**Solution (Assignment 5)**

***Problem 1***

Assume that May has $100 per month to divide between dinners at a Japanese restaurant “Nippon ni mauvais” and evenings at a Jazz club, the “Blue note”.

Assume that going to the “Blue note” costs $20 while eating at the Japanese restaurant costs $10.

Suppose May spends 2 evenings at the “Blue note” and eats 6 times at the restaurant.

a/ Draw May’s budget constraint and show that she can afford 2 nights at the “Blue note” and 6 Japanese dinners.

b/ Assume that May’s income has now increased and she can spend $200 per month. Draw her new budget constraint.

c/ As a result of her income increase, May decides to spend 8 evenings at the “Blue note” and eat at the Japanese restaurant 4 times. What kind of good is Japanese food? What kind of good is a night at the “Blue note”?

d/ What part of the increase in the visits to the Jazz club is due to the income effect, and what part is due to the substitution effect?

e/ Ignore the income increase. Suppose that the “Blue note” cuts its price by half. Show the effect of this price cut on May’s budget constraint.

a/; b/ and e/

Visits to the Japanese restaurant/month

The change due to the increase in May’s income

20

The change due to the decrease in the price of a trip to the “Blue note”

10

6

Visits to the Jazz club/month

10

2

5

a/ If May spends her entire income on Japanese food 🡺 she will be able to eat 10 times per month at “Nippon ni mauvais” (100/10); if she spends all her income on the Jazz club 🡺 she will be able to enjoy Jazz music 5 times per month (100/20). Joining these two points, we obtain May’s budget constraint. If she goes 2 evenings to the Jazz club and 6 times to the restaurant 🡺 she will spend: 2(20) + 6(10) = 40 + 60 = $100 🡺 she will be operating on her budget constraint.

b/ Since May’s income increased to $200 🡺 she will have a new budget constraint (the constraint will shift upward): with $200, May can now eat 20 times at the Japanese restaurant (200/10) if she spends her entire income on Japanese food; and she can go 10 times to the Jazz club per month (200/20) if she spends all her income on Jazz music.

c/ The Jazz club is a normal good; while Japanese food is an inferior good: as May’s income rises, she increases her visits to the “Blue notes” (from 2 times to 8 times) and reduces her consumption of Japanese food (from 6 meals to 4 ).

d/ The entire effect is due to an income effect: since May’s nominal income has increased while the prices remained unchanged 🡺 May’s real income has increased 🡸🡺 she is clearly better off and can consume more of all available goods. The opportunity costs haven’t changed because the prices have not changed! The cost of a “Blue note” trip in terms of meals sacrificed has not changed 🡺 there is no substitution effect.

e/ When the price of a trip to the “Blue note” is cut by half, May’s budget constraint will be affected. Precisely, she will be able to go more often to the Jazz club. For instance, if she spends her entire income on the “Blue note”, she will go there 10 times per month (100/10): her budget constraint will rotate outward and the maximum number of times she can enjoy Japanese food will not change. The equation of her budget constraint will become: 100 = 10 (number of visits to the “Blue note”) + 10 (number of visits to “Nippon ni mauvais”)

***Problem 3***

Khaled spends his income of $150 per week on two goods: movies (which cost $5 each) and books (which cost $10 each). At his current level of consumption, the marginal utility from the last movie consumed is 20 and the marginal utility from the last book consumed is 30. Is Khaled maximizing his utility? Why or why not? If not, what should Khaled do to achieve a higher level of utility?

No, Khaled is not maximizing his utility. To maximize his total utility, he should be consuming such that the marginal utility per dollar spent on movies is equal to the marginal utility per dollar spent on books. In this case, the marginal utility per dollar spent on movies (4: (20/5)) is higher than that spent on books (3: (30/10)). Therefore, he should increase his expenditure on movies and lower his expenditure on books.

**II/ Multiple choice questions**

1. Gretel’s opportunity set can be increased by

(**a**) a decrease in prices.

(b) a decrease in income.

(c) an increase in quantity demanded.

(d) a decrease in quantity demanded.

The opportunity set defines what is available rather than what is demanded. A price decrease permits Gretel to stretch her opportunity set further

2. Your real income may increase in each of the following cases EXCEPT if your income            , and prices            .

(a) increases; increase

(b) increases; decrease

(**c**) decreases; increase

(d) decreases; decrease

Only if income decreases and prices increase will there certainly be a decrease in your real spending power. In all the remaining options your real income may increase: for instance, if your income rises (decreases) and prices also rise but by less (decrease, but by less), then your real income would rise

3. Angela will buy additional units of a good if the value of the good’s

(a) total utility exceeds the price.

(b) total utility is less than the price.

(**c**) marginal utility exceeds the price.

(d) marginal utility is less than the price.

A household would not buy a given good unless its marginal utility (valued in monetary terms) is at least equal to its price.

4. The price of Kellogg’s K cereal falls. Consumers switch over from other cereals to Kellogg’s K because its price is relatively lower. This is the            in operation.

(a) income effect

(**b**) substitution effect

(c) *ceteris paribus* effect

(d) quantity demanded effect

5. The substitution effect occurs when

(**a**) a decrease in the price of Good *A* makes the good relatively cheaper and encourages consumers to buy more of Good *A*.

(b) a decrease in the price of Good *A* encourages consumers to buy more of substitute Good *B*.

(c) a decrease in the price of Good *A* makes consumers better off so that they can buy more of the good.

(d) an increase in the price of Good *A* encourages consumers to buy less of substitute Good *B*.

6. The price of Kellogg’s corn pops falls. Marc finds that he has some money left over after buying his usual quantity of corn pops. He spends some of the extra money on more Kellogg’s corn pops. This is the

(**a**) income effect in operation.

(b) substitution effect in operation.

(c) normal effect in operation.

(d) inferior effect in operation.

The extra money found by Marc represents the income effect: Marc is better off after the decrease in the price of corn pops 🡺 he has the opportunity of consuming more goods and services. He opts for consuming additional units of Kellogg’s corn pops.

7. Beethoven Jr. buys only two goods: violins and pianos. This month he has $500 in a savings account that he plans to spend. Violins cost $5 each and pianos cost $10 each. Beethoven Jr. can buy a maximum of            violins and a maximum of            pianos.

(a) 100; 0

(b) 100; 100

(c) 0; 50

(**d**) 100; 50

8. Draw Beethoven Jr.’s budget constraint in the space below. Place “Violins” on the horizontal axis and “Pianos” on the vertical axis. Write in the maximum value for violins and for pianos at the appropriate places.

Pianos



100

50

Violins

9. The slope of Beethoven Jr.’s budget constraint is

(a) –2.

(**b**) –1/2.

(c) 1/2.

(d) 2.

Beethoven Jr.’s budget constraint is illustrated by the equation: 500 = PV × (number of violins: V) + PP ×(number of pianos: P) 🡺 replacing PV by 5 and PP by 10:

500 = 5V + 10P

The slope of the budget constraint is equal to ∆Y/∆X, where in this case Pianos are represented on the Y axis and Violins on the X axis 🡺 the slope of Beethoven Jr.’s budget constraint is therefore equal to the ratio: ∆P/∆V

We know that 10P = 500 – 5V 🡺 P = 50 – (½)V 🡺 If Beethoven Jr. wants to buy one additional piano, he must reduce his consumption of violins by half a unit 🡸🡺 (∆P/∆V) = -1/2. Notice that the slope of the budget constraint is equal to minus the ratio of the price of violins to the price of pianos.

10. Mario Bross plays video games. Although he is experiencing diminishing marginal utility, his marginal utility remains positive. We can say that Mario’s total utility is

(a) increasing at an increasing rate.

(**b**) increasing at a decreasing rate.

(c) decreasing at an increasing rate.

(d) decreasing at a decreasing rate.