 9) C 10) C
- 6) It is a normal good no matter John's income is high or low. B and C both show an upward sloping curve. C is more appropriate since he has to eat even with no income.

### Essays and Calculations

- 11) i. A consumer's optimal choice is obtained when the following equivalent conditions are met: (a) the ratio of the marginal utility of last pizza to the marginal utility of last burrito equals the ratio of the price of a pizza to the price of a burrito; (b) the ratio of the marginal utility of a pizza to the price of a pizza equals the marginal utility of a burrito to the price of a burrito; (c) the marginal utility of last dollar spent on pizza and that of last dollar spent on burrito are equal. Mathematically, it is

$$\text{MU}_Z/\text{MU}_B = P_Z/P_B, \text{ or}$$

$$\text{MU}_Z/P_Z = \text{MU}_B/P_B.$$

- ii. The price of a burrito must be \$2, since

$$20/4 = 10/P_B.$$

- 12) i. The MU of the fifth movie is 22 and the MU of the second soda is 42. The MU of last dollar on movie is  $22/6$  and the MU from last dollar on soda is  $42/6 = 7$ .
- ii. The last dollar on soda yields higher marginal utility than the last dollar on movies. She can increase utility level by spending more on soda.
- iii. The optimal choice is 4 movies and 3 boxes of sodas. At this combination, the MU of last dollar on both goods is equalized. (MU of fourth movie = 32, MU of third soda = 32. MU of last dollar on both good is  $32/6$ .)

- 13) i. The substitution effect is positive. The price of X drops, so X is relatively cheaper than other goods. A consumer responds by buying more of this cheaper good.
- ii. The Engel curve describes the relationship between income and quantity demanded. A downward sloping curve means X is an inferior good.
- iii. The total effect is the sum of the substitution effect and the income effect. Since X is inferior, the income effect is negative. The total effect will be positive if the substitution effect dominates the income effect, and it will be negative if the income effect dominates the substitution effect.
- iv. See figure 1. (X is an inferior good!)

- 14) i. The substitution effect on leisure is negative since leisure is more expensive with the new wage. Leisure is normal and the income effect is positive for both of them. Alex's total effect on leisure is negative (work more), so it must be that his substitution effect dominates income effect. Allison's total effect is positive (work less), so it must be that her income effect dominates substitution effect.
- ii. See Figure 2.
- iii. The reference point is the optimal choice when Allison is facing the new wage but still maintain the old utility level.

