Signature: _____

Printed name: _____

EXAMINATION 2 VERSION B
"Measuring the Economy"
October 7, 2024

INSTRUCTIONS: This exam is closed-book, closed-notes. Simple calculators are permitted, but graphing calculators or calculators with alphabetical keyboards are NOT permitted. Cell phones or other wireless devices are NOT permitted. Point values for each question are noted in brackets. Points will be subtracted for illegible writing or incorrect rounding. Maximum total points are 100.

I. Multiple choice: Circle the one best answer to each question. Please use the margins for scratch work.
[1 pt each, 15 pts total]

(1) Over time, a graph of real GDP shows
a.   short-run fluctuations.
b.   long-run growth.
c.   neither (a) nor (b).
d.   both (a) and (b).

(2) Potential GDP does *not* depend on
a.   total economic capital available.
b.   technology or know-how available.
c.   stimulus spending by the government.
d.   total hours of all workers

(3) At the trough of a business cycle, actual GDP is
a.   above potential GDP.
b.   below potential GDP.
c.   equal to potential GDP.
d.   cannot be determined from information given.

(4) The highest unemployment rate in the U.S. over the last 100 years occurred during the
a.   Great Depression of the 1930s.
b.   back-to-back recessions of the early 1980s.
c.   Great Recession of 2007-2009.
d.   COVID recession of 2020.

(5) In the early 1930s, the price level in the United States dropped by about 20%. This is an example of
a.   reflation.
b.   hyperinflation.
c.   disinflation.
d.   deflation.

(6) Suppose the interest rate on loans is 5 percent and the inflation rate is expected to be 3 percent. Then the real rate of interest is
a.   negative 5 percent.
b.   2 percent.
c.   3 percent.
d.   5 percent.
e.   8 percent.
f.   15 percent.

(7) Taxes and government spending are elements of
a.   monetary policy.
b.   international trade policy.
c.   fiscal policy.
d.   foreign policy.

(8) Of the following spending components of GDP, which is usually the largest in the U.S.?
a.   Government purchases.
b.   Consumption.
c.   Investment.
d.   Net exports.

(9) Consumption spending in the national accounts does *not* include
a.   purchases of necessities like food and clothing.
b.   spending on medical care.
c.   purchases of new homes.
d.   spending on cell phone service.
e.   spending on entertainment.

(10) Investment spending in the national accounts does *not* include purchases of
a. new factories.
b. shares of stock in corporations.
c. new homes.
d. business software.
e. trucks and heavy equipment.

(11) Government purchases in the national accounts do *not* include
a. Social Security payments.
b. salaries of members of Congress.
c. spending on military aircraft.
d. spending for environmental preservation.
e. spending on highway construction.

(12) If a country's national savings exceed its investment spending, then also its
a. government spending exceeds its tax revenues.
b. exports exceed its imports.
c. consumption exceeds its income.
d. unemployed workers exceed job vacancies.

(13) Real GDP is defined as GDP
a. adjusted for inflation.
b. adjusted for statistical errors.
c. divided by population.
d. adjusted for changes in life expectancy.

(14) Over the last 50 years, the price level has fallen
a. very rarely.
b. in about half the years.
c. almost every year.
d. every year

(15) The exchange rate was 103 Japanese yen per U.S. dollar in 2008, and 79 yen per U.S. dollar in 2012. Clearly, the
a. dollar depreciated against the yen.
b. yen depreciated against the dollar.
c. both of the above.
d. none of the above.

II. Problems: Insert your answer to each question in the box provided. Please use the margins and graphs for scratch work. Only the answers in the boxes will be graded. Work carefully—partial credit is not normally given for questions in this section.

(1) [Spending approach to GDP: 16 pts] Consider each of the following items purchased in 2024. Should the item be counted as part of U.S. GDP for 2024—*YES* or *NO*? If *YES*, in which spending component of GDP—consumption (C), investment (I), government purchases (G), or net exports (X)—does it belong? If *NO*, explain why not.

	Part of U.S. GDP for 2024? (YES or NO)	*If YES, then which spending component (C, I, G, or X)? If NO, why not?*
a. A new school building purchased by a school district in Illinois.		
b. A bunch of bananas purchased by a shopper in Ankeny.		
c. A new delivery van purchased by a drug store.		
d. A 1965 Corvette purchased by a retired executive.		

(2) [Components of GDP: 16 pts] The imaginary country of Concrete Land has just four industries: the Raw Concrete Industry, the Building Construction Industry, the Road Construction Industry, and the Birdbath Industry. There are no other goods and no foreign trade. In a recent year:

- The Raw Concrete Industry produced and sold $30 billion to the Birdbath Industry, $10 billion to the Road Construction Industry, and $10 billion of raw concrete to the Building Industry, for a total of $50 billion in sales.
- The Birdbath Industry produced and sold $80 billion of birdbaths to consumers.
- The Road Construction Industry produced $20 billion of roads for the government.
- The Building Industry produced and sold $10 billion of buildings (a capital good) to each industry (including itself) for a total of $40 billion in sales.

a. Compute the spending components of Concrete Land's GDP.

Consumption (C)	$ billion
Investment (I)	$ billion
Government purchases (G)	$ billion
Total GDP (Y)	$ billion

b. Compute value added by each industry in Concrete Land.

Raw Concrete Industry	$ billion
Building Industry	$ billion
Road Construction Industry	$ billion
Birdbath Industry	$ billion

(3) [GDP, saving, GDP per capita: 6 pts] The table below shows data for the United States as reported by the Bureau of Economic Analysis in *trillions*. [Hint: Some of the data are extraneous and not needed for solving this problem.]

	2021
Population *in millions*	332
Investment	$4.2
Personal taxes	$2.7
Net exports	-$0.9
Transfers	$4.6
Government purchases	$4.2
Consumption	$16.0

a. Compute GDP.

$ trillion

b. Compute national saving (S).

$ trillion

c. Compute GDP per capita to the nearest dollar.

$

(4) [Spending approach to GDP: 12 pts] The table below shows data for the United States as reported by the Bureau of Economic Analysis in trillions for a recent year. [Hint: Some of the data are extraneous and not needed for solving this problem.]

	2023
Residential investment	$1.0
Consumption of durable goods	$2.2
Corporate profits	$3.3
Consumption of nondurable goods	$4.0
Personal dividend income	$1.8
Imports	$3.8
National defense purchases	$1.0
Federal nondefense purchases	$0.8
Depreciation (capital consumption of domestic business)	$3.0
Personal interest income	$1.8
Change in inventories	$0.1
Exports	$3.0
State and local purchases	$3.0
Compensation of employees	$14.2
Transfer payments	$4.1
Consumption of services	$12.4
Business fixed investment	$3.7

a. Compute consumption (C). $ _____ trillion

b. Compute gross investment (I). $ _____ trillion

c. Compute net investment. $ _____ trillion

d. Compute government purchases (G). $ _____ trillion

e. Does the U.S. have a trade surplus or a trade deficit ? _____

f. Compute net exports (X). $ _____ trillion

(5) [Stocks v. flows: 8 pts] Are the following quantities stocks or flows? Write "STOCK" or "FLOW" in each box.

a. The number of students in Hubbell Dining Hall at 12:15 PM yesterday _____

b. The number of students entering Hubbell Dining Hall between noon and 12:30 PM yesterday. _____

c. The amount of economic capital in the U.S. on January 1, 2022. _____

d. The amount of investment spending in the U.S. in 2021. _____

(6) [Value added: 2 pts] Suppose an ice cream shop sells $100,000 of ice cream cones in a year. Over the same year, it pays its employees $20,000, it leases the storefront for $10,000, and it purchases $25,000 in in tubs of ice cream, sugar cones, sprinkles, and sauces. Compute the value added by the bicycle shop.

$ _____

(7) [GDP and real GDP: 8 pts] In an imaginary country, only two final goods are produced, as shown in the following table. (You can use the boxes at right for scratch work.)

	Food		Clothing		2022 prices	2023 prices
Year	Price	Quantity	Price	Quantity		
2022	$5	20	$10	10		
2023	$5	24	$15	10		

a. Compute the growth rate of *nominal GDP* (also called "current-dollar GDP") from 2022 to 2023.
    %

b. Compute the growth rate of GDP from 2022 to 2023 *in constant 2022 prices*.
    %

c. Compute the growth rate of GDP from 2022 to 2023 *in constant 2023 prices*.
    %

d. Compute the growth rate of *real GDP* from 2022 to 2023, as it would be computed by the U.S. Bureau of Economic Analysis.
    %

(8) [Nominal GDP, real GDP, and inflation: 7 pts] The following table shows data for Mexico, in billions of *pesos* the Mexican currency.

Year	Nominal GDP	Real GDP	GDP price index or price deflator (to the nearest tenth)	Rate of inflation (to the nearest tenth of a percentage point)
2016	20,759	23,273		
2017	22,536	23,709		%
2018	24,177	24,177		%

a. [2 pts] Which is the base year for real GDP?

b. [3 pts] Compute the GDP price index for each year, to the nearest tenth, and insert it in the table above. [Hint: The price index should equal 100.0 in the base year.]

c. [2 pts] Compute the rate of inflation for the last two years, to the nearest tenth of a percentage point, and insert in in the table above.

(9) [Using the CPI: 2 pts] Ford introduced the Model T automobile in 1908 at a price of $825. In that year, the CPI was about 9. The CPI is now about 314. Compute the 1908 price of the Model T in today's dollars to the nearest dollar.

$

(10) [Using market exchange rate: 2 pts] The exchange rate for Swiss francs is about 0.848 francs per U.S. dollar. Then a fine watch that costs 50 francs will cost how much in U.S. dollars, to the nearest whole dollar?

$

(11) [PPP exchange rate: 2 pts] Suppose a basket of goods bought by a typical consumer that costs 100 Australian dollars in Australia would cost 65 US dollars in the United States. What is the purchasing-power-parity exchange rate to the nearest hundredth?

Australian dollars
per US dollar

III. Critical thinking: Write a one-paragraph essay answering *one* question below (your choice). [4 pts]

(1) Suppose the value of final goods and services produced annually in Country X is identical to that in Country Y: $2 trillion. However, in Country X, most people have graduated from high school, while in Country Y, most people have only a primary-school education. On the other hand, due to poor health care, Country X has a life expectancy of only 55 years, while Country Y has a life expectancy of 75 years. Which country has higher GDP? Justify your answer.

(2) In the late nineteenth century real GDP grew faster in the U.S. than nominal GDP. Now nominal GDP usually grows faster than real GDP. What must have happened in the late nineteenth century to cause this phenomenon? Justify your answer.

Circle the question you are answering. Write your answer below. Full credit requires correct economic reasoning, legible writing, good grammar including complete sentences, and accurate spelling.

[end of exam]