HOWARD UNIVERSITY

DEPARTMENT OF ECONOMICS

CODE NUMBER---------- TOTAL NUMBER OF PAGES----------

February 1, 2016

COMPREHENSIVE EXAMINATION:

MACROECONOMIC THEORY/ M.A.

EXAMINERS:

1. **Dr. Mika Kato, Chairperson**
2. **Dr. Kofi Kissi Dompere**
3. **Dr. Gerald Daniels**

1. **The examination is scheduled between the hours: 9:30 a.m-1.00 pm**

   ALL STUDENTS ARE TO BE SEATED BY 9:15 a.m.
2. **YOU ARE REQUIRED TO ANSWER ONLY FIVE (5) QUESTIONS.**

   Any additional questions answered over the required number from each category will NOT receive credit.
3. **Correct answers to questions NOT asked will receive NO credit.**
4. **Be sure to write the Code Number assigned to you in the TOP LEFT HAND CORNER OF THIS SHEET AND ON EACH ANSWER SHEET. DO NOT WRITE YOUR NAME ON ANY SHEET OF THE EXAMINATION.**
5. **Begin each question on a new page. Number each page used in sequence. Write only on one side of the paper.**

6. **Write clearly and illustrate your answers with graphs whenever and wherever possible.**
7. **USE ONLY BLACK INK PENS.**
8. **At the end of the examination, please indicate the total number of pages being submitted in the space provided in the TOP RIGHT HAND CORNER of this sheet.**

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1. **Bring your pens, pencils, calculators and rulers.**
2. **No briefcases, book bags or sacks, no handbags larger than 10 x 6 of any form are to be brought into the examination room.**
3. **No books, notes or other study material are to be brought into the examination room.**
4. **During the Examination there is to be no communication between or amongst students for any purpose. All questions must be directed to and channeled through the faculty member conducting the examination.**
5. **Only the scrap paper provided by the proctor is to be used for the examination. Scrap paper should bear the code number assigned to each student, and be handed over to the proctor along with the examination.**
6. **Students are not expected to leave the examination room before completing their examination and turning it in to the proctor.**
7. **NO FOOD OR SMOKING is permitted in the examination room.**
8. **It is the student's responsibility to remove any coffee or water containers taken into the examination room.**
9. **NO CELL PHONES ARE ALLOWED.**
10. **EXAMINATION RESULTS WILL ONLY BE GIVEN TO STUDENTS WHO ARE REGISTERED.**

Revised 09/07/2004

CODE NUMBER_____

STUDENTS: PLEASE CIRCLE ONLY THE QUESTIONS ANSWERED AND PROVIDE THE PAGE NUMBERS.

QUESTIONS	PAGE NUMBERS
1.	
2.	
3.	
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8.	

M.A. MACROECONOMIC THEORY
COMPREHENSIVE EXAMINATION SPRING 2016

PART A. ANSWER ANY TWO (2) QUESTIONS FROM QUESTIONS 1-3.

1. Write short definitions for (a)-(i). Use diagrams and/or equations where appropriate.

(a) Borrowing constraint
(b) Fisher equation
(c) Okun's law
(d) Incomes policy
(e) Involuntary unemployment
(f) Intertemporal budget constraint
(g) Transitory income
(h) Short-run production function
(i) Accelerator model

2. Answer questions (a) and (b).

(a) Demand side management is a framework used by policymakers to stabilize the economy. Explain how this may be used to address problems related to unemployment and inflation.
(b) If the Federal Reserve decided to increase interest rates, describe how this could be achieved and explain why this course of action may be recommended.

3. Answer questions (a) and (b).

(a) In deciding whether to invest in a given project, a firm might utilize the concept known as the present discounted value. Explain what this means to investors.
(b) Using diagrams, show how the present discounted value is related to the investment demand curve and show how the variables in the two models are related.

PART B. ANSWER ANY THREE (3) QUESTIONS FROM QUESTIONS 4-8.

4. Consider the following IS/LM model:

$$\boldsymbol{Y = C + I + G}$$
$$\boldsymbol{C = 0.8(Y - T)}$$
$$\boldsymbol{I = 800 - 20r}$$
$$\boldsymbol{T = 1000}$$
$$\boldsymbol{G = 1000}$$
$$\boldsymbol{\frac{M^s}{P} = \frac{M^d}{P} = 0.4Y - 40r}$$
$$\boldsymbol{P = 1}$$
$$\boldsymbol{M^s = 1200}$$

where all the variables are defined in their traditional manner. Answer questions (a)-(d).

(a) Specify an equation for the IS and LM curves.
(b) Find the equilibrium for Y, r, $Y - T$, C, I, private and public savings,
(c) Find the velocity of money.
(d) If the price level increases to 2, what impact this will have on the model and aggregate demand.

5. Suppose an economy described by the Solow model has the following production function:

$$\boldsymbol{Y = K^{1/2}(LE)^{1/2}},$$

where K, L, and E represent physical capital, raw labor, and labor efficiency, respectively. Answer questions (a)-(c).

(a) For this economy, what is $f(k)$? [*Hint:* $k \equiv \frac{K}{EL}$ *and* $y \equiv \frac{y}{EL}$]
(b) Use your answer in part (a) to solve for the steady-state value of y as a function of $s, n, g,$ and δ, the saving rate, growth rate of the population and labor efficiency, and the depreciation rate of capital, respectively.
(c) Two neighboring economies have the above production function, but they have different parameter values. Atlantis has a saving of 28 percent and a population growth rate of 1 percent per year. Xanadu has a saving rate of 10 percent and a population growth rate of 4 percent per year. In both countries, $g = .02$ and $\delta = .04$. Find the steady-state value of y for each country.

6. A country's production function is

$$\boldsymbol{y = k^{0.5}}$$

where y is output per worker; k is capital per worker. Answer questions (a)-(c).

(a) If the saving rate is 0.4 and the depreciation rate is 0.10, what are the following in the steady state: (*i*) capital per worker, (*ii*) output per worker, and (*iii*) consumption per worker.
(b) If the depreciation rate increases, what impact this will have on the steady state. Use a diagram to explain your answer.
(c) If the growth in capital ($\Delta k/k$) is 4.0 and the growth in the labor force ($\Delta L/L$) is 2, find the growth rate of Δy/y, given the production function $Y = K^{1/2}L^{1/2}$.

7. Suppose a household has a utility function,

$$\boldsymbol{U = CL^{-\alpha}},$$

with a budget constraint,

$$\boldsymbol{C = X + \frac{w}{P}L},$$

where X is income earned from investments, C is consumption, L is the supply of labor hours from the household, and w/P is the real wage rate. Answer questions (a)-(c).

(a) Find the optimal supply of labor from the household and the optimal consumption level.
(b) If the production function for the firm is specified as $Y = 2L^{0.5}$ where Y is output and L is labor, find the demand for labor for the profit maximizing firm.
(c) If the supply of labor in (a) is equal to the demand for labor in (b), find the real wage.

8. The amount of education the typical person receives varies substantially among countries. Suppose you were to compare a country with a highly educated labor force and a country with a less educated labor force. Assume that education affects only the level of efficiency of labor. Also assume that the countries are otherwise the same: they have the same saving rate, the same depreciation rare, and the same rate of technological progress. Both countries are described by the Solow model and are in their steady states. What would you predict for the following variables (a)-(d)? Explain.

(a) The rate of growth of total income.
(b) The level of income per capita.
(c) The real rental price of capital.
(d) The real wage.