# FINAL

A total of 100 points is possible.

Last Name: _____     First Name:_____

Your Student ID Number:      __ __ __  -  __ __  -  __ __ __ __

## Part A:  Multiple Choice Questions

(30 questions, each of which is worth 2 points)

## Questions 1-6 (a few important dates)

What date/dates below best fits with

1.     Demographic Transition  **1880**
2.     "The Wealth of Nations"  **1776**
3.     French Revolution  **1789**
4.     The Industrial Revolution  **1769**
5.     "Essay on a Principle of Population"  **1798**

| A | 1880 |
|---|------|
| B | 1769 |
| C | 1789 |
| D | 1798 |
| E | 1776 |

**In questions 6-13 please answer each of these questions using the following answer scheme:**

A   10
B   0
C   1
D   2
E   5

In some cases the answer will be the number on this list that is closest to the correct number.


6.     What was the average rate of productivity advance in the world economy before 1800 (in percent per year)?  **0%**

7.     Suppose inputs in an economy are growing at 5% per year, and output is growing at 5%. What is the rate of **productivity growth**?  **0%**


8.     What was the average number of children born per woman who **survived to reproductive age** in the England in the year 1600?  **2**


9.     What is the average rate of **productivity** growth in an economy where output prices are falling at 2%, and all input prices are growing at 3%?  **5%**


10.    If productivity growth rates are 3% in a modern economy, what is the closest estimate to the likely growth rate of real wages (in % per year)?  **5%**


11.    What was the average number of children a woman gave birth to in the world before 1800? **5**


12.    What was the average rate of return on the safest capital assets in medieval Europe?  **10%**


13.    What was the average rate of return to safe capital assets in England by 1700?  **5%**




**------------------------------------------**

14. In a Malthusian economy if B is the birth rate per 1000 of the population then in the long run the death rate D is?

A    $D = N/B$
B    $D = 1/B$
**C    D = B**
D    $D = B/w$
E    $D = w/B$

15. Life expectancy at birth in the Malthusian world was (approximately)? (Hint – the birth rate was about 30 per thousand).

| A | 45 |
|---|----|
| B | 55 |
| C | 65 |
| D | 25 |
| **E** | **35** |

16. England in 1800 had the same birth rate as modern hunter gatherer societies. How did **real living conditions** in England likely compare to those in modern hunter gatherer societies?

**A.    They were likely worse in England because the English worked longer hours**
B.    They were likely the same in England
C.    They were likely better in England because England had a more advanced technology
D.    They were likely better in England because England had better medical care
E.    They were likely worse in England because cities in England had poor hygiene

17. Technological advance in the years before 1800 in the world economy can be estimated from which formula (where $a$ is the share of capital in national income, and $c$ the share of land)?

| A. | $g_A = ag_N / c$ |
|----|------------------|
| B. | $g_A = ag_N$ |
| **C.** | $g_A = cg_N$ |
| D. | $g_A = ag_w$ |
| E. | $g_A = g_w / c$ |

18.    Which of the following was allegedly unknown to the Ancient Romans and Greeks

A.      The alphabet
B.      Numbers
C.      The wheel
D.      Glass
**E.      The windmill**

19.  We believe that either capital investment or productivity advances is the basic source of growing income per person since the Industrial Revolution because:

A.      There are no other possible sources of income growth per person.
B.      Technological advances are generated by investment.
C.      Interest rates have fallen from the period before the Industrial Revolution.
**D.      High income economies have both a lot of capital per person and high productivity levels.**
E.      There are external benefits from investing in capital.

19.  By 1850 Britain is estimated to have produced 2/3 of world coal output, ½ of cotton textiles, and ½ of iron output.  What was Britain's share (roughly) in 1850 of world population?

| A | 0.2% |
|---|------|
| **B** | **2%** |
| C | 10% |
| D | 20% |
| E | 30% |

20.  Which of the following features of the English economy did NOT change significantly in the years 1200-1800?

| A | Interest rates |
|---|----------------|
| B | Murder rates |
| C | Literacy |
| D | Work hours |
| **E** | **Life expectancy at birth** |

21. Richer men had many more surviving children than poorer men in England in the years 1250 to 1800. The effect of this on the English economy was

| A | **Strong downward mobility by the children of richer men into lower status occupations** |
|---|---|
| B | Strong population growth in the years 1250-1800 |
| C | Great increases in average wealth levels 1250-1800 |
| D | Substantial declines in wages 1250-1800 |
| E | A declining share of the population in lower status occupations |

22. In a world of perfect capital mobility what share of the differences in income per person across economies is **ultimately** explained by differences in capital stocks.

A.      100
**B.      0**
C.      25
D.      50
E.      75

23. Suppose that the growth rate of the capital stock in the US **increased** by 2% per year. If the growth rate of the labor supply is 3%, and the share of capital in national income is 0.25, while the share of labor is 0.75, what is the **increase** in the growth rate in income per person?

A.      -1%
B.      2%
C.      1.5%
**D.      0.5%**
E.      0%

24. Growth accounting suggests that productivity advance, as opposed to capital accumulation, explains most income growth since the Industrial Revolution. This is puzzling to economists because

A.      There is little sign of crowding out in the Industrial Revolution period.
B.      The rate of return on capital is the same now as in 1760.
**C.      We believe technology was improved mainly through investment in finding new techniques**
D.      Huge amounts of capital have been invested since the Industrial Revolution
E.      Technology develops through natural selection mechanisms.

25. Why did people traditionally expect that an **agricultural revolution** accompanied the Industrial Revolution?

A.    Because of the mechanization of threshing and grain harvesting
B.    Because the sizes of animals brought to sale in the London markets increased from 400 lbs in 1760 to 1000 lbs in 1860
**C.    Because incomes per person had increased and the income elasticity for food demand was 0.65.**
D.    Because of the Enclosure Movement.
E.    Because of the discovery of the importance of nitrogen in crop growth by Baron Leibig in the 1840s


26.    The Industrial Revolution does not seem to explain the "Demographic Revolution" that occurred in England at the same time. This is because:

**A.    The average age of marriage fell as much in agricultural parishes as in manufacturing parishes.**
B.    Population grew because women married at younger ages.
C.    Population grew because more women got married.
D.    There was not much demand for labor since machines displaced people in the Industrial Revolution.
E.    The "demographic revolution" did not begin till 1800.


27. Within advanced economies such as the UK income inequality is likely much less than in the Malthusian era because

**A.    B and C**
B.    Wages are a larger share of national income than in the years before 1800
C.    The premium for skills in the labor market declined since 1800
D.    More people have education
E.    B and D


28.    What has happened to the real rents of farmland in England since the 1760s?

A.    Much lower in 2000 only on grain growing land.
B.    Much lower in 2000 than in 1760s
C.    Much higher in 2000 than in the 1760s
**D.    About the same in 2000 as in the 1760s**
E.    Much lower in 2000 only in the north of the country.

29.    Which of the following combinations of countries are low income tax countries among modern developed economies.

A.    Japan and Belgium
B.    Denmark and Sweden
C.    USA and Sweden
D.    UK and Sweden
**E.    Japan and USA**

30.  If wage earners were rational economic actors a gift to everyone of the same amount collected by the government in taxes on wages would have what effect on the **hours of work**

A.    Decrease work hours if the recipient was male.
B.    Increase work hours
C.    Stay the same
**D.    Decrease work hours**
E.    Increase work hours if the recipient was male.
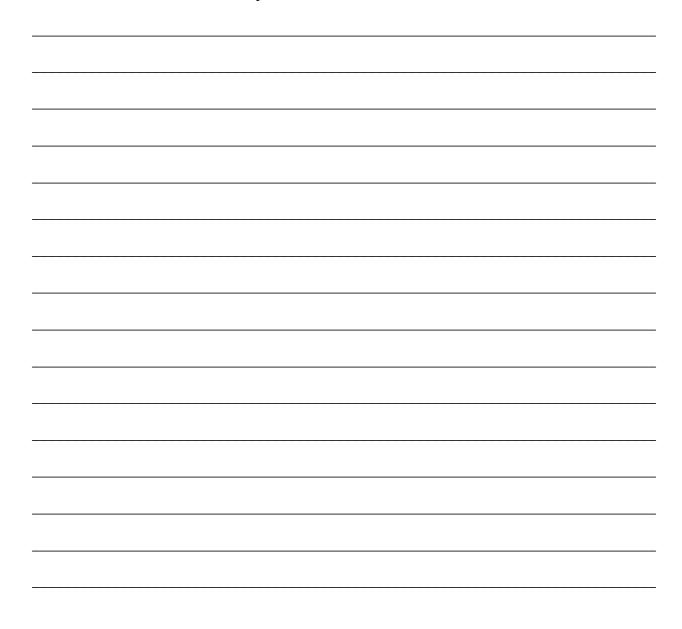
# Part B:  LONGER ANSWERS (40 points)

1.  (8 points)  The growth of efficiency in any economy can be calculated as
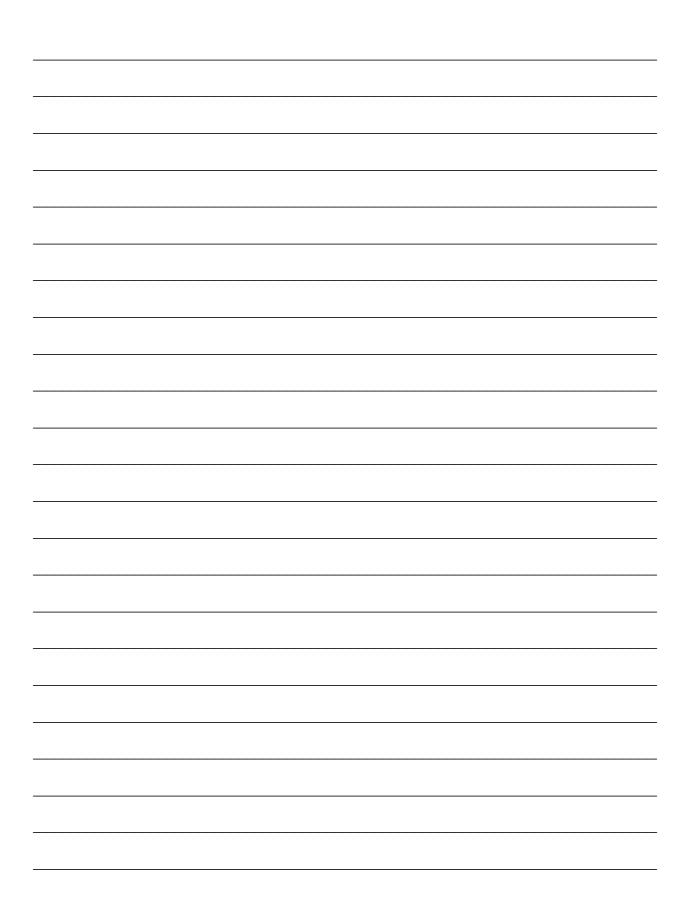
$$g_A \;=\; a g_{r/p} + b g_{w/p} + c g_{s/p}$$

Explain why since the Industrial Revolution this expression has reduced to the approximate formula,

$$g_A \;\approx\; b g_{w/p}$$

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2. (16 points). An "Industrious Revolution" seems to have occurred between the hunter gatherer era and societies such as England in 1800. Explain the effect of this on living standards, using the Malthusian Model. What forces might explain why this occurred?

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(3) (16 points) There are three types of theories of the Industrial Revolution. What are they and what are the strengths and weaknesses of each?

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