11. Assume that the saving rate decreases. We know that this decrease in the saving rate will cause which of the following:

(a) a temporary decrease in the level of output per-capita

(b) no permanent change in the level of output per-capita

(c) a temporary decrease in the rate of growth of output per capita

(d) a permanently lower rate of growth of output per capita

(e) none of these

12. Suppose the saving rate is initially greater than the golden rule saving rate. We know with certainty that a reduction in the saving rate will cause

(a) a reduction in the rate of growth in the long run.

(b) a reduction in output per worker.

(c) a reduction in consumption per worker.

(d) all of these.

(e) none of these.

13. Assume that an economy experiences both positive population growth and technological progress. Once the economy has achieved balanced growth, we know that the capital per effective worker (K/AN) is

(a) growing at a rate of $\delta + g_A + g_N$.

(b) growing at a rate of $g_A + g_N$.

(c) growing at a rate of g_N.

(d) growing at a rate of g_A.

(e) none of these.

14. Consider an aggregate production function that takes form $F(K, N) = K^{3/4}N^{1/4}$. Assume capital depreciation rate is 0.1. The golden-rural level of saving rate is

(a) 0

(b) 1/4

(c) 1/2

(d) 3/4

(e) 1

15. Consider an aggregate production function that takes form $F(K, N) = 2K + N$. Assume saving rate is 0.02 and capital depreciation rate is 0.1. Assume the economy is initially in the steady-state till time t. The depreciation rate then decreases from 0.1 to 0.08 onwards($\delta_j = 0.08, j > t$). Please go ahead calculate the capital and output per worker in $t + 2$:

(a) 0.33

(b) 0.34

(c) 0.35

(d) 0.25

(e) none of these.

16. Suppose the central bank implements a monetary expansion that is not fully anticipated by financial markets. Given this information, we would expect

(a) stock prices to rise.

(b) stock prices to fall.

(c) stock prices to remain unchanged.

(d) an ambiguous effect on stock prices.

(e) none of these

17. Suppose the Fed reduces the money supply in the current period with no other policy change implemented or anticipated. This policy action will cause which of the following shifts in the IS and/or LM curves in the current period?

(a) IS left; LM up

(b) IS right; LM up

(c) no shift in IS; LM up

(d) IS left; LM down

(e) IS right; LM down

18. Assume individuals consider only the long run effects of changes in future macro variables when forming expectations of future output and future interest rates. Suppose policy makers announce a reduction in future government spending, given this information, individuals will expect

(a) a reduction in the expected future interest rate and no change in the expected future output.

(b) a reduction in the expected future interest rate and an increase in expected future output.

(c) a reduction in the expected future interest rate and a reduction in expected future output.

(d) a reduction in the expected future interest rate and an ambiguous effect on expected future output.

19. When $i = 10\%$, the present value of a bond that pays 10 dollar(that stars next year) over the next 4 years is closest to:

(a) 20

(b) 25

(c) 30

(c) 35

20. Suppose that an investor has a choice between buying a three-year bond with a face value of 60 and a stock paying a constant dividend 2 per year. The risk premium on the stock is constant at 10 percent, while on the bond, it is 5 percent. The nominal interest rate is 5% in the first year, 8% in the second, and 12% in the third. The investor should choose:

(a) bond

(b) stock

(c) indifferent between the two assets

Question 4. Consider an economy with both population growth and technological progress. Let the growth rate of population and technology be g_n and g_A, respectively. The standard assumption that a fraction s of the total output being investment in physical capital accumulation still applies. The production function takes the form $Y = K^{1/2}(AN)^{1/2}$, where AN is the so-called effective labor supply. Let the depreciation rate of capital be $\delta > 0$. **(Total: 20 marks)**

(a) If at time t, the capital per-effective worker is $\frac{K_t}{A_t N_t}$, please obtain the desired investment level such that $\frac{K_{t+1}}{A_{t+1}N_{t+1}} = \frac{K_t}{A_t N_t}$. **(5 marks)**

(b) Please characterize the steady state of this economy. **(5 marks)**

(c) Please obtain the growth rate for output, capital, investment and consumption in the steady state.**(5 marks)**

(d) Discuss how an increase in g_A may affect both the level and growth rate of this economy in the steady state. **(5 marks)**

Question 5. Please provide brief arguments on the following two items. **(Total: 20 marks)**

(a) Why IS curve is steeper in the case where expectation is taken into account than the case without expectation. **(10 marks)**

(b) Assume there is an increase in the current government spending. Discuss the impacts on the current output by taking into account short-run, median-run and long-run effects. **(10 marks)**