3. The table below shows total utility in utils that a utility-maximizing consumer receives from consuming two goods: apples and oranges.

Apples		Oranges	
Quantity	Total utility	Quantity	Total utility
0	0	0	0
1	20	1	30
2	35	2	50
3	45	3	65
4	50	4	75
5	52	5	80

Assume that apples cost $1 each, oranges cost $2 each, and the consumer spends the entire income of $7 on apples and oranges.

(a) Using the concept of marginal utility per dollar spent, identify the combination of apples and oranges the consumer will purchase. Explain your reasoning.

(b) With the prices of apples and oranges remaining constant, assume that the consumer's income increases to $12. Identify each of the following.

(i) The combination of apples and oranges the consumer will now purchase

(ii) The total utility the consumer will receive from consuming the combination in (i)

(c) With income remaining at $12, assume the price of oranges increases to $4 each. Identify each of the following.

(i) The combination of apples and oranges the consumer will now purchase

(ii) The total utility the consumer will receive from consuming the combination in (i)

END OF EXAMINATION

Question 3

Correct Answer:

Part a: The utility-maximizing consumer will exhaust her income, purchasing quantities of each good such that for each commodity the marginal utility of the last unit purchased divided by the price of the commodity is equal. This consumer will purchase 3 apples and 2 oranges. The marginal utility per dollar of each commodity is equal: 10/$1 for apples and 20/$2 for oranges.

Part b: With the increase in income, the consumer will now purchase 4 apples and 4 oranges and have 125 utils (50 from apples and 75 from oranges).

Part c: With the increase in the price of oranges, the consumer will now purchase 4 apples and 2 oranges and have 100 utils (50 from apples and 50 from oranges).

Grading Rubric:

Part a, b, and c each worth 2 points for 6 points in total

(a)   3 apples and 2 oranges **(1 point)**
     Marginal analysis: equalization of MU/$ or 10/1 (apples) = 20/2 (oranges) **(1 point)**
   Note: The student may not simply use the maximizing of total utility for the explanation.

(b)   4 apples and 4 oranges **(1 point)**
     50+75 = 125 utils **(1point)**

(c) 4 apples and 2 oranges **(1 point)**
     50+50 = 100 utils **(1 point)**

Note: For parts b and c, the reader must work with the student's apple/orange combination and award a point if the total utility is consistent with that combination.

Commentary:

Students were able to receive 2 of 6 points for calculating the correct amount of total utility from two incorrect apple and orange combinations. Far too few students were able to apply the utility-maximizing rule of equalizing the marginal utility per dollar for each commodity.