

PROBLEM SET 5 WITH ANSWERS

Q.1

a.) Explain why the AD curve is negatively sloped.

AD curve explains the relationship between the overall price level and the aggregate output (income). Aggregate demand falls when the price level increases because the interest rate effect, the international effect and the money wealth effect make the AD curve downward sloping.

- The Interest Rate Effect A decrease in the price level will increase the purchasing power of the money in people's pocket and people will find they're holding more than they need. So, they deposit the extra money at banks in some form, giving banks more money to loan out. As banks make more loans, interest rates will fall, which, in turn, will increase investment expenditures. Since investment is one component of AD, the quantity of aggregate demand will increase when price level falls.
- The International Effect → As price level in the domestic economy falls, the price of domestic goods relative to foreign goods goes down and domestic goods become more competitive relative to foreign goods; thus, exports increase and imports decrease in the domestic economy. Since net export is a component of AD, the quantity of aggregate demand will increase when price level falls.
- The Money Wealth Effect → If the price level falls, the money in your pocket will be more than before because the purchasing power of your money rises. You are, in effect, richer and as you get richer, other things equal, you will buy more goods and services. Since consumption is a component of AD, the quantity of aggregate demand will increase when price level falls.

b.) Distinguish between the short run and the long run aggregate supply curves. In particular, explain the shape of each curve.

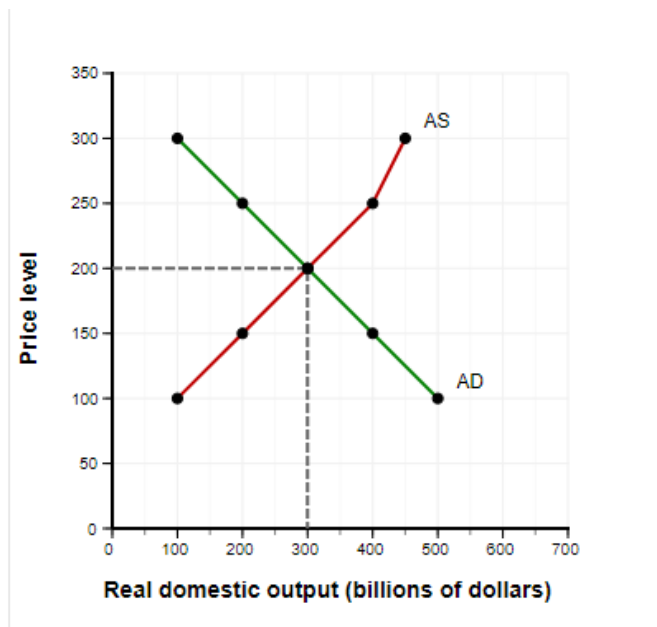
The SRAS curve is relatively flat (but positively sloping) at low Y 's and becomes steep at high Y 's. The idea is that at low Y 's if the AD were to shift outward, firms still have lots of excess capacity, so they will produce more while P will only increase a little. At high Y 's firms are operating close to full capacity, so if AD would shift outward, Y would only increase a little while P would increase a lot. The basic assumption behind the SRAS curve is that output prices increase before input price increase. In the long run however input prices will also increase, and therefore the output level of a profit maximizing firm will not change. Hence the LRAS curve should be vertical at full-employment or potential level of income.

Q.2

Suppose that the aggregate demand and aggregate supply schedules for a hypothetical economy are as shown below:

Amount of Real GDP Demanded, Billions	Price Level (Price Index)	Amount of Real GDP Supplied, Billions
\$100	300	\$450
200	250	400
300	200	300
400	150	200
500	100	100

- a. Use the data above to graph the aggregate demand and aggregate supply curves.



- b. What are the equilibrium price level and the equilibrium level of real output in this hypothetical economy? Is the equilibrium real output also necessarily the full-employment real output?

See the graph: The equilibrium price level = 200, which occurs where aggregate supply equals aggregate demand. Thus, the equilibrium real output = \$300 billion. No, the full-capacity level of GDP cannot be determined without more information.

- c. If the price level in this economy is 150, will quantity demanded equal, exceed, or fall short of quantity supplied? By what amount?

At a price level of 150, real GDP supplied is a maximum of \$200 billion less than the real GDP demanded of \$400 billion. Thus, quantity demanded exceeds quantity supplied by \$200 billion.

- d. If the price level is 250, will quantity demanded equal, exceed, or fall short of quantity supplied? By what amount?

At a price level of 250, real GDP supplied is \$400 billion, which is more than the real GDP demanded of \$200 billion. Thus, quantity demanded falls short of quantity supplied by \$200 billion.

- e. Suppose that buyers desire to purchase \$200 billion of extra real output at each price level. What are the new equilibrium price level and level of real output?

See the graph: Increases in consumer, investment, government, or net export spending might shift the AD curve rightward. The new values for the aggregate demand schedule are:

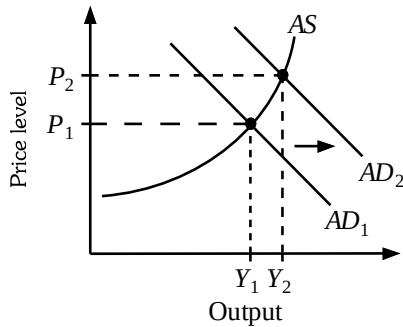
Amount of Real GDP Demanded, Billions	Price Level (Price Index)	Amount of Real GDP Supplied, Billions
\$300 (= \$100 + \$200)	300	\$450
400 (= \$200 + \$200)	250	400
500 (= \$300 + \$200)	200	300
600 (= \$400 + \$200)	150	200
700 (= \$500 + \$200)	100	100

The new equilibrium price level = 250, which occurs where aggregate supply equals aggregate demand. The new equilibrium GDP = \$400 billion.

Q.3.

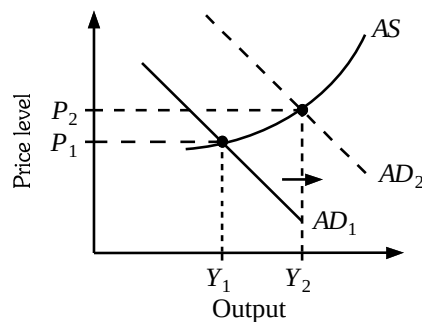
Using aggregate supply and aggregate demand analysis, discuss the impacts of the following events on the price level and on equilibrium GDP (Y) in the short run:

- a) A tax cut holding government purchases constant with the economy operating at near full capacity.



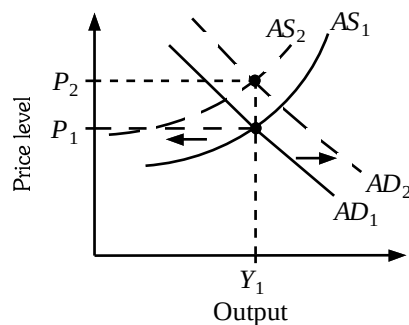
The tax cut leads to an increase in disposable income and thus consumption expenditures. The increase in aggregate expenditure leads to an increase in output given the price level. Thus AD curve shifts from AD_1 to AD_2 . As the economy is operating at a positively sloped portion of the AS curve, decreasing efficiency, causing prices to increase from P_1 to P_2 . Note that the effect of production costs is to trigger a movement along the AS curve rather than cause a shift of the curve.

- b) An increase in money supply, which causes a decrease in interest rates during a period of high unemployment and excess industrial capacity.



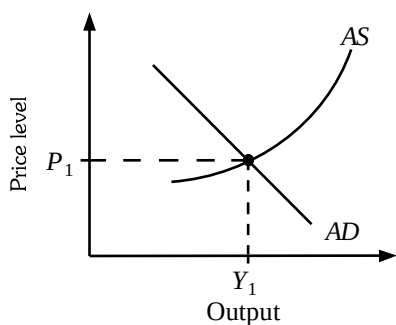
If there is high unemployment and excess industrial capacity, the economy is operating well below the potential GDP. That is, the economy is closer to the flat portion of the AS curve. An increase in the money supply drives interest rates down, increases planned investment expenditures and thus aggregate expenditure and output. Given the price level, this implies a rightward shift of the AD curve from AD_1 to AD_2 .

- c) An increase in the price of oil caused by a war in the Middle East. Realizing that this will give rise to an increase in interest rates, the Central Bank increases the money supply, reducing the interest rate.



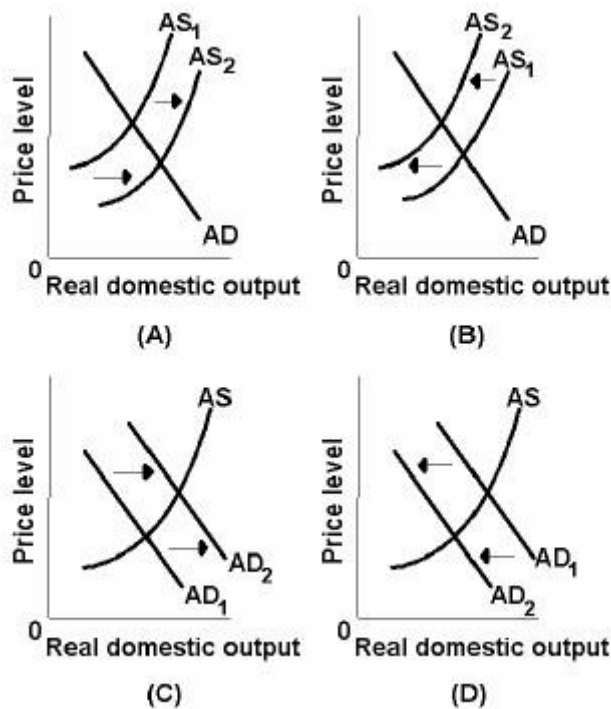
An oil price shock causes the AS curve to shift up from AS_1 to AS_2 . The price level begins to increase. The higher price level causes demand for money to increase, leading to an increase in the interest rate. The increase in the interest rate chokes off investment expenditures. The Central Bank accommodates inflation by conducting expansionary monetary policy so that the increase in the interest rate is reversed. Investment expenditures increase once more. The monetary expansion, however, causes aggregate demand to increase from AD_1 to AD_2 . As a result, output does not change (investment returns to original level after accommodation) but the price level increases.

- d) A decrease in taxes and an increase in government spending, at the same time that the Central Bank takes action to increase the interest rate.



The expansionary fiscal policy is offset by the Central Bank as it initiates a monetary contraction. The two policies have offsetting effects on AD and thus the AD curve does not shift. Note also that there are no mechanisms that affect the AS curve in this exercise. Therefore, neither output nor the price level changes.

Q.4



Consider the diagrams above.

- a) Which of the above diagrams best portrays the effects of an increase in resource productivity?

A

- b) Which of the above diagrams best portrays the effects of a decrease in the availability of key natural resources?

B

- c) Which of the above diagrams best portrays the effects of an increase in foreign spending on domestic products?

C

- d) Which of the above diagrams best portrays the effects of an increase in consumer spending?

C

- e) Which of the above diagrams best portrays an improvement in expected rates of return on investment?

C

- f) Which of the above diagrams best portrays the effects of declines in the incomes of the country's trading partners?

D

- g) Which of the above diagrams best portrays the effects of declines in the prices of imported resources?

A

- h) Which of the above diagrams best portrays the effects of a substantial reduction in government spending?

D

- i) Which of the above diagrams best portrays the effects of a dramatic increase in energy prices?

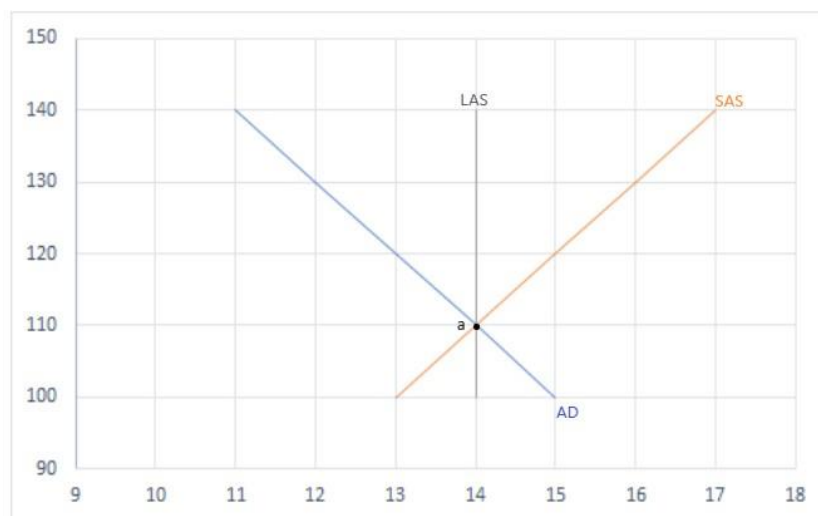
B

Q.5

The table below shows the initial aggregate demand, short-run, and long-run aggregate supply schedules for Euphorialand:

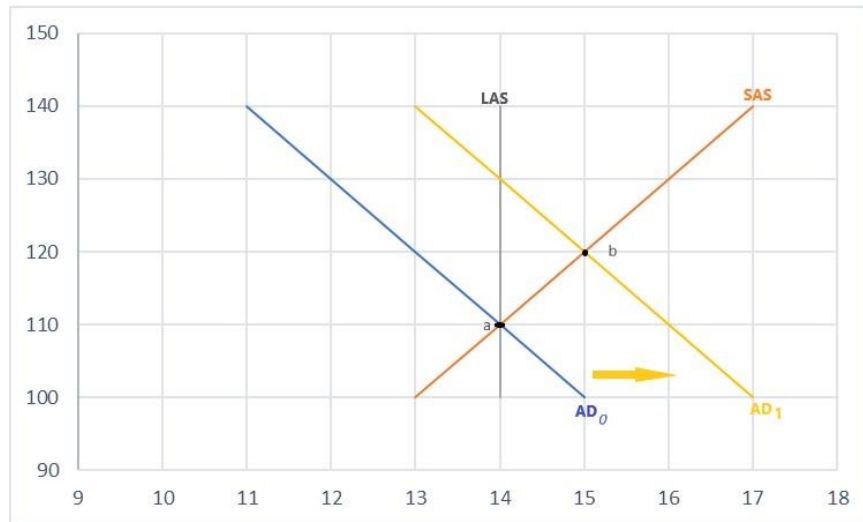
Price Level	Aggregate Demand (billions of £)	Short-run Aggregate Supply (billions of £)	Long-run Aggregate Supply (billions of £)
100	15	13	14
110	14	14	14
120	13	15	14
130	12	16	14
140	11	17	14

- i) Draw the AD, SAS, and LAS curves for Euphorialand. Label the equilibrium point a. What is the equilibrium level of real GDP and price level?



$P_{eq} = 110$ & $Y_{eq} = 14$ billions

- ii) Suppose that government purchases increase so that aggregate demand increases by \$2 billion at every price level. Draw the new aggregate demand curve. Label the new short run equilibrium point b. What is the equilibrium level of real GDP and price level in the short run?

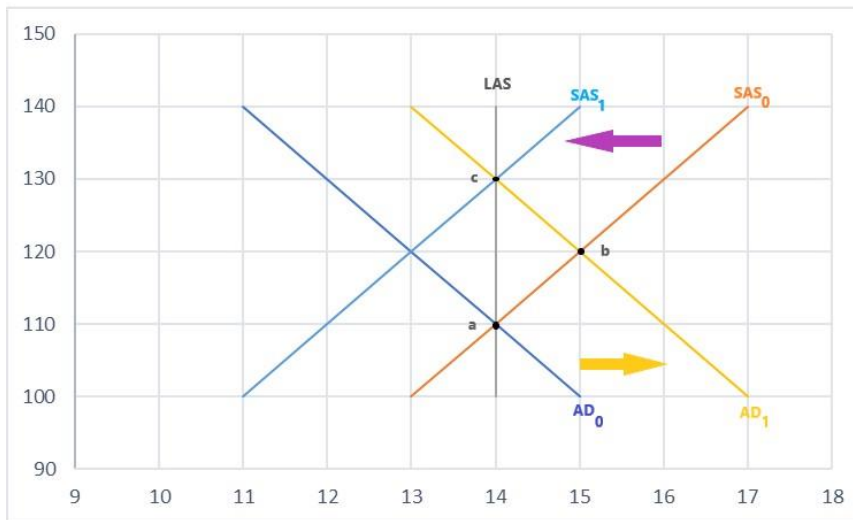


An increase in government expenditure increases aggregate expenditure. Thus, it shifts the aggregate demand from **AD₀** to **AD₁**. The new equilibrium price level is 120, and the new equilibrium output level is 15 billion. The new equilibrium point is b.

- iii) Why is the point b not a long-run equilibrium? In your answer, mention the level of potential real GDP, and describe whether the point b represents an above full-employment, a full-employment, or a below full-employment equilibrium. If either an inflationary or recessionary gap exists, calculate what it equals.

At point b, the economy is producing more than the potential level of output. Resources are over-utilized in the economy. Thus, the point **b** cannot be the long-run equilibrium. The LAS curve shows the potential level of output to be 14 billion. At point b, the economy has an inflationary gap, which is equal to 1 billion.

- iv) As time passes, what moves the economy back to its long-run equilibrium? Illustrate this process in the figure by drawing additional curves you may need. Label the long-run equilibrium point as c. What is the equilibrium level of GDP and price level in the long run?



At point b, the resources are over-utilized. When resources over-utilized, factor prices increase. As factor prices rise, the short-run aggregate supply curve shifts to the left ($SAS_0 \rightarrow SAS_1$). When the short-run aggregate supply curve is SAS_1 , the economy has reached its new long-run equilibrium level (point c). At point c, the price level is 130, and the level of output has returned to the potential level of output, 14 billion.

Q.6

Suppose that workers and firms could always predict next year's price level with perfect accuracy. Briefly explain whether in these circumstances the SRAS curve would still slope upward.

2.8 As explained in the text, most economists would say no. If workers and firms could always predict next year's price level with perfect accuracy, the *SRAS* would be a vertical line, just as the *LRAS* curve is. Some economists, though, would argue that the existence of contracts, menu costs, and other impediments to the rapid adjustment of prices in the short run might cause the *SRAS* to be upward sloping, rather than vertical, even if workers and firms could accurately predict next year's price level.

Q.7

Consider the data in the following table for 1969 and 1970 (where the values for real GDP and potential GDP are in 2009 dollars):

Year	Actual Real GDP	Potential GDP	Unemployment Rate
1969	\$4.71 trillion	\$4.63 trillion	3.5%
1970	\$4.72 trillion	\$4.80 trillion	4.9%

Sources: U.S. Bureau of Labor Statistics; and Federal Reserve Bank of St. Louis.

- In 1969, actual real GDP was greater than potential GDP. Briefly explain how this is possible.
 - Even though real GDP in 1970 was slightly greater than real GDP in 1969, the unemployment rate increased substantially from 1969 to 1970. Why did this increase in unemployment occur?
 - Was the inflation rate in 1970 likely to have been higher or lower than the inflation rate in 1969? Does your answer depend on whether the recession that began in December 1969 was caused by a change in a component of aggregate demand or by a supply shock?
-
- If firms operate beyond their normal capacity and structural and frictional unemployment drop below their normal levels, then actual real GDP can be above potential GDP.
 - The unemployment rate increased from 1969 to 1970 because the increase in actual real GDP was not as large as the increase in potential GDP.
 - If the recession was caused by a shift in aggregate demand (which, in fact, it was), the inflation rate is likely to have been lower in 1970 than in 1969. If the recession was caused by a shift in aggregate supply, the inflation rate was likely to have been higher.

MULTIPLE CHOICE QUESTION

- 1) The basic aggregate demand and aggregate supply curve model helps explain
 - A) **short-term fluctuations in real GDP and the price level.**
 - B) long-term growth.
 - C) price fluctuations in an individual market.
 - D) output fluctuations in an individual market.

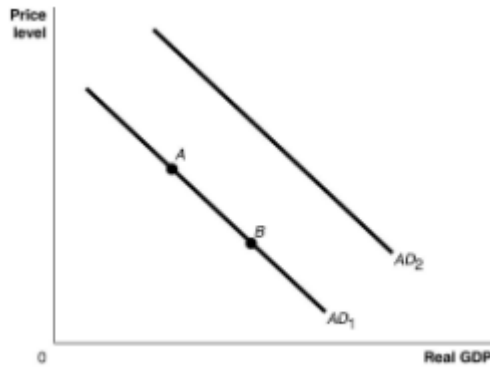
- 2) Because of the slope of the aggregate demand curve, we can say that
 - A) a decrease in the price level leads to a lower level of real GDP demanded.
 - B) an increase in the price level leads to no change in the level of real GDP demanded.
 - C) **a decrease in the price level leads to a higher level of real GDP demanded.**
 - D) an increase in the price level leads to a higher level of real GDP demanded.

- 3) Which of the following best describes the "wealth effect"?
 - A) When the price level falls, the real value of household wealth falls.
 - B) When the price level falls, the nominal value of household wealth falls.
 - C) When the price level falls, the nominal value of household wealth rises.
 - D) **When the price level falls, the real value of household wealth rises.**

- 4) The "interest rate effect" can be described as an increase in the price level that raises the interest rate and chokes off
 - A) government spending.
 - B) government spending and unplanned investment.
 - C) **investment and consumption spending.**
 - D) net exports.

- 5) How do lower taxes affect aggregate demand?
 - A) **They increase disposable income, consumption, and aggregate demand.**
 - B) They reduce disposable income, consumption, and aggregate demand.
 - C) they increase corporate investment and aggregate demand.
 - D) They increase aggregate supply and thus increase aggregate demand as well.

Please answer the next five questions referring to the figure below.



- 6) Ceteris paribus, an increase in the price level would be represented by a movement from
- A) AD_1 to AD_2 .
 - B) AD_2 to AD_1 .
 - C) point A to point B.
 - D) point B to point A.**
- 7) Ceteris paribus, an increase in interest rates would be represented by a movement from
- A) AD_1 to AD_2 .
 - B) AD_2 to AD_1 .**
 - C) point A to point B.
 - D) point B to point A.
- 8) Ceteris paribus, an increase in households' expectations of their future income would be represented by a movement from
- A) AD_1 to AD_2 .**
 - B) AD_2 to AD_1 .
 - C) point A to point B.
 - D) point B to point A.
- 9) Ceteris paribus, an increase in personal income taxes would be represented by a movement from
- A) AD_1 to AD_2 .
 - B) AD_2 to AD_1 .**
 - C) point A to point B.
 - D) point B to point A.
- 10) In the long-run aggregate supply curve,
- A) a decrease in the price level decreases the level of potential GDP.
 - B) a decrease in the price level increases the aggregate quantity of GDP supplied.
 - C) a decrease in the price level decreases the aggregate quantity of GDP supplied.
 - D) a decrease in the price level has no effect on the aggregate quantity of GDP supplied.**

11) If, due to a recession, foreign workers begin to leave Turkey to search for temporary work in their home countries until the recession has ended, this will
A) shift the short-run aggregate supply curve of the home country of foreign workers to the left.

B) shift the short-run aggregate supply curve of the home country of the foreign workers to the right.

C) move the home country's economy up along a stationary short-run aggregate supply curve.

D) move the home country's economy down along a stationary short-run aggregate supply curve.

12) If full-employment GDP is equal to \$4.2 trillion, what does the long-run aggregate supply curve look like?

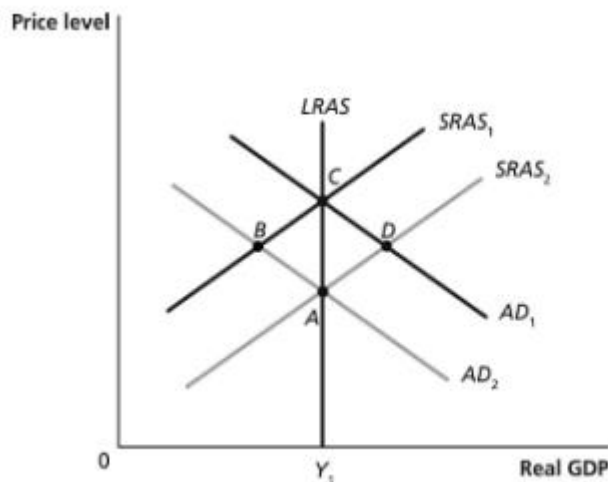
A) It is a horizontal line at \$4.2 trillion of GDP.

B) It is a vertical line at a level of GDP below \$4.2 trillion.

C) It is a vertical line at \$4.2 trillion of GDP.

D) It is a vertical line at a level of GDP above \$4.2 trillion.

Please answer the next two questions referring to the figure below.



14) Which of the points in the above graph are possible long-run equilibria?

A) A and B

B) A and C

C) A and D

D) B and D

15) Which of the points in the above graph are possible short-run equilibria but not long-run equilibria? Assume that Y_1 represents potential GDP.

A) A and B

B) A and C

C) C and D

D) B and D

16) A continual rightward shift in the LRAS would be caused by a recurring increase in

- A) entrepreneurship
- B) capital accumulation
- C) productivity
- D) all of them**

17) A technological improvement will shift;

- A) Both the SRAS and AD curves to the right.
- B) Both the SARS curve and LRAS curves to the right.**
- C) The SRAS curve to the right but leave the LRAS curve unchanged.
- D) The LRAS to the right but leave the SRAS curve shifts to the left.

18) An increase in oil prices, such as the oil shocks in the 70s, cause a _____ (leftward / rightward) shift of _____ (SRAS / AD) curve, move the economy along _____ (SRAS / AD) curve causing a _____ (demand-pull / cost push) inflation.

- A) Leftward / AD / SRAS / cost-push
- B) Leftward / SRAS / AD / demand-pull
- C) Rightward / AD / SRAS / demand-pull
- D) Leftward / SRAS / AD /cost-push**

19) Suppose that there is a political crisis in Germany started in beginning of 2025. It is estimated that this crisis will affect the Turkish economy negatively and some economists believe that some factories might close by the mid-summer. As a Turkish economic advisor to the ~~€~~Treasury, what would you suggest to the minister if you want to keep national income level stable?

- A) Reduce government spending and increase taxes.
- B) Increase government spending and decrease taxes.**
- C) Reduce government spending and lower taxes.
- D) Increase government spending and increase taxes.

20) An increase in the price level will:

- A) increase net exports
- B) reduce the value of household debt and increase investment
- C) increase production costs and reduce short-run aggregate supply
- D) reduce the purchasing power of household wealth and reduce consumption**

21) An increase in the incomes of Turkey's trading partners would shift Turkey's:

- A) aggregate demand curve to the right**
- B) aggregate demand curve to the left
- C) aggregate supply curve to the right
- D) aggregate supply curve to the left

- 22) Higher prices of imported resources will:
- A) move the economy downward and to the right along the aggregate demand curve
 - B) make the aggregate demand curve steeper
 - C) **shift the aggregate supply curve to the left**
 - D) shift the aggregate demand curve to the left
- 23) If major labor unions succeed in increasing wages, this will cause
- A) SRAS to shift upward (to the left) and then return immediately to its original position.
 - B) Both the SRAS and AD curves to shift in opposite directions.
 - C) **The SRAS curve to shift upward (to the left) , increasing the price level.**
 - D) The SRAS curve to shift upward (to the left), reducing the price level.
- 24) When a shift in AD occurs, the effect will be divided between a change in output and a change in price level. How the effect is divided depends on
- A) the position of the AE curve
 - B) **the slope of the SRAS curve**
 - C) the amount of inflation in the economy
 - D) the size of the multiplier
- 25) In the short-run, an increase in AD will increase _____ (price level / output / price level and output) and in the long run will increase _____ (price level / output / price level and output).
- A) **price level and output; price level**
 - B) price level and output; output
 - C) price level; price level
 - D) output; price level and output
- 26) Suppose that the economy is expanding, so actual output exceeds the potential output. Inflationary pressures are increasing. An appropriate fiscal policy would most likely result in;
- A) A reduction in government's budget surplus.
 - B) An increase in government's budget deficit.
 - C) **An increase in the government's budget surplus or at least a reduction in its deficit.**
 - D) Either an increase in the government's budget deficit or a decrease in its surplus, depending on whether taxes increased or spending decreased.

- 27) An increase in oil prices, such as the oil shocks in the 70s, cause a _____ shift of _____ curve, move the economy along _____ curve causing a _____ inflation.
- A) leftward / AD / SRAS / cost-push
 - B) leftward / SRAS / AD / demand-pull
 - C) rightward / AD / SRAS / demand-pull
 - D) **leftward / SRAS / AD / cost-push**
- 28) Suppose that the economy is shrinking, so actual output is less than the potential output. Inflationary pressures are increasing. An appropriate fiscal policy would most likely result in;
- A) A reduction in government's budget surplus.
 - B) An increase in government's budget deficit.
 - C) An increase in the government's budget surplus or at least a reduction in its deficit.
 - D) **Either an increase in the government's budget deficit or a decrease in its surplus, depending on whether taxes increased or spending decreased.**
- 29) An increase in the capital stock of the country improvement will shift;
- A) Both the SRAS and AD curves to the right.
 - B) **Both the SARS curve and LRAS curves to the right.**
 - C) The SRAS curve to the right but leave the LRAS curve unchanged.
 - D) The LRAS to the right but leave the SRAS curve unchanged.