1. The production function \( y = f(k) \) means:
A) labor is not a factor of production.
B) output per worker is a function of labor productivity.
C) output per worker is a function of capital per worker.
D) the production function exhibits increasing returns to scale.

2. Two economies are identical except that the level of capital per worker is higher in Highland than in Lowland. The production functions in both economies exhibit diminishing marginal product of capital. An extra unit of capital per worker increases output per worker:
A) more in Highland.
B) more in Lowland.
C) by the same amount in Highland and Lowland.
D) in Highland, but not in Lowland.

3. The consumption function in the Solow model assumes that society saves a:
A) constant proportion of income.
B) smaller proportion of income as it becomes richer.
C) larger proportion of income as it becomes richer.
D) larger proportion of income when the interest rate is higher.

4. In the Solow growth model of Chapter 7, where \( s \) is the saving rate, \( y \) is output per worker, and \( i \) is investment per worker, consumption per worker (\( c \)) equals:
A) \( sy \)
B) \((1 - s)y\)
C) \((1 + s)y\)
D) \((1 - s)y - i\)

5. If capital lasts an average of 25 years, the depreciation rate is _____ percent per year.
A) 25  B) 5  C) 4  D) 2.5

6. The steady-state level of capital occurs when the change in the capital stock (\( \Delta k \)) equals:
A) 0  B) the saving rate  C) the depreciation rate  D) the population growth rate

7. In the Solow growth model of an economy with no population growth and no technological progress, the higher the steady capital-per-worker ratio, the higher the steady-state:
A) growth rate of total output.
B) level of total output.
C) growth rate of output per worker.
D) level of output per worker.

8. If the per-worker production function is given by \( y = k^{1/2} \), the saving ratio is 0.2, and the depreciation rate is 0.1, then the steady-state ratio of output per worker (\( \gamma \)) is:
A) 1  B) 2  C) 3  D) 4

9. If the national saving rate increases, the:
A) economy will grow at a faster rate forever.
B) capital-labor ratio will increase forever.
C) economy will grow at a faster rate until a new, higher, steady-state capital-labor ratio is reached.
D) capital-labor ratio will eventually decline.
10. Assume two economies are identical in every way except that one has a higher saving rate. According to the Solow growth model, in the steady state the country with the higher saving rate will have ______ level of total output and ______ rate of growth of output per worker as/than the country with the lower saving rate.

A) the same; the same  B) the same; a higher  C) a higher; the same  D) a higher; a higher

11. The Golden Rule level of capital accumulation is the steady state with the highest level of:

A) output per worker.  B) capital per worker.
C) savings per worker.  D) consumption per worker.

12. The Golden Rule level of the steady-state capital stock:

A) will be reached automatically if the saving rate remains constant over a long period of time.
B) will be reached automatically if each person saves enough to provide for his or her retirement.
C) implies a choice of a particular saving rate.
D) should be avoided by an enlightened government.

13. To determine whether an economy is operating at its Golden Rule level of capital stock, a policymaker must determine the steady-state saving rate that produces the:

A) largest MPK.  B) smallest depreciation rate.
C) largest consumption per worker.  D) largest output per worker.

14. When an economy begins below the Golden Rule, reaching the Golden Rule:

A) produces lower consumption at all times in the future.
B) produces higher consumption at all times in the future.
C) requires initially reducing consumption to increase consumption in the future.
D) requires initially increasing consumption to decrease consumption in the future.

15. Assume two economies are identical in every way except that one has a higher population growth rate. According to the Solow growth model, in the steady state the country with the higher population growth rate will have a ______ level of total output and ______ rate of growth of output per worker as/than the country with the lower population growth rate.

A) higher; the same  B) higher; a higher  C) lower; the same  D) lower; a lower

16. In the Solow growth model of an economy with population growth but no technological progress, in the Golden Rule steady state, the marginal product of capital minus the rate of depreciation equals:

A) 0.  B) the population growth rate.  C) the saving rate.  D) output per worker.

17. According to Kremer, large populations:

A) require the capital stock to be spread thinly, thereby reducing living standards.
B) place great strains on an economy’s productive resources, resulting in perpetual poverty.
C) are a prerequisite for technological advance and higher living standards.
D) are not a factor in determining living standards.

18. According to Malthus, large populations:

A) require the capital stock to be spread thinly, thereby reducing living standards.
B) place great strains on an economy’s productive resources, resulting in perpetual poverty.
C) are a prerequisite for technological advance and higher living standards.
D) are not a factor in determining living standards.
1. The rate of labor-augmenting technological progress (g) is the growth rate of:
   A) labor.  B) the efficiency of labor.  C) capital.  D) output.

2. In the Solow growth model with population growth and technological change, the steady-state growth rate of income per person depends on:
   A) the rate of population growth.  B) the saving rate.
   C) the rate of technological progress.
   D) the rate of population growth plus the rate of technological progress.

3. With population growth at rate n and labor-augmenting technological progress at rate g, the Golden Rule steady state requires that the marginal product of capital (MPK):
   A) net of depreciation be equal to n + g.
   B) net of depreciation be equal to the depreciation rate plus n + g.
   C) plus n be equal to the depreciation rate plus g.
   D) plus g be equal to the depreciation rate plus n.

4. In the Solow model with technological progress, the steady-state growth rate of total output is:
   A) 0.  B) g.  C) n.  D) n + g.

5. Conditional convergence occurs when economies converge to:
   A) the same steady state as other economies.  B) the Golden Rule steady state.
   C) the balanced-growth steady state.  D) their own, individual steady states.

6. If two economies are identical (with the same population growth rates and rates of technological progress), but one economy has a lower saving rate, then the steady-state level of income per worker in the economy with the lower saving rate:
   A) will be at a lower level than the steady state of the high-saving economy.
   B) will be at a higher level than the steady state of the high-saving economy.
   C) will be at the same level as the steady state of the high-saving economy.
   D) will grow at a slower rate than the high-saving economy.

7. Differences in factor accumulation and/or differences in production efficiency must account for all international differences in:
   A) human capital and physical capital.  B) saving rates and population growth rates.
   C) income per person.  D) labor efficiency.

8. Which of the following changes would bring the U.S. capital stock, currently below the Golden Rule level, closer to the steady-state, consumption-maximizing level?
   A) increasing the population growth rate
   B) increasing the rate of capital depreciation
   C) increasing the rate of technological progress
   D) increasing the saving rate

9. A possible externality associated with the process of accumulating new capital is that:
   A) a reduction in labor productivity may occur.
   B) new production processes may be devised.
   C) old capital may be made more productive.
   D) the government may need to adopt an industrial policy.
10. One explanation for greater economic development in moderate versus tropical climates is that institutions established by colonial settlers in moderate climates ______, while institutions established by colonists in tropical climates ______.
   A) were based on English common law; were based on the Napoleonic Code
   B) were based on the Napoleonic Code; were based on English common law
   C) protected property rights; were extractive and authoritarian
   D) were extractive and authoritarian; protected property rights

11. Endogenous growth theory rejects the assumption of exogenous:
   A) production functions. B) rates of depreciation.
   C) population growth rates. D) technological change.

12. The endogenous growth model's assumption of constant returns to capital is more plausible if capital is defined to include:
   A) plant and equipment. B) knowledge.
   C) depreciation. D) technology.

13. In the two-sector endogenous growth model, the fraction of labor in universities (u) affects the steady-state:
   A) level of income. B) growth rate of income.
   C) level of income and growth rate of income.
   D) level of income, growth rate of income, and growth rate of the stock of knowledge.

14. Empirical results justify substantial government subsidies to research based on the finding that the private return to research is:
   A) greater than the social return to research.
   B) approximately equal to the social return to research.
   C) less than the social return to research.
   D) positive, but the social return to research is negative.

15. Schumpeter's thesis of "creative destruction" is an explanation of economic progress resulting from:
   A) using up scarce natural resources to create new products.
   B) breaking down barriers to trade and development.
   C) new product producers driving incumbent producers out of business.
   D) creating new methods to destroy the environment.
1. Business cycles are:
A) regular and predictable.  B) irregular but predictable.
C) regular but unpredictable.  D) irregular and unpredictable.

2. Okun’s law is the ______ relationship between real GDP and the ______.
A) negative; unemployment rate  B) negative; inflation rate
C) positive; unemployment rate  D) positive; inflation rate

3. The index of leading indicators compiled by the Conference Board includes 10 data series that are used to forecast economic activity about ______ in advance.
A) one month  B) six to nine months  C) one to two years  D) five to ten years

4. Most economists believe that prices are:
A) flexible in the short run but many are sticky in the long run.
B) flexible in the long run but many are sticky in the short run.
C) sticky in both the short and long runs.  D) flexible in both the short and long runs.

5. Alan Blinder’s survey of firms found that the typical firm adjusts its prices:
A) more than once a week.  B) about once a month.
C) once or twice a year.  D) less than once a year.

6. According to the quantity theory of money, if output is higher, ______ real balances are required, and for fixed M this means ______ P.
A) higher; lower  B) lower; higher  C) higher; higher  D) lower; lower

7. When the Federal Reserve reduces the money supply, at a given price level the amount of output demanded is ______ and the aggregate demand curve shifts ______.
A) greater; inward  B) greater; outward  C) lower; inward  D) lower; outward

8. Aggregate supply is the relationship between the quantity of goods and services supplied and the:
A) money supply.  B) unemployment rate.  C) interest rate.  D) price level.

9. If the short-run aggregate supply curve is horizontal, then changes in aggregate demand affect:
A) level of output but not prices.  B) prices but not level of output.
C) both prices and level of output.  D) neither prices nor level of output.

10. If the short-run aggregate supply curve is horizontal, then a change in the money supply will change ______ in the short run and change ______ in the long run.
A) only prices; only output
B) only output; only prices
C) both prices and output; only prices
D) both prices and output; both prices and output

11. If the short-run aggregate supply curve is horizontal and the Fed increases the money supply, then:
A) output and employment will increase in the short run.
B) output and employment will decrease in the short run.
C) prices will increase in the short run.
D) prices will decrease in the short run.
12. Assume that the economy begins in long-run equilibrium. Then the Fed reduces the money supply. In the short run _____, whereas in the long run, prices _____ and output returns to its original level.
A) output decreases and prices are unchanged; rise
B) output decreases and prices are unchanged; fall
C) output and prices both decrease; rise
D) output and prices both decrease; fall

13. Which of the following is an example of a demand shock?
A) a large oil-price increase
B) the introduction and greater availability of credit cards
C) a drought that destroys agricultural crops
D) unions obtaining a substantial wage increase

14. Starting from long-run equilibrium, if the velocity of money increases (due to, for example, the invention of automatic teller machines), the Fed might be able to stabilize output by:
A) decreasing the money supply. B) increasing the money supply.
C) decreasing the price level. D) increasing the price level.

15. An adverse supply shock _____ the short-run aggregate supply curve _____ the natural level of output.
A) raises; but cannot affect B) raises; and may also lower
C) lowers; but cannot affect D) lowers; and may also lower

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1. John Maynard Keynes wrote that responsibility for low income and high unemployment in economic downturns should be placed on:
A) low levels of capital. B) an untrained labor force.
C) inadequate technology. D) low aggregate demand.

2. For the purposes of the Keynesian cross, planned expenditure consists of:
A) planned investment. B) planned government spending.
C) planned investment and government spending.
D) planned investment, government spending, and consumption expenditures.

3. With planned expenditure and the equilibrium condition Y = PE drawn on a graph with income along the horizontal axis, if income exceeds expenditure, then income is to the _____ of equilibrium income and there is unplanned inventory _____.
A) right; decumulation B) right; accumulation C) left; decumulation D) left; accumulation

4. When firms experience unplanned inventory accumulation, they typically:
A) build new plants. B) lay off workers and reduce production.
C) hire more workers and increase production. D) call for more government spending.

5. In the Keynesian-cross model, if taxes are reduced by 250, then the equilibrium level of income:
A) increases by 250. B) increases by more than 250.
C) decreases by 250. D) increases, but by less than 250.

6. Tax cuts stimulate _____ by improving worker's incentive and expand _____ by raising households' disposable income.
A) velocity; demand for loanable funds B) demand for loanable funds; velocity
C) aggregate demand; aggregate supply D) aggregate supply; aggregate demand
7. The simple investment function shows that investment ______ as ______ increases.
   A) decreases; the interest rate   B) increases; the interest rate
   C) decreases; government spending   D) increases; government spending

8. Along any given IS curve:
   A) tax rates are fixed, but government spending varies.
   B) government spending is fixed, but tax rates vary.
   C) both government spending and tax rates vary.
   D) both government spending and tax rates are fixed.

9. One argument in favor of tax cuts over spending on infrastructure to increase production is that:
   A) tax cuts increase the MPC by a larger amount than spending on infrastructure.
   B) tax cuts increase planned spending, but spending on infrastructure offsets private spending.
   C) the tax multiplier is larger than the government spending multiplier.
   D) it takes longer to implement spending on infrastructure than to implement tax cuts.

10. An IS curve shows combinations of:
    A) taxes and government spending.   B) nominal money balances and price levels.
    C) interest rates and income that bring equilibrium in the market for real balances.
    D) interest rates and income that bring equilibrium in the market for goods and services.

11. The theory of liquidity preference implies that:
    A) as the interest rate rises, the demand for real balances will fall.
    B) as the interest rate rises, the demand for real balances will rise.
    C) the interest rate will have no effect on the demand for real balances.
    D) as the interest rate rises, income will rise.

12. The theory of liquidity preference implies that, other things being equal, an increase in the real money supply will:
    A) lower the interest rate.   B) raise the interest rate.
    C) have no effect on the interest rate.
    D) first lower and then raise the interest rate.

13. When Paul Volcker tightened the money supply:
    A) the inflation rate immediately fell.
    B) nominal interest rates fell in the short run.
    C) nominal interest rates fell in the long run.
    D) real balances rose in the short run.

14. An explanation for the slope of the LM curve is that as:
    A) the interest rate increases, income becomes higher.
    B) the interest rate increases, income becomes lower.
    C) income rises, money demand rises, and a higher interest rate is required.
    D) income rises, money demand rises, and a lower interest rate is required.

15. For any given interest rate and price level, an increase in the money supply:
    A) lowers income.   B) raises income.
    C) has no effect on income.   D) lowers velocity.