PART I MULTIPLE CHOICE QUESTIONS

Instructions: This part consists of 40 multiple-choice questions, each of which is worth 1.5 points. Circle one and only one answer.

1) The savings curve is upward sloping, because
   (a) high interest rates increase the future returns that households obtain from their savings.
   (b) high interest rates increase the opportunity cost of consuming today so that people save more to smooth their consumption.
   (c) low interest rates reduce the interest income on current savings, forcing people to save more.
   (d) a and b.

2) Which of the following is NOT true about the Bretton Woods agreement?
   (a) It aimed to bring stability to the world economy.
   (b) It involved active participation of each country’s Central Bank in the foreign exchange market.
   (c) The Agreement was abolished when the Oil Crisis hit the economy.
   (d) The US agreed to fix the value of the dollar according to its endowment of gold reserves.

3) The theory that the real exchange rate should be equal to one, because free trade should lead to prices being equalized everywhere, is called
   (a) Uncovered interest rate parity.
   (b) Covered interest rate parity.
   (c) Purchasing power parity.
   (d) Relative purchasing power parity.
4) Some newly industrialized countries, especially in East Asia, have pursued active government policies to encourage saving. If such policies were to increase the savings rate from, say 15% to 20%, and productivity does NOT grow at all, then the Neoclassical theory predicts that
   (a) This will have no effect on GDP per capita.
   (b) The steady state per capita capital stock will be higher, but the growth rate will be zero in the long-run.
   (c) The steady state per capita capital stock will be higher, and the growth rate will be higher forever.
   (d) The growth rate of the economy would increase by 5%.

5) The real interest rate is calculated from the nominal interest rate by
   (a) Adding the expected rate of inflation to the nominal interest rate.
   (b) Multiplying the nominal interest rate by the expected inflation rate.
   (c) Subtracting the expected inflation rate from the nominal interest rate.
   (d) Dividing the nominal interest rate by the expected inflation rate.

6) The main difference between the exogenous and endogenous theories of growth is that
   (a) In the exogenous model, growth results from the accumulation of capital, but in the endogenous model it results from unexplained productivity growth.
   (b) Growth in the exogenous model results from unexplained improvements in productivity, but in the endogenous model productivity improvements depend upon aggregate capital because of learning by doing.
   (c) Population growth is the key mechanism driving growth in the exogenous model, but not in the endogenous model.
   (d) All of the above.

7) What is the money demand function when the utility of money for the representative household is given by \( U\left( Y, \frac{M}{P} \right) = 0.5 \ln(Y) + 0.5 \ln\left(\frac{M}{P}\right) \)?
   (a) \( \frac{M^0}{P} = Y/i \)
   (b) \( \frac{M^0}{P} = 2Y/i \)
   (c) \( \frac{M^0}{P} = 0.5Y/i \)
   (d) \( \frac{M^0}{P} = Y/(0.5i) \)

8) If seignorage is the main source of revenue for the government, which of the following will happen?
   (a) The country will prosper because now it has a lot of money
   (b) The money supply will decrease
   (c) The country will not collect inflation tax
   (d) The country will observe inflation.

9) An increase in endowments of capital will:
   (a) Shift labor supply to the right
   (b) Shift labor supply to the left
   (c) Shift labor demand to the right
   (d) Shift labor demand to the left
10) The relative price of a basket of foreign goods, valued in terms of a basket of domestic goods, is called:
(a) Nominal exchange rate.
(b) Purchasing power parity.
(c) Real exchange rate.
(d) Floating exchange rate.

11) If Coca-Cola sells its products in the Dominican Republic, but buys the syrup (raw materials) in Georgia, and the Dominican currency weakens with respect to the Dollar, then Coca-Cola has:
(a) Earned more income from its operations in the Dominican Republic relative to the amount paid in Dollars for their input.
(b) Earned less income from its operations in the Dominican Republic relative to the amount paid in Dollars for their input.
(c) It does not affect Coke, because they sell big quantities in many countries.
(d) It does not affect Coke, because the demand for their product is inelastic.

12) The price of a typical bundle of goods in Mexico is 200 Pesos and the price of a similar bundle of goods in Italy is 400 Euros. If the exchange rate is 0.5 Euros to a Mexican Peso, then which of the following is true?
(a) The Mexican and Italian baskets are equal in price.
(b) The Italian basket is .25 as expensive as the Mexican basket; hence Euro should depreciate for the purchasing power parity to hold.
(c) The Mexican basket is .25 as expensive as the Italian basket; hence Euro should depreciate for the purchasing power parity to hold.
(d) The Mexican basket is .25 as expensive as the Italian basket; hence Peso should depreciate for the purchasing power parity to hold.

13) Which of the following is an example of Cyclical unemployment?
(a) Job seekers search ineffectively to find a job.
(b) Unemployment as a result of a technological revolution.
(c) A company abstains from hiring, because it believes there are not enough qualified individuals available for the job.
(d) Cutbacks resulting from a recessionary economic phase.

14) Which of the following should increase the nominal exchange rate of dollars per peso?
(a) Americans start preferring Mexican goods to homemade goods.
(b) Mexico’s real GDP increases.
(c) Peso is expected to depreciate.
(d) The Mexican interest rate decreases.

15) Which of the following is NOT claimed by Keynesian economic thought?
(a) Government intervention is necessary when markets do not function perfectly.
(b) Unemployment can exist in the market naturally.
(c) Firms may be willing to pay higher than equilibrium wages to attract quality workers.
(d) The economy has perfectly functioning markets.
16) Georgia is a small open economy that takes the world interest rate $r_w$ as given. Assume $r_w = 0.25$, the investment demand $I = 5 - r_w$, and the household utility function $\log C_1 + 2\log C_2$. There are 5 units of income in the first period and 0 units of income in the second period.

The country is
a) Net borrower of $13/4$

b) Net borrower of $10/3$

c) Net borrower of $17/12$

d) Net lender of $17/12$

17) Suppose that a new tax is imposed on a firm every time it hires a worker. What would happen to the efficiency wage and unemployment as a result of this tax?

a) Efficiency wage increases, unemployment decreases.

b) Efficiency wage decreases, unemployment decreases.

c) Efficiency wage decreases, unemployment increases.

d) Efficiency wage increases, unemployment increases.

18) Which of the following is a tradable good?

a) haircut

b) construction

 c) house

d) airplane engines

19) Suppose that the per worker turnover cost for a firm is given by $c = 0.33/(w/p)$. What will be the efficiency wage for this economy?

a) 0.29

b) 1.74

c) 0.57

d) 17.4

20) Suppose that Joe, an Economics student at University of Miami, has the opportunity to purchase his textbooks in both the US and in Mexico with no extra costs or trade barriers. The price of his Economics textbook is $140 dollars in the US, and 210 pesos in Mexico. The nominal exchange rate is 0.5 dollars per peso. Then,

a) The real exchange rate is .75, and he should purchase the book in the United States

b) The real exchange rate is .75, and he should purchase the book in Mexico

c) The real exchange rate is 1.25, and he should purchase the book in the United States

d) The real exchange rate is 1.25, and he should purchase the book in Mexico

21) The efficiency wage theory argues that

a) Firms choose to pay a higher wage than the classical equilibrium wage, thus the real wage is higher than the wage at which the labor market clears.

b) Firms choose to pay a higher wage than the classical equilibrium wage, thus the real wage is lower than the wage at which the labor market clears.

c) Firms choose to pay a lower wage than the classical equilibrium wage, thus the real wage is lower than the wage at which the labor market clears.

d) Firms choose to pay a lower wage than the classical equilibrium wage, thus the real wage is higher than the wage at which the labor market clears.
22) Which of the following is a flow variable?
   a) Income
   b) Wealth
   c) Capital
   d) Government debt

23) When monetary policy is NOT neutral,
   a) Both the real and nominal variables change.
   b) Real variables change, nominal variables don’t.
   c) Nominal variables change, real variables don’t.
   d) Neither nominal, nor real variables change.

24) Which of the following statements is NOT a possible explanation why the purchasing power parity does not hold?
   a) Existence of non-tradable goods in a typical basket
   b) Free trade affecting real prices
   c) Differences in consumer preferences among nations
   d) Existence of tariffs

25) Under the floating exchange rate system, when the nominal exchange rate increases, we say that the dollar ______ against the foreign currency.
   a) Appreciates
   b) Devaluates
   c) Depreciates
   d) Revaluates

26) Johnny lost his job as an electrical engineer for a manufacturer that was put out of business by technology changes. Johnny is
   a) a discouraged worker
   b) structurally unemployed
   c) frictionally unemployed
   d) cyclically unemployed

27) If the United States is on a system of fully flexible exchange rates and the interest rate in a foreign country rises relative to that in the United States, then
   a) the assets from the foreign country become less attractive
   b) the demand for the foreign currency will shift leftwards
   c) the exchange rate will increase as the foreign currency becomes stronger
   d) the exchange rate will decrease as the domestic currency becomes weaker

28) What conclusion can be made from the Neoclassical Growth Model?
   a) There is a positive relationship between the savings rate and per capita capital in the steady state.
   b) There is a negative relationship between depreciation rate and the capital per capita.
   c) Both (a) and (b)
   d) None of the above.
29) Consider a small open economy. If there is a positive productivity shock in the country, how will the domestic capital market be affected?
   a) The domestic interest rate will rise.
   b) The domestic interest rate will decrease.
   c) The domestic interest rate will stay the same.
   d) The investment demand will fall.

30) The _____ means that the rates of return should be equalized among nations for similar assets after correcting for percentage change in the current exchange rate.
   a) Purchasing Power Parity
   b) Covered interest rate parity
   c) Uncovered interest rate parity
   d) Real Exchange Rate

31) Which of the following is NOT a growth fact for the US?
   a) The share of consumption expenditures in GDP has been steady.
   b) The share of capital income in GDP has been steady.
   c) The share of labor income in GDP has been steady.
   d) The most important factor in GDP per capita growth has been the increase in capital.

32) Suppose that a government spends $200 on goods and services, pays $50 as transfer payments to individuals, and runs a budget surplus of $100. Then, the tax revenue of the government must be
   a) $150
   b) $350
   c) $50
   d) $250

33) If the investment and savings functions are I(i) = 1/(3i) and S(i,Y) = 5Y, what is the resulting IS curve?
   a) i = 1/(5Y)
   b) i = 15Y
   c) i = 1/(15Y)
   d) i = 3/5Y

34) When a country fixes the rate at which it exchanges its domestic currency against another for a long definite period,
   a) The country employs a soft peg.
   b) The country employs a hard peg.
   c) The country depreciates its currency.
   d) The country devalues its currency.

35) For an individual who tries to optimally choose between consumption and leisure, the budget constraint indicates
   a) the maximum output that can be produced with a given amount of labor.
   b) the total expenditure on goods that can be supported by wage earnings.
   c) the maximum utility that can be reached by consumption and work.
   d) the difference between total revenue and total cost of production.
36) Suppose the government wants to boost aggregate demand through fiscal and monetary policy instruments. Which of the following policy mixes will deliver the desired result, unambiguously?
   a) Increase government spending and the money supply so that the interest rate does not rise.
   b) Increase government spending but reduce money supply, so that GDP does not increase.
   c) Increase taxes and money supply.
   d) Reduce transfers made to private citizens.

37) Suppose that the real money supply and real money demand functions are given by
   \( M^s / P = 250 \) and \( M^d / P = 0.25Y - 5i \), respectively. Then, the equation for the LM curve is
   a) \( i = 0.25Y - 250 \)
   b) \( i = 0.5Y - 50 \)
   c) \( i = 0.05Y - 50 \)
   d) \( i = 0.05Y + 50 \)

38) Which of the following is the disposable income of a nation?
   a) Government expenditures (G) + Government transfers (TR) – Tax revenue (T)
   b) Government expenditures (G) + Government transfers (TR) + Tax revenue (T)
   c) GDP + Government transfers (TR) – Tax revenue (T)
   d) GDP – Government transfers (TR) – Tax revenue (T)

39) The labor supply function
   a) shows the amount of labor firms are willing to employ at each real wage.
   b) shows the fraction of time households devote to work at each nominal wage.
   c) is positively sloped if the substitution effect dominates the wealth effect.
   d) is positively sloped if the wealth effect dominates the income effect.

40) Risk aversion is defined as ________.
   a) The risk one runs of not diversifying
   b) Preference of savings rather than investing
   c) Preference of steady rather than fluctuating income
   d) None of the above
PART II MODEL SOLVING

Instructions: This part of the exam consists of four questions. Show all your calculations to get credits.

Question 1 (10 points). Endogenous growth theory

Consider an economy with savings rate $s=0.2$, depreciation rate $\delta=0.08$, production function $Y_t = K_t^{1/3} (Q_t L_t)^{2/3}$. There is no population growth. The law of motion for capital is as usual: $K_{t+1} = (1 - \delta) K_t + I_t$. Assume that this economy is closed so that $S_t = I_t$, where $S_t = s Y_t$. Suppose that $Q_t$ varies directly with the level of capital stock per worker, i.e., $Q_t K_t/L_t$ for all $t$.

(i) Define the steady state for this economy.

(ii) Find the steady state level of capital stock per capita and steady state level of GDP per capita in this case.

(iii) What is the growth rate of this economy? (The growth rate is given by $\frac{Y_{t+1}}{Y_t} - 1$.)
Consider two economies, A and B, with the same initial capital stock and same production function. Suppose that both countries have the same savings rate, i.e., $s^A = s^B = 0.5$; but the depreciation rate in A is bigger than that of B, i.e., $\delta^A = 0.05, \delta^B = 0.04$. What is the prediction of the endogenous growth theory in terms of the growth paths of the two countries? Provide a graph which supports your explanation.
Question 2 (10 points). Exogenous growth theory

Consider an economy with savings rate $s=0.1$, depreciation rate $\delta=0.05$, production function $Y_t = K_t^{\frac{1}{3}} (Q_t L_t)^{\frac{2}{3}}$, where $L_t=1$ for all $t=0, 1, 2, \ldots$. Assume that population doesn’t grow. The law of motion for capital is as usual: $K_{t+1} = (1-\delta)K_t + I_t$. Assume that this economy is closed so that $S_t = I_t$, where $S_t = sY_t$. Suppose that that $Q$ is exogenously fixed at $Q_t = 8$ for all $t$.

(i) Find the steady state capital stock per capita and GDP per capita in this case.

(ii) Provide the graph for this economy that shows the transition of the economy to the steady state. Make sure that your graph analyzes two cases: 1. initial capital stock $k_0$, which is below the steady state level, 2. initial capital stock $k_0$, which is above the steady state level.
Question 3 (10 points). Savings, investment, and capital market equilibrium in a closed economy

Suppose a firm produces current output from investment $I$ made the previous period according to the production function $Y = \log I$. Investment is financed by borrowing at a real interest rate of $r$. The utility function of the representative household is given by $U(C_1, C_2) = \log C_1 + 0.9 \log C_2$, where $C_1$ is the consumption in the first period, and $C_2$ is the consumption in the second period. The household earns 2 units of income in the first period and 0 units in the second.

(a) Write down the household’s problem and solve for savings and consumption in each period.

(b) Write down the firm’s problem and solve for the investment demand curve.

(c) Find the equilibrium interest $r$. 
Question 4 (10 points). Exchange rates

The following table gives data on interest rates and prices in the US and Germany as well as the nominal exchange rate (dollars per euro) between 2000 and 2004. Both countries are under the flexible exchange rate regime.

<table>
<thead>
<tr>
<th>Year</th>
<th>Price index in the US (in $)</th>
<th>Price index in Germany (in €)</th>
<th>Exchange rate ($ per €)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td>100</td>
<td>100</td>
<td>1.13</td>
</tr>
<tr>
<td>2001</td>
<td>104</td>
<td>78</td>
<td>1.20</td>
</tr>
<tr>
<td>2002</td>
<td>108</td>
<td>80</td>
<td>1.25</td>
</tr>
<tr>
<td>2003</td>
<td>116</td>
<td>84</td>
<td>1.15</td>
</tr>
</tbody>
</table>

(a) Calculate the real exchange rate for each year.

<table>
<thead>
<tr>
<th>Year</th>
<th>Real exchange rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>2000</td>
<td></td>
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<tr>
<td>2001</td>
<td></td>
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<td>2002</td>
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<tr>
<td>2003</td>
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</tbody>
</table>

(b) In which years did the dollar depreciate?

(c) Would a German tourist be better-off in the US in 2001 or 2002? Why?