**Solution (Assignment 1)**

**A/ Problems**

**Problem 1**

Macrostan is a developing economy located to the North of Kazakhstan. Use the following information on the Macrostanian economy. Quantities are given in millions of Macrostanian dollars (M$).

|  |  |
| --- | --- |
| Non-residential investment | 586.1 |
| Change in business inventories | –30.9 |
| Amount of National Income not going to Households | 366.2 |
| Macrostanian exports of goods and services | 380.8 |
| Personal income taxes | 600.0 |
| Personal consumption expenditures | 3514.8 |
| Government consumption and gross investment | 1589.7 |
| Net factors of production payments to the rest of the world | 0.0 |
| Residential investment | 453.7 |
| National Income | 5,075.7  |
| Macrostanian imports of goods and services | 285.0 |

1. Calculate the Macrostanian Gross Domestic Product (using the expenditure approach).

GDP = C + I + G + (X – M)

C = 3514.8

I = 586.1 – 30.9 + 453.7 = 1008.9

G = 1589.7

X – M = 380.8 – 285 = 95.8

GDP = M$ 6209.2

2. Calculate the Macrostanian Personal Income.

Personal income = national income – part of national income not going to households

Personal income = 5075.7 – 366.2 = M$ 4709.5

3. Calculate the Macrostanian Disposable Income.

Disposable income = personal income – personal income taxes

Disposable income = 4709.5 – 600 = M$ 4109.5

4. Calculate Personal Saving in Macrostan.

Personal saving = disposable income – consumption

Personal saving = 4109.5 – 3514.8 = M$ 594.7

5. Use the information above to calculate the Macrostanian Personal Saving rate.

Personal saving rate = personal saving/disposable income

Personal saving rate = 594.7/4109.5 = 14.47%

**Problem 2**

Which of the following transactions would be counted in GDP?

a/ General Motors issues new shares of stocks

b/ General Motors builds a new plant

c/ Company A purchases all the assets of company B

d/ You win a $500 bet

e/ You buy a new version of Dante’s “Divine comedy”

f/ You buy a used version of Bach’s “Well tempered clavier”

g/ Domino’s Pizza in your neighborhood buys 30 pounds of mozzarella cheese, keeps it in inventory for one month, and then uses it to make (and sell) new pizzas.

h/ Given your mother’s continuous complaints, you spend the week end cleaning your room.

a/ not counted (financial transactions 🡸🡺 mere transfer of ownership)

b/ counted (residential investment spending)

c/ not counted (financial transactions 🡸🡺 mere transfer of ownership)

d/ not counted (financial transfer 🡸🡺 mere transfer of ownership )

e/ counted (consumption expenditure on a newly produced final good)

f/ not counted (consumption expenditure on a used (old) final good)

g/ Domino’s pizza’s expenditure on cheese is not counted; however the production of pizzas is counted (consumption expenditure on a newly produced final good) and the value of the pizza will include that of the cheese

h/ not counted (GDP only takes into account market activities)

**Problem 3**

Joe Green is a farmer who lets his cows graze in the pasture. Joe’s cows produce 1000 gallons of milk per week, and he sells this milk to the dairy for $0.80 per gallon (ignore minor purchases such as veterinary services, and consider that Joe’s output is all value added).The dairy processes the raw milk and sells it to the grocer for $2.70 per gallon. The grocer sells the milk for $3.00 per gallon.

1) Compute the value added/gallon at each stage of the “milk-processing chain”

- Since Joe’s output is all value added 🡺 the value added at this stage is $0.8/gallon

- The value added/gallon by the dairy is equal to $1.9 ($2.7 – $0.8)

- The value added/gallon by the grocer is $0.3 ($3 - $2.7)

2) What is the market value of the final good (all the gallons sold by the grocer)?

The market value of the final good is the unit price times the quantity sold of milk: 3 × 1000 = $3000

3) Can you obtain the market value of the final good using your answer in question 1? (*hint*: of course you can!)

If we add up the value added at each stage we will get a total of $3/gallon. Since the quantity produced (and sold) is 1000 gallons 🡺 the value added for the entire quantity of milk produced is $3000 (3 × 1000), which is equal to the market value of the quantity of milk sold

**Problem 4**

Utopia is a prosperous economy with only two industries: cars and steel. Both industries use workers and capital in the production process. To produce cars, the automobile industry uses steel produced by the steel firm as an intermediate good. The following table summarizes the main economic operations taking place in Utopia

|  |
| --- |
| **Steel industry** |
| Sales revenue ($) | 100 |
| Salaries paid to employees ($) | 80 |
| Profit ($) | 20 |
| **Cars industry** |
| Sales revenue ($) | 210 |
| Salaries paid to employees ($) | 70 |
| Steel bought from the steel industry ($) | 100 |
| Profit ($) | 40 |

1. What is the value of the Utopian GDP based on the value of the final good produced in this country?

In this country, the final product is the cars (since steel is only used as an intermediate good by the automobile industry). The country’s GDP is the final good’s value, which is equal to the cars industry’s sales revenue: $210

1. Compute the GDP by adding the value added obtained in each one of the industries

The value added in each industry is the difference between the value of the product as it leaves the industry and the value of all intermediate goods used in the production process. The steel industry does not use any intermediate good: the value added is equal to the value of the produced steel: $100

The automobile industry uses steel as an intermediate good, and the value of the cars produced is equal to 210 🡺 the added value in the cars industry is thus 210 – 100 = $110

All in all, GDP is equal to the value added in both industries: $210

1. Compute the GDP by adding the revenues gained by both factors of production in both industries

GDP can be obtained by adding the revenues earned by factors of production: in the present case it’s the sum of labor revenue (salaries) and capital revenue (profit) in each industry.

In the steel industry, labor revenue is $80 and capital revenue is $20: total revenue is thus $100. In the cars industry, labor revenue is $70 and capital revenue is $40: total revenue is thus $110.

By adding up revenues in both industries we get the GDP: $210

**B/ Multiple choice questions**

1. Having totaled the other components of the Lebanese GDP, you find that (i) business inventories have fallen while (ii) imports have exceeded exports. (i) will            GDP; (ii) will            GDP.

(a) increase; increase

(b) increase; decrease

(c) decrease; increase

(**d**) decrease; decrease

A decrease in inventories reduces the overall investment level which, in turn, reduces GDP. If imports have exceeded exports, net exports are negative which reduces GDP

2. Bugs Bunny, an avid gardener, buys a new packet of carrot seeds. The packet of seeds            counted in GDP as a final product; the carrots Bugs Bunny grows and consumes            counted in GDP as a final product.

(a) is; are

(**b**) is; are not

(c) is not; are

(d) is not; are not

The seeds are sold to the final user. Because Bugs Bunny grows and eats the carrots, they never reach a market and will not be counted (although they do represent production). This is a limitation of the GDP concept.

Use the following information about prices of goods in Utopia to calculate the economy’s production for the next two questions.

|  |  |  |
| --- | --- | --- |
|  | **Production** | **Prices** |
| **Good** | **Year 1** | **Year 2** | **Year 3** | **Year 1** | **Year 2** | **Year 3** |
| Goat milk | 200 | 180 | 160 | 2.00 | 2.40 | 2.50 |
| Bananas |  80 |  90 | 100 | 3.00 | 3.20 | 3.10 |

3. Nominal GDP in Year 1 is            and nominal GDP in Year 2 is            .

(**a**) 640; 720

(b) 640; 736

(c) 630; 720

(d) 630; 736

Nominal GDP for Year 1 = (200 2.00) + (80 3.00) = 640. Nominal GDP for Year 2 = (180 2.40) + (90 3.20) = 720.

4. In Year 1 prices, real GDP in Year 2 is            and real GDP in Year 3 is            .

(a) 640; 620

(b) 640; 630

(c) 630; 640

(**d**) 630; 620

Real GDP for Year 2 = (180 2.00) + (90 3.00) = 630. Real GDP for Year 3 = (160 2.00) + (100 3.00) = 620.

5. In Lalaland, nominal GDP is 4000 Kopeks and real GDP is 3000 Kopeks. The GDP deflator is

(a) 25.

(b) 33.33.

(c) 75.

(**d**) 133.33.

To find the GDP deflator, divide nominal GDP by real GDP and then multiply by 100.