1. Which of the following best illustrates the law of supply?

A. A farmer grows more com when the price of com rises.
B. A moving company lays off five workers because of a slowdown in sales.
C. A grocery store increases prices because of higher production costs.
D. A bookstore begins a new advertising campaign to attract more customers.
E. A government collects more in sales taxes because of an increase in consumption spending.

2. Which of the following best characterizes the problem of scarcity?

A. A shortage of wants and needs
B. The difference between limited wants and unlimited resources
C. The conflict between satisfying wants and satisfying needs
D. The existence of unlimited financial wealth
E. The existence of unlimited wants and limited resources

3. Suppose that the banking system of a country has ample reserves and that current real output is greater than potential output. Which of the following actions taken by the central bank would most effectively close the output gap in the short run?

A. Buying bonds on the open market
B. Selling bonds on the open market
C. Increasing the interest rate on reserves
D. Increasing the required reserve ratio
E. Decreasing the discount rate

4. Assume Singapore has a capital and financial account (CFA) balance of zero. Which of the following will move Singapore's capital and financial account (CFA) toward surplus?

A. A Russian resident purchases bonds from a bank in Singapore.
B. A resident of Singapore invests in the British stock market.
C. A company in Singapore sells electronics to a retailer in China.
D. A company in Singapore opens a factory in Thailand.
E. A French tourist visits Singapore and spends money at hotels and restaurants.

5. GDP does not fully measure a nation's economic performance because it fails to account for which of the following?

A. Exports of goods and services
B. Government spending
C. Business spending on physical capital
D. Consumer spending on durable goods
E. Nonmarket transactions

6. An increase of $10,000 in disposable income results in an increase in consumer spending of $7,000. Based on these changes, what is the marginal propensity to consume (MPC) and the marginal propensity to save (MPS)?

A. MPC MPS
0.3 0.7
B. MPC MPS

0.6 0.7

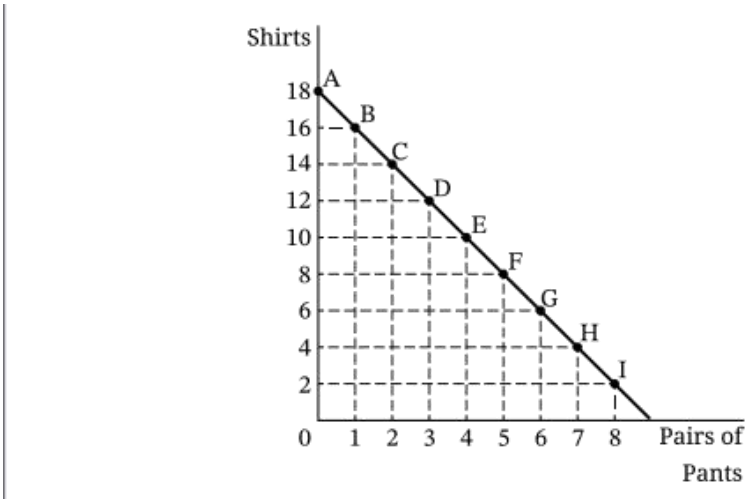
C. MPC MPS
0.7 0.3

D. MPC MPS
0.7 1.0

E. MPC MPS
1.0 0.7

7. Which of the following will cause a decrease in the real output and the price level of the Brazilian economy in the short run?

A. An open-market purchase of bonds by Brazil's central bank
B. An improvement in consumer confidence
C. An increase in Brazil's exports of coffee
D. An increase in households' wealth due to rising stock market prices
E. An increase in personal income taxes



8. Based on the production possibilities curve provided, what is the opportunity cost of moving production from point D to point F?

A. 2 pairs of pants
B. 3 pairs of pants
C. 5 pairs of pants
D. 4 shirts
E. 10 shirts

9. Which of the following describes why the short-run aggregate supply curve is upward-sloping?

A. Input prices are flexible in the short run.
B. Input prices are flexible in the long run.
C. Input prices are sticky in the short run.
D. Input prices are sticky in the long run.
E. Input prices change faster than output prices in the short run.

10. Assume that Fischerland has a constant velocity of money, its banking system has limited reserves, and its economy is in long-run equilibrium. An increase in the money supply will result in which of the following changes in the price level and real output in the long run?

A.	**Price Level**	**Real Output**
	Increase	Decrease
B.	**Price Level**	**Real Output**
	Increase	Remain the same
C.	**Price Level**	**Real Output**
	Remain the same	Increase
D.	**Price Level**	**Real Output**
	Decrease	Increase
E.	**Price Level**	**Real Output**
	Decrease	Decrease

11. What are the unemployment rate and the labor force participation rate in Pearland?
The table shows macroeconomic data for the nation of Pearland for a given year.

Employed, full-time	40 million
Employed, part-time	20 million
Not working, and looking for work	20 million
Discouraged workers	2 million
Full-time students, not seeking employment	8 million
Civilian noninstitutional population age 16 and over	200 million

A. 25% unemployment rate and 30% labor force participation rate
B. 25% unemployment rate and 40% labor force participation rate
C. 30% unemployment rate and 40% labor force participation rate
D. 30% unemployment rate and 45% labor force participation rate
E. 33.3% unemployment rate and 45% labor force participation rate

12. In the short run, an increase in investment spending will cause which of the following?
A. Cost-push inflation
B. Demand-pull inflation
C. Recession
D. Deflation
E. Cyclical unemployment

13. Suppose a French citizen earns income while working in Canada and then sends the money home to France. Which of the following describes how this transaction would be counted?
A. As an increase in France's GDP
B. As a decrease in Canada's GDP
C. As an increase in France's current account balance
D. As an increase in Canada's current account balance
E. As an increase in France's capital and financial account (CFA) balance

14. Open-market operations affect which of the following?

A. The demand for reserves
B. The national debt
C. The required reserve ratio
D. The supply of reserves
E. The budget balance

15. Georgeville initially had a balanced budget. The government then increased public expenditures and income taxes by the same amount. Which of the following accurately describes the immediate impact of these changes on the budget and on the national debt?

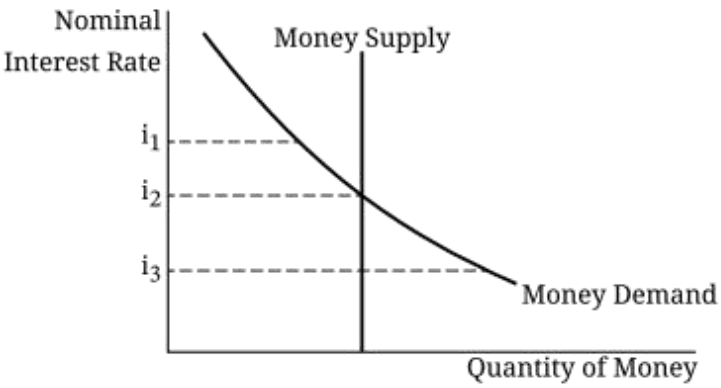
A.	**Budget**	**National Debt**
	Move into surplus	Remain the same
B.	**Budget**	**National Debt**
	Move into surplus	Increase
C.	**Budget**	**National Debt**
	Move into deficit	Increase
D.	**Budget**	**National Debt**
	Remain in balance	Remain the same
E.	**Budget**	**National Debt**
	Remain in balance	Increase

16. Which of the following transactions will immediately decrease both the M1 and the M2 measures of the money supply?

A. Sonja purchases a newly-issued government bond with funds from her checking account.
B. Tristan transfers money from his savings account into his checking account.
C. Parin withdraws cash from his checking account.
D. Xin withdraws money from his checking account to buy a certificate of deposit (a type of time deposit).
E. Brandon deposits cash he was keeping in his safe-deposit box into his savings account.

17. Suppose the marginal propensity to consume is 0.75. What is the minimum amount of the income tax cut necessary to change real output by $120 billion?

A. $10 billion
B. $30 billion
C. $40 billion
D. $60 billion
E. $120 billion



18. Which of the following is true based on the money market graph provided?

A. The opportunity cost of holding money is higher at i3 than at i1.

B. The opportunity cost of holding money is higher at i1 than at i2.

C. People will prefer holding money to holding bonds at i1.

D. The quantity of money supplied will increase as the interest rate changes from i2 to i3.

E. The quantity of money demanded will increase as the interest rate changes from i2 to i1.

19. If the country of Milton experiences a decrease in international financial capital inflows, then which of the following will occur?

A. The real interest rate will increase.

B. Investment spending will increase.

C. Potential output in Milton will increase.

D. The unemployment rate in Milton will stay the same.

E. The level of domestic private savings will decrease.

20. A country's long-run Phillips curve has shifted to the right. Which of the following events could have caused this change?

A. An increase in the expected rate of inflation

B. A permanent increase in unemployment benefits

C. An expansionary monetary policy action by the central bank

D. A decrease in real output

E. A decrease in structural unemployment

The table shows the number of workers it takes for the firms of Anderson and Belmond to make 1 car or 1 plane.

	1 Car	1 Plane
Anderson	10 workers	5 workers
Belmond	12 workers	4 workers

21. Which of the following statements is correct?

A. Anderson has the comparative advantage in producing planes.
B. Belmond has the comparative advantage in producing cars.
C. Anderson has the absolute advantage in producing cars.
D. Belmond has the absolute advantage in producing cars.
E. Neither Anderson nor Belmond has the comparative advantage in producing planes.

22. Assume that in Year 2, a French resident shopping for T-shirts online exchanged 24 euros to buy a T-shirt in the United States with a price of $30. In Year 1, she would have had to exchange 20 euros to buy the same T-shirt for $30. How many dollars could a euro buy in Year 2, and did the euro appreciate or depreciate against the dollar from Year 1 to Year 2?

A. 1 euro bought $0.80 in Year 2, and the euro depreciated against the dollar.
B. 1 euro bought $1.25 in Year 2, and the euro depreciated against the dollar.
C. 1 euro bought $1.25 in Year 2, and the euro appreciated against the dollar.
D. 1 euro bought $1.50 in Year 2, and the euro depreciated against the dollar.
E. 1 euro bought $1.50 in Year 2, and the euro appreciated against the dollar.

23. Which of the following changes would result in an increase in the equilibrium quantity and an indeterminate effect on the equilibrium price of cotton shirts, a normal good, in the short run?

A. An increase in the price of cotton, an input to production, and an increase in consumer preferences for cotton shirts
B. An increase in the number of shirt producers and an increase in the price of silk shirts, a substitute for cotton shirts
C. A technological advancement in the production of shirts and a decrease in consumers' income
D. A drought that destroyed a large portion of the cotton crop and an increase in consumers' income
E. A decrease in the number of cotton-shirt workers and a decrease in the price of wool shirts, a substitute for cotton shirts

24. Which of the following scenarios demonstrates a limitation of the official unemployment rate?

A. It excludes people like Bob, who is looking for a new job as a school cafeteria worker since his last job was replaced by a vending machine.
B. It excludes people like Tammy, who is not working but is looking for a new job because of her recent move from Texas to New York.
C. It excludes people like Salem, who is no longer attempting to find a job after unsuccessfully searching for one.

D. It excludes people like Rania, who is working as a beach lifeguard only during the summer because she is a full-time student.
E. It excludes people like Julie, who is searching for a job but is unable to find one as a result of an increase in the minimum wage.

Year	CPI
1	80
2	100
3	140

25. Based on the information provided in the table, which of the following is true?
A. From year 1 to year 2, the rate of inflation is exactly one half the rate of inflation between year 2 and year 3.
B. If year 3 were the base year, the CPI in year 2 would be 60.
C. The rate of inflation from year 1 to year 2 is 20 percent.
D. The rate of inflation from year 1 to year 3 is 75 percent.
E. The nominal value of the market basket in year 3 is 40 percent less than the nominal value of the market basket in year 2.

26. Assume Aneingo's economy is experiencing a decrease in the price level and a decrease in the actual unemployment rate. Which of the following could have caused these changes in the short run?
A. A depreciation of Aneingo's currency
B. An increase in Aneingo's exports
C. An increase in business income taxes
D. A decrease in Aneingo's imports
E. A decrease in nominal wages

27. The government of Bolivar simultaneously increases personal income taxes and government spending by the same amount. How will these actions affect the price level and real output in Bolivar in the short run?
A. Price Level **Real Output**
Increase Increase
B. Price Level **Real Output**
Increase Indeterminate
C. Price Level **Real Output**
Decrease Decrease
D. **Price Level** **Real Output**
Indeterminate Indeterminate
E. **Price Level** **Real Output**
Indeterminate Increase

The following balance sheet is for a commercial bank in a banking system with limited reserves.

Assets		Liabilities	
Reserves	$250 billion	Deposits	$1,000 billion
Loans	$850 billion	Owners' equity	$300 billion
Government bonds	$200 billion		

28. Suppose the required reserve ratio is 10%. If the bank decides to lend out all excess reserves, what is the maximum possible increasein the money supply after all adjustments have been made throughout the banking system?

A. $150 billion
B. $850 billion
C. $1,500 billion
D. $2,500 billion
E. $8,500 billion

29. Assume that the government of Waterland has a balanced budget and the banking system has ample reserves. Which of the following combinations of policy actions will most likely increase interest rates and have an indeterminate effect on the level of real gross domestic product in Waterland in the short run?

A. The central bank increases its administered interest rates, and the government increases taxes.
B. The central bank increases its administered interest rates, and the government decreases transfer payments.
C. The central bank increases its administered interest rates, and the government increases spending.
D. The central bank decreases its administered interest rates, and government spending remains constant.
E. The central bank decreases its administered interest rates, and the government increases transfer payments.

30. The government in the country of Archid conducts expansionary fiscal policy in response to a recession. Based solely on the change in real income, which of the following accurately describes how the expansionary fiscal policy may affect the value of Archid's currency in the foreign exchange market?

A. The currency will depreciate because of the increase in the domestic interest rate.
B. The currency will depreciate because of the increase in the demand for imports.
C. The currency will appreciate because of the decrease in the domestic money supply.
D. The currency will appreciate because of the decrease in the domestic unemployment rate.
E. The currency will appreciate because of the increase in the domestic price level.

31. Which of the following describes a stock?

A. It earns a fixed interest rate.
B. It is included in M2.
C. It is considered more liquid than a savings account.
D. It represents equity in a company.
E. It is most commonly issued by governments.

32. Which of the following will most likely increase the price of previously issued bonds?

A. A decrease in the supply of oil, a major input in the production of goods and services
B. A decrease in investment spending and an increase in household and public savings
C. An increase in the central bank's administered interest rates
D. An increase in government spending and a decrease in personal income tax rates
E. An increase in household purchases of homes and a decrease in imports

The table shows macroeconomic data for the country of Merryland for a given year in real dollars.

Personal consumption expenditures	$250 billion
Private investment spending	$50 billion
Government spending	$40 billion
Personal income taxes	$50 billion
Exports	$120 billion
Imports	$110 billion

33. If nominal GDP is $700 billion, what is the GDP deflator?

A. 50
B. 140
C. 200
D. 350
E. 570

34. Assume an economy is not in long-run macroeconomic equilibrium. Which of the following automatic stabilizers will moderate a shortrun change in real output without the need for deliberate policy actions?

A. A discretionary change in the business tax rate
B. A discretionary change in the policy rate
C. The presence of discouraged workers in the labor force
D. Higher wages negotiated by a labor union
E. Transfer payments such as unemployment compensation

35. Assume a nation's required reserve ratio is 20% and the banking system has limited reserves. Which of the following could explain why the money supply decreased by $100 million?

A. The central bank sold bonds worth $20 million.
B. Depositors transferred $20 million from savings to checking accounts.
C. Depositors withdrew $20 million from checking accounts.
D. Businesses borrowed $80 million in the loanable funds market.
E. Commercial banks decided to issue $100 million in new loans rather than hold that amount in excess reserves.

36. The coexistence of which of the following pairs of conditions best represents the relationship between net exports and international financial capital flows?

A. Country X's trade deficit with Country Y and Country X's trade surpluses with other countries
B. Country X's exports of cotton and grains to Country Y and Country Y's exports of clothing and electronic gadgets to Country X
C. Country X's purchases of Country Z's corporate bonds and Country Z's purchases of Country X's government bonds
D. Country X's trade deficit with Country Y and Country Y's purchases of Country X's government bonds
E. Country X's current account surplus and capital and financial account (CFA) surplus

37. The country of Leros finds a new sustainable source of energy, leading to a decrease in energy prices, and at the same time Leros experiences an increase in consumer spending. How will these changes affect the price level and real output in Leros in the short run?

A.	**Price Level**	**Real Output**
	Decrease	Decrease
B.	**Price Level**	**Real Output**
	Decrease	Indeterminate
C.	**Price Level**	**Real Output**
	Decrease	Increase
D.	**Price Level**	**Real Output**
	Indeterminate	Increase
E.	**Price Level**	**Real Output**
	Indeterminate	Indeterminate

38. Assume the government of Theta had a balanced budget. The government increases spending and decreases taxes. Why might the resulting change in real GDP in the short run be less than the maximum possible amount?

A. Increased government spending results in a depreciation of Theta's currency, decreasing exports.
B. Increased government spending results in a depreciation of Theta's currency, increasing exports.
C. The decrease in taxes increases consumption spending by less than the full amount of the increase in disposable income.
D. Increased interest rates caused by government borrowing decrease gross private domestic investment spending.
E. Decreased interest rates caused by government borrowing increase gross private domestic investment spending.

39. Which of the following describes the effect of a price level change in the short run?

A. When the price level increases, consumption expenditures will increase, resulting in the aggregate demand curve shifting to the right.
B. When the price level increases, investment spending will decrease, resulting in the aggregate demand curve shifting to the left.
C. When the price level increases, imports become relatively less expensive than domestic goods, resulting in a movement upward and to the left on the aggregate demand curve.
D. When the price level decreases, consumption expenditures will decrease, resulting in a movement upward and to the left on the aggregate demand curve.

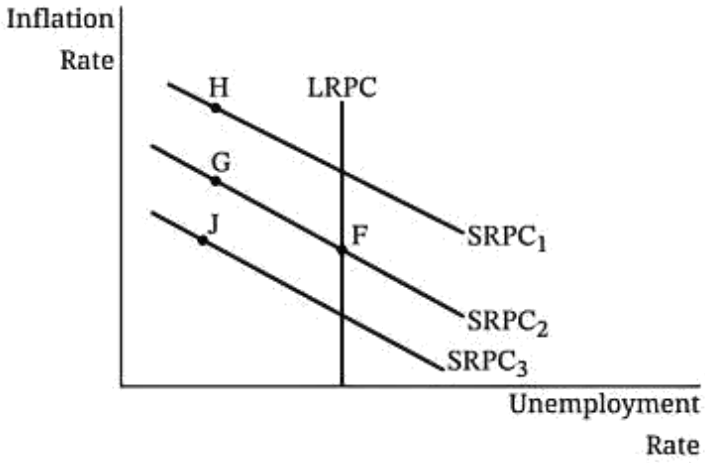
E. When the price level decreases, investment spending will increase, resulting in a movement upward and to the left on the aggregate demand curve.

40. Which of the following will most likely lead to long-run economic growth?

A. A decrease in spending on research and development
B. A decrease in the immigration of skilled workers
C. An increase in spending on road and rail networks
D. An increase in the price of crude oil
E. An increase in corporate income taxes

41. Which of the following groups would benefit from unexpected inflation in Sunland?

A. Private businesses in Sunland that took out fixed-rate loans
B. Banks in Sunland that lent out fixed-rate loans
C. Retirees on a fixed income in Sunland
D. Export-oriented businesses in Sunland
E. Consumers in Skyland that buy goods from Sunland



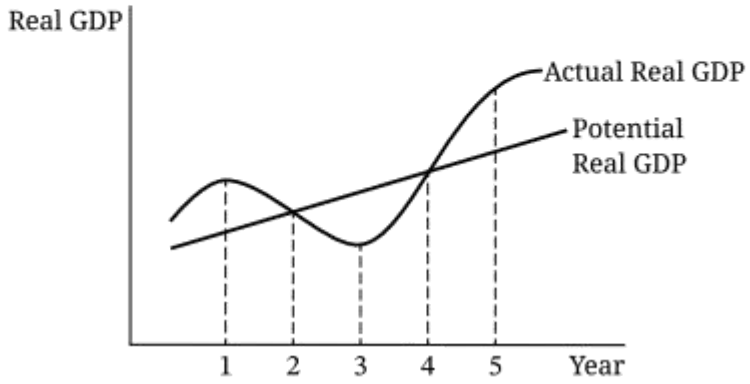
42. If the economy of Sloan is currently in short-run equilibrium at point G in the Phillips curve model provided, what will be the effect of an unexpected decrease in aggregate demand?

A. There will be movement from point G to point H.
B. There will be movement from point G to point F.
C. There will be movement from point G to point J.
D. There will be a shift of $SRPC_2$ to $SRPC_3$.
E. There will be a shift of $SRPC_2$ to $SRPC_1$.

43. Which of the following is an example of investment in capital stock?

A. A business paying for the cost of employee training
B. Automobile manufacturers purchasing television time for an advertisement
C. A bakery purchasing a new high-efficiency oven
D. A business hiring an accountant to streamline inventories
E. A business financing its day-to-day operations by borrowing money

The graph provided shows the actual real GDP and potential real GDP for an economy.



44. Which of the following is true in year 3?

A. The country's exports exceed imports.
B. The country's currency is appreciating.
C. The economy is in an inflationary gap.
D. The government budget is in surplus.
E. The actual rate of unemployment exceeds the natural rate of unemployment.

45. Assume that a nation's banking system has ample reserves. If the central bank implements monetary policy with the goal of decreasing unemployment, what will happen to the policy rate and real output in the short run?

A.	**Price Level**	**Real Output**
	Increase	Increase
B.	**Price Level**	**Real Output**
	Increase	Decrease
C.	**Price Level**	**Real Output**
	Decrease	Decrease
D.	**Price Level**	**Real Output**
	Decrease	Increase
E.	**Price Level**	**Real Output**
	Remain the same	Decrease

46. Japan and India are trading partners with flexible exchange rates. The Japanese currency is the yen and the Indian currency is the rupee. If there is an increase in real interest rates in Japan while real interest rates remain constant in India, which of the following would result in the foreign exchange market?

A. A decrease in the supply of the Indian rupee
B. A decrease in the demand for the Japanese yen
C. An increase in the demand for the Indian rupee
D. An appreciation of the Japanese yen
E. An appreciation of the Indian rupee

47. How is the actual real interest rate calculated?

A. By subtracting the nominal interest rate from the actual inflation rate
B. By subtracting the actual inflation rate from the nominal interest rate
C. By subtracting the nominal interest rate from the expected inflation rate
D. By subtracting the expected inflation rate from the nominal interest rate
E. By subtracting the actual inflation rate from the expected inflation rate

48. Which of the following is necessarily true at the intersection of the aggregate demand and short-run aggregate supply curves?

A. The economy is fully utilizing all of its resources.
B. There is no cyclical unemployment.
C. Wages and prices are flexible.
D. The nominal and real interest rates are equal.
E. The economy is in short-run equilibrium.

49. The country of Arden has a banking system with limited reserves. Arden's economy falls into a recession, and its government and central bank each implement policies to restore full employment. Which of the following combinations of fiscal and monetary policy would be most effective to achieve this objective?

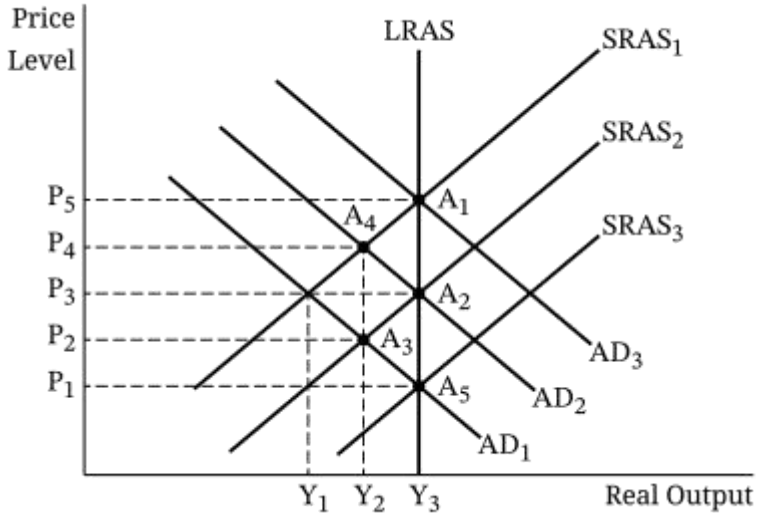
A. Arden's government increases taxes on businesses, and its central bank decreases the required reserve ratio.
B. Arden's government increases spending, and its central bank sells bonds on the open market.
C. Arden's government increases the minimum wage, and its central bank increases the required reserve ratio.
D. Arden's government decreases unemployment benefits, and its central bank buys bonds on the open market.
E. Arden's government decreases personal income tax rates, and its central bank buys bonds on the open market.

50. The country of Avionville has full-employment real output of $4,000 million and a marginal propensity to consume of 0.80. Its short-run real output was $1,600 million. Assume that Avionville's government increased spending by $300 million and its central bank implemented an expansionary monetary policy that increased investment by $100 million. If the maximum effects of both policy changes are achieved, what will be the effect on the output gap in the short run?

A. Avionville will have a recessionary output gap of $400 million.
B. Avionville will have a recessionary output gap of $2,100 million.
C. Avionville will be at the full-employment level of output.
D. Avionville will have an inflationary output gap of $400 million.
E. Avionville will have an inflationary output gap of $2,000 million.

51. Assume that consumers in the country of Binder begin making all their everyday transactions in cash following the implementation of restrictions on the use of credit cards. If there are no changes in inflationary expectations, which of the following will occur in the short run?

A. Real interest rates in Binder will decrease.
B. Unemployment in Binder will decrease.
C. The money supply in Binder will increase.
D. Nominal interest rates in Binder will increase.
E. Real GDP in Binder will increase.



52. The country of Balfor is in short-run equilibrium at point A_3 in the graph provided. If policymakers in Balfor decide not to implement any policy changes, what point will Balfor move to in the long run?

A. A_1
B. A_2
C. It will remain at A_3.
D. A_4
E. A_5

The table shows the maximum number of printers or copiers that the United States and South Korea can produce in a day using equivalent resources. Both countries experience constant opportunity costs in production.

	Printers	Copiers
United States	250	500
South Korea	100	400

53. If the United States and South Korea are trading partners, which of the following are mutually beneficial terms of trade?

A. 1 printer for 3 copiers
B. 1 printer for 4 copiers
C. 1 printer for 5 copiers
D. 1 copier for 0.20 printer
E. 1 copier for 0.25 printer

54. A simple circular flow model indicates that final goods are consumed by which of the following?

A. Households in the product market
B. Households in the factor market
C. Households in the money market
D. Firms in the resource market
E. Firms in the goods and services market

55. Assume there is an increase in national savings in the economy of Arita. What effect will this change have on the real interest rate and interest-sensitive expenditures in Arita?

A.	**Real Interest Rate**	**Interest-Sensitive Expenditures**
	Increase	Decrease
B.	**Real Interest Rate**	**Interest-Sensitive Expenditures**
	Increase	Increase
C.	**Real Interest Rate**	**Interest-Sensitive Expenditures**
	Indeterminate	Indeterminate
D.	**Real Interest Rate**	**Interest-Sensitive Expenditures**
	Decrease	Decrease
E.	**Real Interest Rate**	**Interest-Sensitive Expenditures**
	Decrease	Increase

56. If the value of the United Kingdom's currency falls relative to other currencies in the foreign exchange market, then which of the following sequences of events will likely occur in the United Kingdom?

A. Its real interest rate will increase, resulting in a decrease in the demand for loanable funds.
B. Its net exports will increase, resulting in an increase in aggregate demand.
C. Its price level will decrease, resulting in a movement along the short-run Phillips curve down and to the right.
D. Its central bank will implement expansionary monetary policy, resulting in an increase in the value of its currency.
E. Its investment spending will increase, resulting in a movement on the production possibilities curve.

57. Which of the following would shift the long-run aggregate supply curve to the left?

A. An increase in net exports
B. An increase in the cyclical rate of unemployment
C. A decrease in the interest rate on reserves
D. A decrease in the real interest rate
E. A decrease in labor force participation

58. A worker's position is eliminated, as computers using new artificial intelligence will be performing her job tasks from now on. As a result, what will happen to her country's unemployment figures as the worker searches for a new job?

A. Frictional unemployment will increase, cyclical unemployment will increase, and the natural rate of unemployment will increase.
B. Frictional unemployment will increase, structural unemployment will increase, and the natural rate of unemployment will remain unchanged.
C. Structural unemployment will increase, cyclical unemployment will remain unchanged, and the natural rate of unemployment will increase.
D. Structural unemployment will increase, cyclical unemployment will increase, and the natural rate of unemployment will decrease.
E. Structural unemployment will remain unchanged, cyclical unemployment will increase, and the natural rate of unemployment will decrease.

59. An increase in inflationary expectations will result in which of the following in the Phillips curve model?

A. A movement to the right along the short-run Phillips curve
B. A movement to the left along the short-run Phillips curve
C. A rightward shift of the long-run Phillips curve
D. A rightward shift of the short-run Phillips curve
E. A leftward shift of the short-run Phillips curve

60. The government of Pineacre increased borrowing to finance additional spending on national defense. As a result, what will most likely happen to business expenditures on plant and equipment and to Pineacre's long-run economic growth rate?

	Business Expenditures on Plant and Equipment	**Long-Run Economic Growth Rate**
A.	Increase	Increase
B.	Increase	Decrease
C.	Decrease	Increase
D.	Decrease	Decrease
E.	Remain the same	Remain the same

1. The economy of Keene lsland is in short-run equilibrium with a natural rate of unemployment of 5%, a frictional unemployment rate of 3%, and an actual unemployment rate of 6%. Keene lsland has an open economy with a flexible exchange rate.

A. What is the numerical value of the cyclical unemployment rate on Keene lsland?

B. Draw a correctly labeled graph of the aggregate demand,short-run aggregate supply, and long-run aggregate supply curves for Keene lsland, and show each of the following.
   i. The current equilibrium real output and price level, labeled Y,and PL1, respectively
   ii. The full-employment output, labeled Y_e

C. The government of Keene lsland is considering changing its spending to close the $100 million output gap in the short run. The marginal propensity to save in Keene Island is 0.20,and the government has a balanced budget.
   i. Calculate the minimum change in government spending and identify the direction of change needed to fully close the output gap in the short run. show your work
   ii. Assume the government of Keene lsland changes government spending as determined in part c (0. 0n your graph in par B, show the effect of this change in government spending, labeling the new short-run equililbrium real output and price level Y, and PL, respectively.
   iii. If the government instead decides to change income taxes rather than changing government spending to cloe the output gap, would the magnitude of the change in income taxes need to be greater than, less than, or the same as the magnitude of the change calculated in part C (i) to fully close the output gap in the short run? Explain.

D. Draw a correctly labeled graph of the loanable funds market, and show the effect of the change in government spending identified in part c (i) on the equilibrium real interest rate.

E. Based solely on the change in the real interest rate shown in part D, will each of the following increase, decrease, or remain the same?
   i. The demand for Keene lsland's currency in the foreign exchange market in the short run
   ii. The rate of economic growth in the long run. Explain.

2. In the base year, the market basket of consumer goods used to calculate the consumer price index (CPI) in the country of Graylandcost $500. In 2022, an identical basket of goods cost $540. The CPI in 2021 was 90.

A. Calculate Grayland's CPI in 2022. Show your work.

B. Based on your answer to part A, calculate the inflation rate in Grayland from 2021 to 2022. Show your work.

C. Explain why the inflation rate calculated in part B may overstate the actual inflation rate a typical household experienced in Grayland.

D. Assume that in 2021, residents of Grayland expected inflation to be 25% from 2021 to 2022. If they adjusted their expectations to the inflation rate calculated in part B, how would each of the following change?

   i. The short-run Phillips curve in the long run

   ii. Nominal interest rates. Explain.

3. The economy of Bookville is experiencing high inflation.

A. The banking system in Bookville has ample reserves. What specific monetary policy action would the central bank implement to reduce the inflation rate in the short run?

B. Draw a correctly labeled graph of the reserve market for Bookville, and show the effect of the central bank's action identified in part A on the policy rate.

C. As a result of the change in the interest rate shown on your graph in part B, will each of the following increase, decrease, or remain the same in the short run?

   iii. Real output. Explain.

   iv. The unemployment rate

AP Macroeconomics

2025

APPENDIX - ANSWERS

Matching multiple-choice answers and free-response scoring follow.

Supplied FRQ worked answers are nonofficial. The MCQ key omitted question 30, completed below with an independent nonofficial answer and explanation.

Complete MCQ key (question 30 completed independently)

1. A	21. B	41. A
2. E	22. B	42. B
3. B	23. C	43. C
4. A	24. D	44. E
5. E	25. E	45. D
6. C	26. A	46. D
7. E	27. C	47. B
8. D	28. C	48. E
9. C	29. B	49. E
10. B	30. B	50. A
11. B	31. D	51. D
12. B	32. B	52. E
13. C	33. C	53. A
14. D	34. E	54. A
15. A	35. A	55. E
16. C	36. D	56. B
17. B	37. D	57. E
18. A	38. D	58. C
19. B	39. C	59. D
20. C	40. C	60. D

Question 30: higher real income increases demand for imports and demand for foreign currency; Archid currency depreciates. B is the independently determined answer. All other entries follow the supplied key.

Alignment: AP Macroeconomics CED (2026), MKT-5.E.1 and MKT-5.E.2, PDF p166.

Section II

1.

A. Cyclical Unemployment Rate

The cyclical unemployment rate is calculated as the difference between the actual unemployment rate and the natural unemployment rate.

- Natural unemployment rate＝5%
- Actual unemployment rate＝6%

Cyclical unemployment rate＝6%－5%=1%

Numerical value: 1%

B. Graph of Aggregate Demand, Short-Run Aggregate Supply, and Long-Run Aggregate Supply

The graph should be labeled as follows:

- Vertical axis: Price Level (PL)
- Horizontal axis：Real Output (Y)
- Curves:
  - Long-run aggregate supply (LRAS) curve: vertical at full-employment output Y_F
  - Short-run aggregate supply (SRAS) curve: upward sloping
  - Aggregate demand (AD) curve: downward sloping
- Equilibrium:
  - The short-run equilibrium is at the intersection of AD and SRAS, labeled with real output Y_1 and price level PL_1.
  - Since the actual unemployment rate (6%) is higher than the natural rate (5%), the economy is in a recessionary gap, so $Y_1 < Y_F$.
  - Y_F is shown on the horizontal axis where LRAS is located.

Graph Description:

- The AD curve intersects the SRAS curve at point A, with coordinates (Y_1,PL_1).
- The LRAS curve is drawn at Y_F, to the right of Y_1.

C. Government Spending Change to Close Output Gap

i. Minimum Change in Government Spending

The output gap is $100 million (recessionary gap).

Marginal propensity to save (MPS)＝0.20，so the spending multiplier＝ $\frac{1}{MPS}$ ＝ $\frac{1}{0.20}$ ＝5.

The change in government spending (△G) needed to close the output gap is :

△G＝ $\frac{Output\ gap}{Multiplier}$ ＝ $\frac{100}{5}$ ＝ 20 million.

Since the economy is below full employment, government spending should be increased to stimulate aggregate demand.

Direction of change: Increase government spending by $20 million.

ii. Effect on Graph from Part B

- The increase in government spending shifts the AD curve to the right (from AD to AD_2).
- The new short-run equilibrium is at the intersection of AD_2 and SRAS, labeled with real output Y_2 and price level PL_2.
- $Y_2 = Y_F$, indicating the output gap is closed.

- $PL_2 > PL_1$, reflecting a higher price level due to increased demand.

iii. Comparison with Income Tax Change

The tax multiplier is $-\frac{MPC}{MPS}$, where MPC = 1 − MPS = 0.80 .

Tax multiplier $= -\frac{0.80}{0.20} = -4$.

To close the output gap of \$100 million, the change in taxes (△T) is:

$$\triangle T = \frac{Output\ gap}{Tax\ multiplier} = \frac{100}{-4} = -25 \text{ million}$$

This implies a decrease in taxes of \$25 million.

The magnitude of the tax change (\$25 million) is greater than the magnitude of the government spending change (\$20 million.)

Explanation: The tax multiplier is smaller in absolute value than the spending multiplier due to the marginal propensity to save, meaning a larger tax change is needed to achieve the same change in output.

D. Graph of Loanable Funds Market

The loanable funds market graph should be labeled as follows:

- Vertical axis: Real Interest Rate (r)
- Horizontal axis: Quantity of Loanable Funds (Q)
- Curves:
  - Demand for loanable funds (DLF): downward sloping
  - Supply of loanable funds (SLF): upward sloping
- Initial equilibrium: at the intersection of DLF and SLF, with real interest rate r_1 .
- Effect of increased government spending:
- Government spending increases by \$20 million, leading to a budget deficit, which increases the demand for loanable funds.
- The DLF curve shifts to the right (from DLF to DLF_2).
- The new equilibrium has a higher real interest rate r_2 .

E. Effects of Change in Real Interest Rate

i. Demand for Keene Island’s Currency

The increase in real interest rate makes Keene Island's financial assets more attractive to foreign investors. To purchase these assets, foreign investors need to buy Keene Island's currency, increasing the demand for the currency in the foreign exchange market.

Result: Increase

ii. Rate of Economic Growth in the Long Run

The increase in real interest rate crowds out private investment by making borrowing more expensive. Reduced investment leads to lower capital accumulation, which decreases potential output and long-run economic growth.

Result: Decrease

Explanation: Higher real interest rates discourage investment, reducing the capital stock and thus the long-run growth rate.

2.

A. Calculate Grayland's CPI in 2022

We are told

- Base year:market basket＝$500
- 2022: market basket＝$540
- CPI formula:

$CPI_{year}=\frac{Cost\ of\ \ basket\ in\ year}{Cost\ of\ basket\ in\ base\ year}\times 10$

$CPI_{2022}=\frac{540}{500}\times 10=108$

B. Inflation rate from 2021 to 2022

CPI in 2021＝90

CPI in 2022＝108

Inflation rate:

$\frac{108-90}{90}\times 100\%=\frac{18}{90}\times 100\%=20\%$

C. Why CPI may overstate actual inflation for a typical household

CPI uses a fixed market basket from the base year, but consumers substitute goods when relative prices change.

If the price of one good rises a lot, consumers buy less of it and more of other goods, so their actual cost of living rises less than CPI suggests.

Also, CPI does not fully capture new goods and quality improvements immediately.

Substitution bias and new goods/quality bias in CPI calculation

D. Adjusting expectations

In 2021, expected inflation＝25%

Actual inflation(2021－2022)＝20%

i. Short run Phillips curve in the long run

In the short run, if expected inflation falls from 25% to 20%, the short - run Phillips curve will shift downward in the long run because lower expected inflation gets built into wage setting and price setting, reducing actual inflation for any given unemployment rate.

ii. Nominal interest rates

By the Fisher effect:
Nominal interest rate≈real interest rate + expected inflation.
If expected inflation decreases from 25% to 20%, nominal interest rates will decrease, assuming the real interest rate stays constant.
SRPC shifts down; nominal rates decrease

3.

A. Monetary policy action to reduce inflation with ample reserves

In an ample reserves system, the central bank's main tool is the administered interest rates - primarily the interest on reserves (IOR) and overnight reverse repo rate.
To reduce inflation, the central bank will raise the policy rate (interest on reserves), which increases other short - term interest rates, reducing aggregate demand.
Raise the interest on reserves (policy rate)

B. Reserve market graph

Correctly labeled graph of the reserve market:

- Vertical axis: Federal funds rate / policy rate
- Horizontal axis: Quantity of reserves
- Demand for reserves: downward sloping at low reserves, but with ample reserves, the demand curve is flat (horizontal) at the IOR rate.
- Supply of reserves: vertical (set by the Fed's asset purchases).

Effect of raising IOR:
The horizontal section of the demand curve shifts upward to a higher interest rate.
The equilibrium federal funds rate increases to the new higher IOR.

Sketch description:

- Initial horizontal demand segment at rate i_0.
- New horizontal segment at higher rate i_1.
- Supply curve vertical to the right — intersection remains at the same quantity of reserves but at a higher rate.

C. Short-run effects

iii. Real output

Higher policy rate → higher market interest rates → reduces investment and consumption → decreases aggregate demand → decreases real output in the short run.

Decrease

iv. The unemployment rate

Lower real output → firms produce less → lay off workers or hire less → unemployment rate increases.

Increase