Multiple Choice Questions (40 x 2=80 points)

1. Compound interest is:
   A) the payment of interest on the original deposit.
   B) the interest rate adjusted for the rate of inflation.
   C) the same as the real interest rate.
   D) the real rate of interest compounded by the rate of inflation.
   E) the payment of interest on the original deposit and all accumulated interest.

2. Bank C promises to pay a compound annual interest rate of 6 percent, while Bank S pays a 10 percent simple annual interest rate on deposits. If you deposit $1,000 in each bank, after 10 years your deposit in Bank C equals ____, while your deposit in Bank S equals _____.
   A) $1,060; $1,100  B) $1,600; $2,000  C) $1,600; $2,594  D) $1,791; $2,000  E) $1,791; $1,100

3. Real GDP per person in Westland is $30,000, while real GDP in Eastland is $10,000. However, Westland's real GDP per person is growing at 1.5% per year and Eastland's is growing at 3% per year. If these growth rates persist indefinitely, then:
   A) Westland's real GDP per person will decline until it equals Eastland's.
   B) Westland's real GDP per person will always be greater than Eastland's.
   C) Eastland's real GDP per person will always be less than Westland's.
   D) Eastland's real GDP per person will eventually be greater than Westland's.
   E) Eastland's real GDP per person will catch up to Westland's, but never exceed Westland's.

4. Real GDP per person in the United States was $9,864 in 1950. Over the next 48 years it grew at a compound annual rate of 2.0%. If instead real GDP per person had grown at an average compound annual rate 2.5%, then real GDP per capita in the United States in 1998 would have been approximately _____ larger.
   A) $3,420  B) $6,750  C) $9,900  D) $25,500  E) $32,270

5. The key indicator of a country's living standard and economic well being is:
   A) the interest rate.  D) real GDP per person.
   B) the inflation rate.  E) nominal GDP per person.
   C) real GDP.

6. Small differences in annual growth rates of real GDP generate large differences in real GDP over time because of the:
   A) importance of average labor productivity.  D) increasing returns to scale.
   B) power of compound interest.  E) limits of economic growth.
   C) diminishing returns to capital.

7. If real GDP per person equaled $1,000 in 1900 and grew at a 1 percent annual rate, what would real GDP per person equal 100 years later?
   A) $1,010  B) $1,100  C) $2,705  D) $11,000  E) $13,780,612

8. Real GDP per person in both Alpha and Omega equals $2,000. Over the next 100 years real GDP per person grows at 1.5 percent annual rate in Alpha and at a 2.5 percent annual rate in Omega. After 100 years real GDP person in Alpha is _____ smaller than real GDP per person in Omega.
   A) $2,000  B) $7,382  C) $14,763  D) $24,954  E) $57,837

9. Growth of real GDP per person is totally determined by the growth of average:
   A) labor productivity and the proportion of the population employed.
B) labor productivity and the proportion of the population in the labor force.
C) labor force participation and the share of income going to capital.
D) labor force participation and the share of the population employed.
E) number of employed workers and population.

10. In symbolic terms where Y equals real GDP, POP equals total population, and N equals the number of employed workers, Y/POP must equal:
A) Y/N x N/POP.  B) N/Y x POP/N.  C) Y/POP x N/POP.  D) N/Y x N/POP  E) Y/N x POP/N.

11. If average labor productivity in two countries is the same, average living standards will be lower in the country with:
   A) the smaller population.  D) the lower share of population employed.
   B) the larger population.  E) more output.
   C) the higher share of population employed

12. If 40 percent of the population in a country is employed and average labor productivity equals $50,000, then real GDP per person equals:
A) $20,000  B) $40,000  C) $50,000  D) $50,040  E) $125,000

13. Assume that the share of population employed in all countries is 50 percent. Based on the information below, which country has the highest real GDP per capita?

<table>
<thead>
<tr>
<th>Population (millions)</th>
<th>Average Labor Productivity ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100</td>
</tr>
<tr>
<td>B</td>
<td>150</td>
</tr>
<tr>
<td>C</td>
<td>75</td>
</tr>
<tr>
<td>D</td>
<td>250</td>
</tr>
<tr>
<td>E</td>
<td>95</td>
</tr>
</tbody>
</table>


14. Assume that average labor productivity is the same in each country. Based on the information below, which country has the highest real GDP per capita?

<table>
<thead>
<tr>
<th>Country</th>
<th>Population (millions)</th>
<th>Share of Population Employed (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>100</td>
<td>60</td>
</tr>
<tr>
<td>B</td>
<td>150</td>
<td>55</td>
</tr>
<tr>
<td>C</td>
<td>75</td>
<td>50</td>
</tr>
<tr>
<td>D</td>
<td>250</td>
<td>45</td>
</tr>
<tr>
<td>E</td>
<td>95</td>
<td>40</td>
</tr>
</tbody>
</table>


15. In 1998 average labor productivity in the U.S. was $66,381 per worker and 48.9% of the population was employed. If over the next forty years average labor productivity increases by 85 percent, but the share of population employed falls to 36.4%, then compared to real GDP per person in 1998, real GDP per person in 2038 will be approximately:
A) 85% larger.  B) 38% larger.  C) the same as in 1998.  D) 4% smaller.  E) 18% smaller.

16. The population of Alpha totals one million people of whom 40 percent are employed. Average output per worker in Alpha is $20,000. Real GDP per person in Alpha totals:
A) $8,000  B) $12,000  C) $20,000  D) $28,000  E) $8 billion

17. In the long run, increases in output per person arise primarily from:
A) increases in female labor force participation.
B) increases in male labor force participation.
C) an increasing proportion of the population retiring
D) a decreasing proportion of the population retiring.
E) increases in average labor productivity.

18. The principle of diminishing returns to capital states that if the amount of labor and other inputs employed is held constant, then the greater the amount of capital in use the:
A) less is produced.
B) more production is wasted.
C) less production is wasted.
D) the more an additional unit of capital adds to production.
E) the less an additional unit of capital adds to production.

19. Based on the table below, if the production process described below is subject to diminishing returns to capital, then total packages wrapped when a fourth machine is installed must be less than _____ packages.

<table>
<thead>
<tr>
<th>Number of (Identical) Machines</th>
<th>Total Packages Wrapped</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>5,000</td>
</tr>
<tr>
<td>2</td>
<td>9,000</td>
</tr>
<tr>
<td>3</td>
<td>12,000</td>
</tr>
</tbody>
</table>

A) 3,000  B) 4,000  C) 12,000  D) 13,000  E) 15,000

20. Increasing physical capital is not the most effective way to increase average labor productivity because:
A) population increases more rapidly than physical capital.
B) there is a greater abundance of unused natural resources.
C) the share of the population employed is always increasing.
D) the demand for physical capital is inelastic.
E) of diminishing returns to capital.

21. Alpha has $40,000 of capital per worker, while Beta has $5,000 of capital per worker. According to the principle of diminishing returns to capital, an additional unit of capital will increase output ____ in Alpha compared to Beta, holding other factors constant.
A) more  B) less  C) not at all  D) by the same amount  E) either more or less

22. The introduction of new technologies that allow producers to specialize in those activities in which they are relatively more efficient is an example of how overall productivity increases because of the:
A) principle of comparative advantage. D) equilibrium principle.
B) diminishing returns to capital. E) cost-benefit principle.
C) scarcity principle.

23. The increasing wage inequality in the United States is between _____ workers and ____ workers.
A) old; young  D) service-sector; industrial-sector
B) male; female  E) highly skilled; unskilled
C) married; single

24. The major labor market problem in the United States is ______ and in Western Europe the problem is ______.
A) high persistent unemployment; low average wages
B) high persistent unemployment; increasing wage inequality
C) increasing wage inequality; increasing wage inequality
D) increasing wage inequality; high persistent unemployment
E) low average wages; increasing wage inequality
25. An abundance of natural resources, such as arable land, raw materials, and energy,:
   A) within a country's borders is necessary to achieve economic growth.
   B) increases the productivity of workers who use them.
   C) results in economic growth only if the population increases at least as rapidly.
   D) result in economic growth only if an economy obtains them through international trade.
   E) seldom contribute to economic growth, as measured by percentage increases in real GDP per person.

26. Saving equals:
   A) current spending minus current income.
   B) wealth minus assets.
   C) assets minus liabilities.
   D) current income minus spending on current needs.
   E) current income minus transfers.

27. Vickie earns $1,000 per week and spends $850 per week on living expenses, puts $50 in a savings account, and buys $100 worth of shares in a stock mutual fund. Vickie's saving is ____ and her saving rate is ____.
   A) $50; 5%    B) $50; 5.9%    C) $100; 10%    D) $100; 11.8%    E) $150; 15%

28. Wealth equals:
   A) current income minus spending on current needs.
   B) assets minus liabilities.
   C) saving minus investment.
   D) investment minus saving.
   E) current income minus liabilities.

29. Assets are:
   A) current income minus spending on current needs.
   B) the debts one owes.
   C) saving minus investment.
   D) anything of value one owns.
   E) stocks, bonds, and credit card balances.

30. Rich B. has the following assets and liabilities:

   Two cars          $ 15,000
   House             $400,000
   Mortgage          $300,000
   Cash              $  1,000
   Car loans         $  5,000
   Checking account balance $  3,000
   Credit card balance $  3,000

   What is Rich B.'s wealth?
   A) $105,000    B) $107,000    C) $111,000    D) $419,000    E) $727,000

31. On January 1, 2002, Jay purchased shares of stock for $10,000. On December 31, 2002, the same shares are now worth $7,500. Based on this information:
   A) Jay's saving for the year increased by $2,500. D) Jay has a $2,500 capital loss for the year.
   B) Jay's saving for the year decreased by $2,500. E) Jay's wealth is unchanged for the year.
   C) Jay has a $2,500 capital gain for the year.
32. If Alexandra deposits $1,000 from her paycheck into her checking account and at the same time increases her credit card balance by $1,500, then her saving equals:
A) +$500.    B) +$1,000.    C) +$2,500.    D) -$500.    E) -$1,500.

33. If total government tax collections equal $100 billion, transfer payments equal $50 billion, and government interest payments equal $5 billion, then net taxes equal:
A) $45 billion.  B) $50 billion.  C) $95 billion.  D) $105 billion.  E) $155 billion.

34. Where Y is GDP, C is consumption, I is investment, T is net taxes, and G is government spending, if there is no trade, then private saving equals:
A) C + I + G - T  B) Y - T - C  C) Y - T - G  D) Y - C - I  E) Y - C - G

35. You are given the following information about the economy:

<table>
<thead>
<tr>
<th>Consumption</th>
<th>3000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government budget surplus</td>
<td>500</td>
</tr>
<tr>
<td>Government transfers and interest payments</td>
<td>750</td>
</tr>
<tr>
<td>Government tax collections</td>
<td>1,750</td>
</tr>
<tr>
<td>GDP</td>
<td>6,000</td>
</tr>
</tbody>
</table>

Public saving is _____ and national saving is ______.
A) 500; 500    B) 500; 2,500    C) 500; 3,500    D) 750; 2,750    E) 1,250; 2,000

36. The opportunity cost of capital investment is the:
A) value of the marginal product of capital.  D) price of the firm's output.
B) value of the marginal product of labor.  E) price of new capital goods.
C) real interest rate.

37. The introduction of new technologies ____ the real interest rate and ____ the equilibrium quantity of national saving.
A) increases; increases  D) decreases; increases
B) increases; decreases  E) decreases; decreases
C) increases; does not change

38. An increase in the government's budget deficit ____ the real interest rate and ____ the equilibrium quantity of national saving.
A) increases; increases  D) decreases; increases
B) increases; decreases  E) decreases; decreases
C) increases; does not change

39. Holding other factors constant, if Congress passes a 5% investment tax credit under which for every $100 a firm spends on new capital equipment it receives an extra $5 in tax refunds from the government, then the real interest will ____ and the equilibrium quantity of national saving and investment will ____.
A) increase; increase  D) decrease; increase
B) increase; decrease  E) decrease; decrease
C) increase; not change

40. Holding other factors constant, if lessened concerns about job security reduce precautionary saving, then the real interest rate will _____ and the equilibrium quantity of national saving and investment will _____.
A) increase; increase  D) decrease; increase
B) increase; decrease  E) decrease; decrease
C) increase; not change
Short-answer questions (10 points each)

1. Here are data for Germany and Japan on the ratio of employment to population in 1979 and 2003.

<table>
<thead>
<tr>
<th></th>
<th>1979</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Germany</td>
<td>0.33</td>
<td>0.43</td>
</tr>
<tr>
<td>Japan</td>
<td>0.48</td>
<td>0.52</td>
</tr>
</tbody>
</table>

Using data from Table 7.1 (page 192 of the textbook), find average labor productivity for each country in 1979 and in 2003. Between 1979 and 2003, compute the increase in GDP per capita, in labor productivity and in employment relative to population for each country.

2. Using the following economic data to find national saving, private saving, public saving and the national saving rate.

- Consumption expenditures = 4,000
- Investment = 1,000
- Government purchases = 1,000
- Net Export = 0
- Tax collections = 1,500
- Government transfers and interest payments = 500