Solution 6: Macroeconomic Indicators

Problem 1 (*Gross Domestic Product*)

GDP calculation: Output Method

(i) GDP is the sum of market values of all final goods produced domestically in a given period of time (net of intermediate goods produced abroad or in previous periods).

(ii) GDP is the sum of value added at each stage of domestic production in a given period of time.

(i)	Final Goods	
−	100,000	IM
+	200,000	C
+	100,000	EX
−	100,000	IM
+	500,000	C
+	300,000	EX
	900,000	

(ii)	Value Added
+	200,000
+	300,000
+	400,000
	900,000

Net Exports: $\text{NX} = \underbrace{400{,}000}_{\text{EX}} - \underbrace{200{,}000}_{\text{IM}} = 200{,}000$

Problems 2-4 (*Price Level*)

Base Period: 2023

	Nominal GDP	Real GDP	Cost of base-period consumer basket	GDP-Deflator	CPI
2023	550,000	550,000	550,000	1	1
2024	687,500	550,000	687,500	1.25	1.25
2025	643,500	495,000	1,100,000	1.3	2.0

$$\text{GDP-Deflator} = \frac{\text{Nominal GDP}}{\text{Real GDP}}$$

$$\text{CPI} = \frac{\text{Cost of base-period consumer basket at current prices}}{\text{Cost of base-period consumer basket at base-period prices}}$$

Problem 2

In 2024, the GDP-Deflator is $\frac{687{,}500}{550{,}000} = 1.25$, while the CPI is $\frac{687{,}500}{550{,}000} = 1.25$.

$\Rightarrow$ **(B)** is correct.

Problem 3

In 2025, the GDP-Deflator is $\frac{643{,}500}{495{,}000} = 1.3$, while the CPI is $\frac{1{,}100{,}000}{550{,}000} = 2$.

$\Rightarrow$ **(D)** is correct.

Problem 4

Between 2024 and 2025, the inflation rate based on the GDP-Deflator is $\frac{1.3-1.25}{1.25} = 0.04$, while it is $\frac{2-1.25}{1.25} = 0.6$ based on the CPI.

$\Rightarrow$ **(B)** is correct.

Problems 5-6 (*Unemployment*)

The labor force participation rate is

$$e = \frac{L}{N} = \frac{E+U}{N}. \tag{1}$$

The unemployment rate is

$$u = \frac{U}{L} = \frac{U}{E+U}. \tag{2}$$

Problem 5

Rearranging (1) and substituting $N = 70$, $U = 2.1$, and $e = 0.5$ yields

$$E = e \cdot N - U \quad \Rightarrow \quad E = 0.5 \cdot 70 - 2.1 = 32.9.$$

$\Rightarrow$ **(A)** is correct.

Problem 6

Rearranging (2) and substituting $U = 2.1$ and $u = 0.05$ yields

$$L = \frac{U}{u} \quad \Rightarrow \quad L = \frac{2.1}{0.05} = 42.$$

Substituting $L = 42$ into (1) yields

$$e = \frac{42}{70} = 0.6.$$

$\Rightarrow$ **(C)** is correct.