**HOWARD UNIVERSITY**

**DEPARTMENT OF ECONOMICS**

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

**January 18, 2017**

**COMPREHENSIVE EXAMINATION:**

**MACROECONOMIC THEORY/ M.A.**

**EXAMINERS:**

1. **Dr. Mika Kato, Chairperson**
2. **Dr. Kofi Kissi Dompere**
3. **Dr. Gerald Daniels**
4. **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.**

1. **YOU ARE REQUIRED TO ANSWER ONLY FIVE (5) QUESTIONS.**

**Any additional questions answered over the required number from each category will NOT receive credit.**

1. **Correct answers to questions NOT asked will receive NO credit.**
2. **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.**
3. **Begin each question on a new page. Number each page used in sequence. Write only on one side of the paper.**
4. **Write clearly and illustrate your answers with graphs whenever and wherever possible.**
5. **USE ONLY BLACK INK PENS.**
6. **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.**

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| **QUESTIONS** | **PAGE NUMBERS** |
| **1.** |  |
| **2.** |  |
| **3.** |  |
| **4.** |  |
| **5.** |  |
| **6.** |  |
| **7.** |  |
| **8.** |  |

**M.A. MACROECONOMIC THEORY**

**COMPREHENSIVE EXAMINATION SPRING 2017**

**PART A. ANSWER ALL THREE (3) QUESTIONS 1-3.**

1. **Write short definitions for (a)-(f). Use diagrams and/or equations where appropriate.**
2. Tobin’s *q*-theory of investment
3. Golden rule
4. Purchasing-power parity
5. The business cycle
6. Balanced growth
7. Permanent technology shock
8. **Country A and country B both have the production function,**

**.**

**Answer questions (a)-(c).**

1. Prove that this production function displays constant returns to scale.
2. Assume that there is no technological progress, the population for each country grows at rate n, capital depreciates at rate δ, and both countries save at rate *s*. Using the Solow growth model, determine the steady-state level of capital per capita and output per capita as function of the population growth rate, depreciation, and the savings rate.
3. Suppose that population growth rate is higher in country A relative to country B. How would this effect their relative steady states?
4. **Using the IS-LM, answer questions (a)-(c).**
5. Explain why the aggregate demand curve slopes downward.
6. What is the impact of an increase in taxes on the interest rate, income, consumption, and investment?
7. What is the impact of a decrease in the money supply on the interest rate, income, consumption, and investment?

**PART B. ANSWER ANY TWO (2) QUESTIONS FROM QUESTIONS 4-8.**

1. **Consider the following centrally-planned model with labor:**

**where the objective is to maximize**

**where is output, is consumption, is investment, is the capital stock, is employment, and is leisure, . The parameters and are assumed to be nonnegative. Answer questions (a)-(d).**

1. Define the Lagrangian for the centralized economy.
2. Determine the first order conditions for (a).
3. Obtain the long-run solution.
4. What are the implied long-run real interest rate and wage rate?
5. **We assume that an economy's production function is described by where output and capital stock period *t* are denoted by and , respectively. The level of technology is represented by *A*, and . Answer questions (a)-(d).**

1. Describe the Inada conditions for the economy's production function, i.e. the behavior of the marginal product of capital as tends to zero or infinity.
2. Define the resource constraint for the centralized closed economy.
3. Using the economy's production function and your solution to (b), determine the golden rule solution.
4. Explain why the golden rule solution is sustainable indefinitely provided there are no disturbances to the economy.
5. **Assume that an economy's production function is described by**

**.**

**The size of the population is denoted by and the level of technology is represented by and . The level of technology at time t is determined by**

**, ,**

**and is the initial level of technology. The population at time t is determined by where**

**, ,**

**and is the initial level for the population. In addition, we assume that the aim of the central planner is to maximize the present value of current and future utility,**

**Answer questions (a)-(d).**

* 1. Write the production function in terms effective units of labor, .
  2. Define the Lagrangian for the centralized closed economy.
  3. Determine the first order conditions for (a).
  4. Using (b), determine the Euler equation.

1. **Consider the CES production function , where and is nonnegative. Answer questions (a) and (b).**

1. Find Show that the CES function becomes the Cobb-Douglas function as .
2. Verify that the CES function is homogeneous of degree one and hence satisfies
3. **Consider the economy of Hawardonia. The consumption function is given by**

**.**

**The investment function is**

**Government purchases and taxes are both 500. Answer questions (a)-(c).**

1. For this economy, express the IS curve as *r*(*Y*) and graph the IS curve.
2. Assume that the money demand function in Howardonia is

the money supply is 3,000 and the price level is 3. Express the LM curve as *r*(*Y*) and graph and LM curve.

1. For the initial value of monetary and fiscal policy, derive and graph an equation, *Y*(*P*), for the aggregate demand curve. What happens to this aggregate demand curve if the central bank pursues expansionary monetary policy?