Name _____   Student ID _____
Mark on your scantron: Test from A

Final Exam - Economics 101 (Fall 2007)
You will have 120 minutes to complete this exam. There are 6 pages and 155 points.

<u>**Section 1:**</u> (30 points total, 3 points each) Record the best answer on your scantron.

MC#1: If U.S. money supply growth is 1% and output growth is 2 %, and the real interest rate is 2%, then according to the Quantity Theory of money (where velocity is constant), inflation should be
a) -1%
b) 1%
c) 2%
d) 3%

MC#2: In the problem above, according to the Fisher relation, the nominal interest rate should be
a) -1%
b) 1%
c) 2%
d) 3%

MC#3: Which of the following might lower the natural rate of unemployment in the U.S.?
a) a rise in unemployment benefits
b) a rise in money supply
c) a cut in the minimum wage
d) a cut in government purchases

MC#4: Which of the following can generate continued long run growth in real wages and consumption levels per person in the US economy?
a) a high saving rate
b) a high rate of technological progress
c) a high population growth rate
d) all of the above

MC#5: According to the Neoclassical model, the long-run effect of a cut in government spending is to ___ output and ___ investment.
a) lower, raise
b) lower, not change
c) not change, lower
d) not change, raise
e) not change, not change

MC#6: If money demand is not very responsive to interest rates (the coefficient on interest rates in the money demand equation is small), this will make the
a) LM curve steeper
b) LM curve flatter
c) IS curve steeper
d) IS curve flatter

MC#7: If expectations are rational in the Phillips Curve, then when the Federal Reserve tries to reduce inflation, this will imply that
a) unemployment falls
b) output falls
c) the sacrifice ratio is zero
d) Okun's law fails to hold

MC#8: Which of the following is a weakness of the "sticky wage" model of aggregate supply: it implies that…
a) the SRAS curve is flat
b) the SRAS cure slopes upward.
c) the real wage is fixed.
d) the real wage is countercyclical.

MC#9: In the Keynesian Cross model, if government spending is cut by $1 million, income must
a) fall by $1 million.
b) fall by less than $1 million.
c) fall by more than $1 million.
d) fall, but it is not clear how much

MC#10: In the Keynesian Cross model, if taxes are cut by $1 million, income must
a) rise by $1 million.
b) rise by less than $1 million.
c) rise by more than $1 million.
d) rise, but it is not clear how much

Problem 1: Neoclassical Model (30 points total)

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

Production:	$Y = 10\ K^{1/2}\ L^{1/2}$	
Factor supply:	$K = 100$	$L = 100$
Government:	$G = 200$	$T = 200$
Consumer behavior:	$C = 100 + 0.5(Y\text{-}T)$	
Investment behavior:	$I = 400 - 1000r$	

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

Quantity theory of money:	$MV = PY$	where V=5
Nominal money supply:	$M = 400$	

(Y is real GDP, K capital, L labor, G government purchases, T taxes, C consumption, I invest-ment, r real interest rate, P price level, M money supply, V velocity.)

a) (10 points) Compute the equilibrium levels of the following five variables:
real interest rate,   real GDP,   real wage,   price level,   nominal wage
Show your work, and be careful about mathematical accuracy. In a sentence or two, 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) (6 points, mark on scantron) Suppose that the <u>government decreases the money supply</u>. What effect will this have on the variables listed below? Mark the answer on your scantron. No computations necessary; no explanation required.

MC#11) Price level	(a) rise	(b) fall	(c) no change	(d) insufficient information
MC#12) Real GDP	(a) rise	(b) fall	(c) no change	(d) insufficient information
MC#13) Nominal wage	(a) rise	(b) fall	(c) no change	(d) insufficient information

c) (10 points, scantron) Assume money supply is back at the original level. Suppose now that immigration raises the labor force. What effect will this rise in labor force have on the variables listed below? Mark the answer on your scantron. No computations necessary; no explanation required.

MC#14) Real GDP   (a) rise   (b) fall   (c) no change   (d) insufficient information
MC#15) real interest rate   (a) rise   (b) fall   (c) no change   (d) insufficient information
MC#16) real wage   (a) rise   (b) fall   (c) no change   (d) insufficient information
MC#17) price level   (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) Explain in a couple of sentences what is meant by the <u>classical dichotomy</u>, and how accurately it describes this economy. Do any of your results in the preceding sections violate this property?

Problem 2: Solow Growth Model: (22 points total)

Suppose an economy can be characterized by the production function: $Y = F(K,L) = 6K^{0.5}L^{0.5}$. Suppose the depreciation rate is 20%, the saving rate is 15%, and the population growth rate is 10%. Assume there is no technological progress.

a) (6 points) Using the Solow growth model, compute the steady state value of capital per person and output per person for this economy.

b) (8 points) Compute the maximum level of consumption per person that this economy can sustain as a steady state. Explain in words the economic reasoning for why a higher level of consumption is not possible for this economy.

c) (8 points, record on scantron) Suppose this economy experiences a rise in its population growth rate above the level assumed above. What would happen to the steady state values of the following variables:

MC#19) output per person   (a) rise   (b) fall   (c) no change   d) ambiguous

MC#20) consumption per person   (a) rise   (b) fall   (c) no change   d) ambiguous

MC#21) steady state growth rate in output per person

                                                (a) rise   (b) fall   (c) no change   d) ambiguous

MC#22) steady state growth rate in total output (not per person)

                                                (a) rise   (b) fall   (c) no change   d) ambiguous

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Problem 3: Short Run and Long Run (35 points total)

Suppose there is a permanent rise in taxes in an economy. Use the IS-LM / AS-AD tools to analyze the implications in the short run and the long run.

(Assume that prices are completely fixed in the short run and completely flexible in the long run. Make the usual IS-LM assumptions unless told otherwise: Consumption is a function of just disposable income with a constant marginal propensity to consume. Investment is a function only of the interest rate. Money demand responds to the interest rate and income.)

a) (8 points) Draw the IS-LM and AS-AD graphs to show the <u>short run and long run</u> equilibria following this shock. Assume that prices are completely fixed in the short run. Be sure to label the axes, curves, use arrows to show shifts in curves, and mark the equilibrium points: 1 for the initial equilibrium, 2 for the short run equilibrium, and 3 for the long-run equilibrium. Explain in a sentence or two each curve shift.

b) (10 points, write on scantron) What happens to the following real variables in the <u>short run?</u>

MC#23) output:	a) rise	b) fall	c) no change	d) ambiguous
MC#24) interest rate:	a) rise	b) fall	c) no change	d) ambiguous
MC#25) consumption:	a) rise	b) fall	c) no change	d) ambiguous
MC#26) investment:	a) rise	b) fall	c) no change	d) ambiguous
MC#27) private saving:	a) rise	b) fall	c) no change	d) ambiguous

c) (10 points, write on scantron) Consider the value that each of the variables goes to in the <u>long run</u> -- is this long-run value the same as the initial level before the shock (point 1 on your graphs), will it end up higher in the long run than its initial level, will it end up lower, or is this ambiguous for the given information.

MC#28) output:	a) initial value	b) higher	c) lower	d) ambiguous
MC#29) interest rate:	a) initial value	b) higher	c) lower	d) ambiguous
MC#30) consumption:	a) initial value	b) higher	c) lower	d) ambiguous
MC#31) investment:	a) initial value	b) higher	c) lower	d) ambiguous
MC#32) price level:	a) initial value	b) higher	c) lower	d) ambiguous

d) (7 points) Suppose that consumption is now a negative function of the interest rate, as well as depending on disposable income. Discuss in a sentence or two why this might be a realistic assumption. Next, discuss the effects this assumption has on your conclusions for the long run in part (c) above: which of the variables will move more than before; which less?

Problem 4: IS/LM in the Short Run   (26 points total)

Suppose the Federal Reserve were to <u>raise the money supply</u> by some amount. Use the IS-LM model to analyze the <u>short run</u> implications of this policy.
(Assume the following unless otherwise stated: prices are completely fixed in the short run. Investment is just the usual function of the interest rate alone; consumption is a function of disposable income alone, with a constant marginal propensity to consume; money demand responds to income and interest rate.)

a) (6 points) Graphically illustrate the short-run effect of this policy in an IS-LM graph. Be sure to label the axes, the curves, and use arrows showing the direction the curves shift. Also mark the initial equilibrium as point '1', and the short-run equilibrium as point '2'. Explain briefly the reason for any curve shift.

b) (10 points, mark on scantron) What will happen to the levels of the following variables in the short run?

MC#33: output:	a) rise	b) fall	c) no change	d) ambiguous
MC#34: interest rate:	a) rise	b) fall	c) no change	d) ambiguous
MC#35: consumption:	a) rise	b) fall	c) no change	d) ambiguous
MC#36: investment:	a) rise	b) fall	c) no change	d) ambiguous
MC#37: real money demand:	a) rise	b) fall	c) no change	d) ambiguous

c) (10 points, mark on scantron) Suppose that investment responds to the interest rate to a greater degree than you assumed above (the investment function has a larger coefficient on the interest rate). How would this affect the slopes of curves, and how would it affect your answers to part (b)? In particular, for the first two variables from part (b), indicated below if it changes more compared to the case in part (b), less, the same, or ambiguous.

MC#38: IS curve:	a) steeper	b) flatter	c) same	d) ambiguous
MC#39: LM curve:	a) steeper	b) flatter	c) same	d) ambiguous
MC#40: output:	a) more	b) less	c) same	d) ambiguous
MC#41: interest rate:	a) more	b) less	c) same	d) ambiguous
MC#42: investment:	a) more	b) less	c) same	d) ambiguous

Problem 5: Recessions   (12 points total)

Suppose the U.S. experiences a recession where consumption is falling and real interest rates are rising. Given this information and the usual assumptions of the IS/LM model (where prices are assumed completely fixed in the short run) what might cause such a recession? For each of the economic shocks listed below, indicate if it could be a potential cause of the recession here. (mark on your scantron.)

MC#43: a fall in exogenous money demand	a) yes	b) no
MC#44: a fall in autonomous consumption (fall consumer confidence)	a) yes	b) no
MC#45: a fall in autonomous investment (fall in business confidence)	a) yes	b) no
MC#46: a fall in taxes	a) yes	b) no
MC#47: a fall in money supply	a) yes	b) no

Explain your logic in a few sentences below.