Student Name	
Student ID	

ECO3152B: MACROECONOMIC THEORY III

MIDTERM EXAM 1, VERSION A

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October 13, 2011

16:00 – 17:20

1. The exam consists of two sections. You are required to answer **all** questions.

2. Answer the multiple choice questions on the Scantron answer sheet. Answer all other questions in the exam booklets.

3. Make sure to indicate your student ID and the exam version on your copy of the exam, the Scantron answer sheet and on your answer booklet. Submit the exam questions and the answer booklet.

4. The use of books, notes, mathematical tables or other study aides is **not** allowed.

5. The use of a calculator is permitted.

6. Budget your time wisely!

	Q I	Q II	Q III	Q IV	MC	Grade in %
Student's grade						
Maximum possible	**20**	**20**	**20**	**20**	**20**	**100**

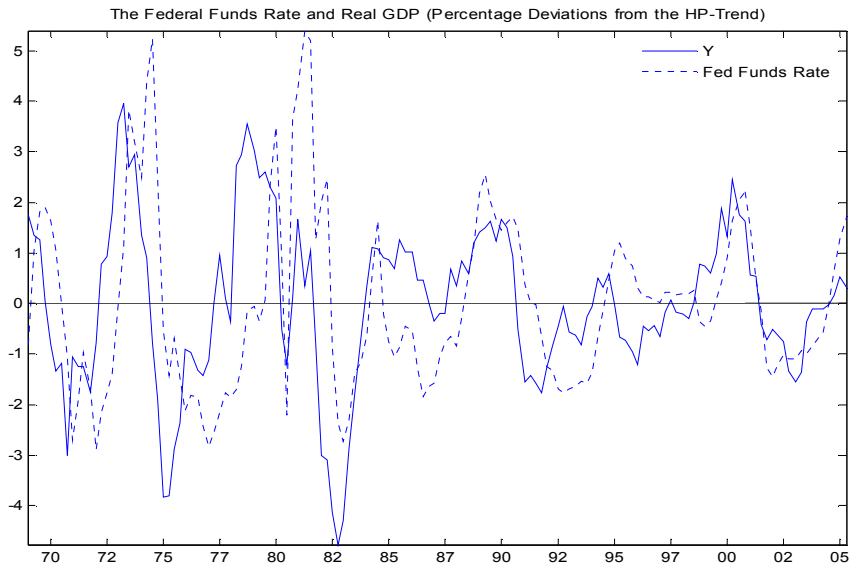
GOOD LUCK!!!

SECTION 1

Question I (20 points): Business cycle measurement

a. **(5 points)** What is the primary defining feature of business cycles?

b. The figure below plots the cyclical components (percentage deviations from the trends) of real GDP and of the Federal Funds Rate (FFR) for the U.S. economy. The correlation coefficient between the two series is equal to 0.35. The standard deviations of the cyclical components of real GDP and the FFR are 1.58 and 1.74.



Based on the given information, determine whether the Federal Funds Rate is

i). **(5 points)** Procyclical, countercyclical or acyclical variable. Justify your answer.
ii). **(5 points)** Leading, lagging or coincident variable. Justify your answer.
iii). **(5 points)** More or less volatile relative to GDP. Justify your answer.

Question II (20 points): Predictions of the one-period closed economy model

Canadian data indicate that aggregate output, consumption and the real wage have increased steadily since World War II. However, hours worked per employed person have remained roughly constant.

Do you think that long-run improvements in technology are a likely cause of the long-run trends in output, consumption, the real wage and hours worked per person? Explain your answer using the closed economy one-period macroeconomic model from Chapter 5. Illustrate your explanation graphically.

Question III (20 points) : The firm's problem

Suppose that the firm's production technology is given by $Y=zF(K,N) = z\,K^{a}N^{1-a}$, where $0<a<1$. The quantity of capital stock K is given.

a. **(10 points)** Determine the firm's demand for labour as a function of *z, K,* a, and *w,* and interpret.

b. **(10 points)** Assume that a=0.35. Imagine that a fire destroyed ten percent of the firm's capital. How will labour demand respond to this event? Find the analytical response by computing dN^{d}/dK. Interpret your answer. Provide a graphical illustration by plotting the labour demand curve.

Question IV (20 points): Competitive equilibrium and Pareto optimality

Consider a one-period closed economy model from Chapter 5.

a. **(10 points):** What are the four conditions that a competitive equilibrium must satisfy for this model?

b. **(10 points):** How does the constraint facing the representative consumer in the model differ from the constraint facing the social planner?

SECTION 2 (20 points)

MULTIPLE CHOICE. Choose the one alternative that best completes the statement or answers the question. All questions in this section carry equal weight (**2 points each**)

1) Primarily, macroeconomists use microeconomic principles to study
   A) trends in the stock market and long–term economic growth.
   B) short run and long run economic growth.
   C) long–run economic growth and business cycles.
   D) business cycles and trends in the stock market.
   E) long–run economic growth and employment policies

2) Significant problems with measuring real GDP and the price level include
   A) changes in relative price levels.
   B) changes in the number of consumers.
   C) changes in standards of living.
   D) purchases of used goods.
   E) changes in consumption patterns.

For the following question(s), suppose that an economy produces only bread and computers. Assume that all production is consumed in each year, and that price and quantity data are given in the table below.

	Year 1			Year 2	
Good	Quantity	Price	Good	Quantity	Price
Bread	30	$10	Bread	40	$15
Computers	10	$50	Computers	30	$60

3) If Year 1 is the base year, the CPI for Year 2 is approximately
   A) 131.3.
   B) 211.0.
   C) 126.3.
   D) 181.0.
   E) 100.0.

4) The marginal rate of substitution is defined as
   A) the amount of good Y substituted for good X by a consumer.
   B) the slope of the utility function.
   C) the amount of good Y that a consumer is willing to substitute for good X and stay at a given level of satisfaction.
   D) the convexity of the indifference curve.
   E) the feasible rate of substitution given prices.

5) We typically assume that
   A) both consumption and leisure are normal goods.
   B) consumption is an inferior good and leisure is a normal good.
   C) consumption is a normal good and leisure is an inferior good.
   D) both consumption and leisure and complimentary goods.
   E) both consumption and leisure are inferior goods.

6) In a one–period economy, the expression for the budget constraint is
   A) $C = w(h + l) + \pi - T$.
   B) $C = wl = wh + \pi - T$.
   C) $C = w(N^S + l) + \pi + T$.
   D) $C = w(N^S + l) + \pi - T$.
   E) $C = wN^S + \pi - T$.

7) The presence of a distorting tax on wage income can result in

   A) $MRS_{L,C} = MP_N$.
   B) $MRT_{L,C} < MRS_{L,C}$.
   C) $MP_N < w$.
   D) $MRS_{L,C} < MP_N$
   E) $MP_N < MRT_{L,C}$

8) An increase in the real wage
   A) increases consumption and decreases labour supply.
   B) unambiguously increases consumption and increases labour supply.
   C) has an ambiguous effect on consumption and increases labour supply.
   D) has an ambiguous effect on both consumption and labour supply.
   E) increases consumption and has an ambiguous effect on labour supply.

9) The optimal consumption bundle is the point representing a consumption–leisure pair that is on the
   A) lowest possible indifference curve and is on or inside the consumer's budget constraint.
   B) lowest possible indifference curve and is on or outside the consumer's budget constraint.
   C) highest possible indifference curve and is on or outside the consumer's budget constraint.
   D) highest possible indifference curve and is on or inside the consumer's budget constraint.
   E) lowest possible indifference curve that maximizes total utility.

10) Changes in government spending are not likely causes of business cycles because government spending induced business cycles would, counterfactually predict
   A) countercyclical real wages.
   B) countercyclical consumption.
   C) procyclical employment.
   D) countercyclical employment.
   E) procyclical consumption.