SOLUTIONS TO TEXT PROBLEMS:

Quick Quizzes

1. The unemployment rate is measured starting with a survey of about 60,000 households. The BLS categorizes individuals surveyed as employed, unemployed, and not in the labor force. Next, the BLS computes the labor force as the sum of the number of employed and the number of unemployed. Finally, the unemployment rate is calculated as the number of unemployed divided by the labor force multiplied by 100. The unemployment rate overstates the amount of joblessness because some of those who report being unemployed may not, in fact, be trying hard to find a job. But the unemployment rate may understate the amount of joblessness because discouraged workers are considered not in the labor force even though they are workers without jobs.

2. An increase in the world price of oil increases the amount of frictional unemployment as oil-producing firms increase output and employment, but other firms, such as those in the auto industry, reduce output and employment. The sectoral shift from the auto industry to oil firms causes higher frictional unemployment for a time until workers have shifted from the auto industry to the oil industry. Although no increase in unemployment is really desirable, this type of frictional unemployment is a natural outcome of the reallocation of resources between different sectors. Public policies that might affect the unemployment caused by this change in the price of oil include government-run employment agencies, which can help autoworkers move into the oil industry, job-training programs to help workers adapt to a new industry, and unemployment insurance, which keeps workers from suffering economic hardship while changing from one industry to another.

3. Figure 1 shows the supply curve (S) and the demand curve (D) for labor. The wage (W) is above the equilibrium wage (Wₑ). The result is unemployment, equal to the amount by which the quantity of labor supplied (Lₛ) exceeds the quantity of labor demanded (Lᵈ).
4. A union in the auto industry raises the wages of workers employed by General Motors and Ford by threatening to strike. To prevent the costs of a strike, the firms generally pay higher wages than they would if there were no union. However, the higher wages reduce employment at General Motors and Ford. The unemployed autoworkers seek jobs elsewhere, reducing wages and increasing employment in the nonunion sector.

5. There are four reasons that firms might find it profitable to pay wages above the level that balances the quantity of labor supplied and the quantity of labor demanded: (1) to ensure that workers are in good health so they will be more productive; (2) to reduce worker turnover because it is costly to hire new workers; (3) to make workers eager to keep their jobs, thus discouraging them from shirking; and (4) to attract a better pool of workers.

Questions for Review

1. The BLS categorizes each adult (16 years of age and older) as employed, unemployed, or not in the labor force. The labor force consists of the sum of the employed and the unemployed. The unemployment rate is the percentage of the labor force that is unemployed. The labor-force participation rate is the percentage of the total adult population that is in the labor force.

2. Unemployment is typically short term. Most people who become unemployed are able to find new jobs fairly quickly. But most unemployment observed at any given time is attributable to the relatively few workers who are jobless for long periods of time.

3. Frictional unemployment is inevitable because the economy is always changing. Some firms are shrinking while others are expanding. Some regions are experiencing faster growth than other regions. Transitions of workers between firms and between regions are accompanied by temporary unemployment.

   The government could help to reduce the amount of frictional unemployment through public policies that provide information about job vacancies in order to match workers and jobs more quickly, and through public training programs that help ease the transition of workers from declining to expanding industries and help disadvantaged groups escape poverty.

4. Minimum-wage laws are a better explanation for unemployment among teenagers than among college graduates. Teenagers have fewer job-related skills than college graduates do, so their wages are low enough to be affected by the minimum wage. College graduates’ wages generally exceed the minimum wage.

5. Unions affect the natural rate of unemployment via the effect on insiders and outsiders. Because unions raise the wage above the equilibrium level, the quantity of labor demanded declines while the quantity supplied of labor rises, so there is unemployment. Insiders are those who keep their jobs. Outsiders, workers who become unemployed, have two choices: either get a job in a firm that is not unionized, or remain unemployed and wait for a job to open up in the union sector. As a result, the natural rate of unemployment is higher than it would be without unions.

6. Advocates of unions claim that unions are good for the economy because they are an antidote to the market power of the firms that hire workers and they are important for helping firms respond efficiently to workers’ concerns.
7. Four reasons why a firm's profits might increase when it raises wages are: (1) better paid workers are healthier and more productive; (2) worker turnover is reduced; (3) the firm can attract higher quality workers; and (4) worker effort is increased.

Quick Check Multiple Choice
1. a
2. c
3. b
4. b
5. c
6. a

Problems and Applications
1. a. The adult population consists of the number of employed (143,322,000) plus the number of unemployed (12,332,000) plus those not in the labor force (89,008,000), which equals 244,662,000.
   b. The labor force consists of the number of employed (143,322,000) plus the number of unemployed (12,332,000), which equals 155,654,000.
   c. The labor-force participation rate is the labor force (155,654,000) divided by the adult population (244,662,000) times 100, which equals 63.6%.
   d. The unemployment rate is the number of unemployed (12,332,000) divided by the labor force (155,654,000) times 100, which equals 7.9%.
2. Many answers are possible.
3. The fact that employment increased 4.9 million while unemployment declined 2.7 million is consistent with growth in the labor force of 2.2 million workers. The labor force constantly increases as the population grows and as labor-force participation increases, so the increase in the number of people employed may exceed the reduction in the number unemployed.
4. a. If an auto company goes bankrupt and its workers immediate begin looking for work, the unemployment rate will rise and the employment-population ratio will fall.
   b. If some of the unemployed auto workers give up looking for a job, the unemployment rate will fall and the employment-population ratio will remain the same.
   c. If numerous students graduate from college and cannot find work, the unemployment rate will rise and the employment-population ratio will remain unchanged.
   d. If numerous students graduate from college and immediately begin new jobs, the unemployment rate will fall and the employment-population ratio will rise.
   e. If a stock market boom induces earlier retirement, the unemployment rate will rise and the employment-population ratio will fall.
f. Advances in health care that prolong the life of retirees will not affect the unemployment rate and will lower the employment-population ratio.

5. a. A construction worker who is laid off because of bad weather is likely to experience short-term unemployment, because the worker will be back to work as soon as the weather clears up.

b. A manufacturing worker who loses his job at a plant in an isolated area is likely to experience long-term unemployment, because there are probably few other employment opportunities in the area. He may need to move somewhere else to find a suitable job, which means he will be out of work for some time.

c. A worker in the stagecoach industry who was laid off because of the growth of railroads is likely to be unemployed for a long time. The worker will have a lot of trouble finding another job because his entire industry is shrinking. He will probably need to gain additional training or skills to get a job in a different industry.

d. A short-order cook who loses his job when a new restaurant opens is likely to find another job fairly quickly, perhaps even at the new restaurant, and thus will probably have only a short spell of unemployment.

e. An expert welder with little education who loses his job when the company installs automatic welding machinery is likely to be without a job for a long time, because he lacks the technological skills to keep up with the latest equipment. To remain in the welding industry, he may need to go back to school and learn the newest techniques.

6. Figure 2 shows a diagram of the labor market with a binding minimum wage. At the initial minimum wage \( (w_{M,1}) \), the quantity of labor supplied \( L_{S,1} \) is greater than the quantity of labor demanded \( L_{D,1} \), and unemployment is equal to \( L_{S,1} - L_{D,1} \). An increase in the minimum wage to \( w_{M,2} \) leads to an increase in the quantity of labor supplied to \( L_{S,2} \) and a decrease in the quantity of labor demanded to \( L_{D,2} \). As a result, unemployment increases as the minimum wage rises.
7. a. Figure 3 illustrates the effects of a union being established in the manufacturing labor market. In the manufacturing labor market (figure on the left), the wage rises from the non-union wage, \( w_{NU} \), to the union wage, \( w_U \), and the quantity of labor demanded declines from the non-union quantity of labor, \( L_{NU} \), to the union quantity of labor demanded, \( L_{UD} \). Because the wage is higher, the quantity supplied of labor increases to the union quantity of labor supplied \( L_{US} \), so there are \( L_{US} - L_{UD} \) unemployed workers in the unionized manufacturing sector.

b. When those workers who become unemployed in the manufacturing sector seek employment in the service labor market, shown in the figure on the right, the supply of labor shifts to the right from \( S_1 \) to \( S_2 \). The result is a decline in the wage in the nonunionized service sector from \( w_1 \) to \( w_2 \) and an increase in employment in the nonunionized service sector from \( L_1 \) to \( L_2 \).

![Figure 3](image)

8. a. Wages between the two industries would be equal. If not, new workers would choose the industry with the higher wage, pushing the wage in that industry down.

b. If the country begins importing autos, the demand for domestic auto workers would fall. If the country begins to export aircraft, there would be an increase in the demand for workers in the aircraft industry.

c. In the short run, wages in the auto industry would fall, while wages in the aircraft industry would rise. Over time, new workers would move into the aircraft industry bringing its wage down until wages were equal across the two industries.

d. If the wage did not adjust to its equilibrium level, there would be a shortage of workers in the aircraft industry and a surplus of labor (unemployment) in the auto industry.

9. a. If a firm was not providing such benefits prior to the legislation, the curve showing the demand for labor would shift to the left by exactly $4 at each quantity of labor, because
the firm would not be willing to pay as high a wage given the increased cost of the benefits.

b. If employees value the benefit by exactly $4 per hour, they would be willing to work the same amount for a wage that is $4 less per hour, so the supply curve of labor shifts to the right by exactly $4.

![Figure 4](image)

**Figure 4**

c. Figure 4 shows the equilibrium in the labor market. Because the demand and supply curves of labor both shift by $4, the equilibrium quantity of labor is unchanged and the wage declines by $4. Both employees and employers are just as well off as before.

d. If the minimum wage prevents the wage from falling to the new equilibrium level, the result will be increased unemployment, as Figure 5 shows. Initially, the equilibrium quantity of labor is $1 and the equilibrium wage is $w_1$, which is $3 higher than the minimum wage $w_m$. After the law is passed, demand falls to $D_2$ and supply rises to $S_2$. Because of the minimum wage, the quantity of labor demanded ($L_{D2}$) will be smaller than the quantity supplied ($L_{S2}$). Thus, there will be unemployment equal to $L_{S2} - L_{D2}$.

![Figure 5](image)
e. If the workers do not value the mandated benefit at all, the supply curve of labor does not shift. As a result, the wage rate will decline by less than $4 and the equilibrium quantity of labor will decline, as shown in Figure 6. Employers are worse off, because they now pay a greater total wage plus benefits for fewer workers. Employees are worse off, because they get a lower wage and fewer are employed.

Figure 6