Multiple Choice: (20 points total, 2 points each) Choose the best answer. Write on your scantron

MC#1) Which of the following would be part of GDP and investment in the U.S. national accounts: IBM builds a computer in the U.S. which it
a) sells to you for personal use
b) sells to a shoe company in China
c) sells to a textbook publisher in the U.S.
d) none of the above

MC#2) The GDP deflator
a) differs from the consumer price index in that it has weights that change over time
b) differs from the consumer price index in that it only considers final goods and services
c) tends to overstate the level of inflation because of substitution bias.
d) all of the above.

MC#3) Frictional unemployment differs from structural unemployment in that it:
a) has a shorter duration
b) can be caused by ‘efficiency wages’
c) implies the supply of labor is larger than the number of jobs
d) all of the above

MC#4) Which of the following could help explain high unemployment in Europe?
a) wage rigidity
b) large unemployment insurance benefits
c) sectoral shifts due to technological change
d) all of the above

MC#5) Endogenous Growth Theory implies:
a) a diminishing marginal product of capital
b) income per person grows in steady state
c) poorer countries tend to grow faster than rich ones
d) conditional convergence

MC#6) Which of the following would tend to cause higher inflation:
a) lower growth rate in money supply
b) fall in money velocity
c) lower growth rate in GDP
d) none of the above

MC#7) Which of the following would help stop a hyperinflation:
a) reduce M1 money growth
b) reduce need for seigniorage
c) reduce expectations for inflation.
d) all of the above.

MC#8) According to the Fisher relation, a rise in inflation by 1% will tend to …
a) raise the ex-ante real interest rate 1%
b) lower the ex-ante real interest rate 1%
c) raise the nominal interest rate 1%
d) lower the nominal interest rate 1%

MC#9) If it is true that in the short run prices are fixed and the goods market is demand determined (as in the Aggregate Demand/Supply model), then a cut in money supply should lead to ____ in the short run and ____ in the long run.
a) recession, lower prices
b) inflation, no change in prices
c) a rise in output, no change in prices
d) inflation, a fall in output

MC#10) According to Euler’s theorem:
a) the labor share of income equals the capital share of income
b) economic profits are zero.
c) all of GDP is paid to labor
d) the labor share equals the MPL
Problem 1: Neoclassical Model (26 points total)

Suppose the real side of the U.S. macroeconomy is characterized as follows:

Production: \[ Y = 20 K^{1/2} L^{1/2} \]

Factor supply: \( K = 100 \quad L = 100 \)

Government: \( G = 400 \quad T = 200 \)

Consumer behavior: \( C = 200 + 0.5(Y-T) \)

Investment behavior: \( I = 800 - 1000r \)

Suppose the nominal side of the economy is characterized by the following:

Quantity theory of money: \( MV = PY \quad \text{where} \quad V=10 \)

Nominal money supply: \( M = 800 \)

\( Y \) is real GDP, \( K \) capital, \( L \) labor, \( G \) government purchase, \( T \) taxes, \( C \) consumption, \( I \) investment, \( r \) real interest rate, \( P \) price level, \( M \) money supply, \( V \) velocity. Assume a closed economy.

a) (10 points) Compute the equilibrium levels of the following eight variables: real GDP, real interest rate, investment, private saving, real wage, price level, nominal GDP, nominal wage.

Show your work. (Assume a closed economy.) In a couple of sentences, explain the equilibrium condition you used for the goods market, and the economic reasoning why the real interest rate must take the value you computed above.

b) (5 points) Suppose that the government wishes to balance the government budget by raising taxes. What effect will this have on the variables listed below? Mark the answer on your scantron, and explain in a few sentences in your blue book the economic intuition. No computations necessary.

MC#11) Real interest rate (a) rise (b) fall (c) no change (d) insufficient information
MC#12) Investment (a) rise (b) fall (c) no change (d) insufficient information
MC#13) Private saving (a) rise (b) fall (c) no change (d) insufficient information
MC#14) National saving (a) rise (b) fall (c) no change (d) insufficient information

c) (4 points) Suppose now instead that the government cuts the money supply. What effect will this have on the variables listed below? Mark the answer on your scantron. No computations necessary; no explanation required.

MC#15) Price level (a) rise (b) fall (c) no change (d) insufficient information
MC#16) Real GDP (a) rise (b) fall (c) no change (d) insufficient information
MC#17) Nominal GDP (a) rise (b) fall (c) no change (d) insufficient information
MC#18) Nominal wage (a) rise (b) fall (c) no change (d) insufficient information

d) (4 points) Suppose instead that the government adopts new tougher immigration laws, and there is a fall in the labor force in the U.S. What effect will this have on the variables listed below? Mark the answer on your scantron. No computations necessary; no explanation required.

MC#19) Real Wage (a) rise (b) fall (c) no change (d) insufficient information
MC#20) Real GDP (a) rise (b) fall (c) no change (d) insufficient information
MC#21) Nominal GDP (a) rise (b) fall (c) no change (d) insufficient information
MC#22) Price level (a) rise (b) fall (c) no change (d) insufficient information
e) (3 points) Explain in a short paragraph (around 3-5 sentences) what is meant by the classical
dichotomy, and how accurately it describes this economy. Do any of your results in the
preceding sections violate this property?

**Problem 2: Solow Growth Model** (20 points total)
Suppose an economy can be characterized by the production function: \( Y = F(K, L) = 10K^{0.5}L^{0.5} \).
Suppose the depreciation rate is 13%, the saving rate is 15%, the population growth rate is 2%.
Unless told otherwise, assume there is no technological progress.

a) (6 points) Using the Solow growth model, compute the steady state values of the following:
(show your work)
GDP per person (real)
Consumption per person
Real rental rate

b) (3 points) Suppose the saving rate is raised by the amount needed to achieve the golden rule
here. What will happen to the steady state values of the variables in part (a):
MC#23) GDP per person (a) rise (b) fall (c) no change (d) insufficient information
MC#24) Cons. per person (a) rise (b) fall (c) no change (d) insufficient information
MC#25) Real rental rate (a) rise (b) fall (c) no change (d) insufficient information

c) (3 points) Suppose now instead the country promotes a policy to lower the population growth
rate. What will happen to the steady state values of the variables in part (a):
MC#26) GDP per person (a) rise (b) fall (c) no change (d) insufficient information
MC#27) Cons. per person (a) rise (b) fall (c) no change (d) insufficient information
MC#28) Real rental rate (a) rise (b) fall (c) no change (d) insufficient information

d) (4 points) Suppose now that there is a constant rate of labor augmenting technological progress in
this economy equal to 3%. For each of the variables below, what will the growth rate be in steady
state?
MC#29) total GDP (a) 0% (b) 2% (c) 3% (d) 5% (e) none of above
MC#30) GDP per person (a) 0% (b) 2% (c) 3% (d) 5% (e) none of above
MC#31) Real rental rate (a) 0% (b) 2% (c) 3% (d) 5% (e) none of above
MC#32) Real wage (a) 0% (b) 2% (c) 3% (d) 5% (e) none of above

e) (4 points) In a paragraph (around 4-6 sentences) describe three policies discussed in class by
which the government could promote stronger growth and a higher standard of living in an
economy. Make an argument for which of these would be the most helpful for the case of the
U.S.

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