

I. T/F/U

1. *True.* If prices are expected to increase, FED can decrease nominal money supply (contractionary monetary policy), which will cause prices to go down (since output cannot change).
2. *False.* During periods of high unemployment, the probability of losing one's job *increases*, because firms are more likely to lay-off workers when demand is low; firms do not need to hold on to workers because it is easy to find replacements, since the pool of unemployed candidates is large. However, the probability of finding a job if unemployed *decreases*. This is precisely because in times of high unemployment more people are looking for jobs, and there are fewer vacancies due to low demand.
3. *False.* The data show that total entry into and out of the labor force in any given month is about ten times the number of new entrants and retirees.
4. *False.* The unemployment rate is a stock variable; it does not tell us about flows into and out of unemployment. Even if the unemployment rate remains constant, it is not necessarily the same people who are unemployed each month. In fact, in any given month, 25 percent of the unemployed find a job.
5. *False.* As efficiency wage theory suggests, productivity may be positively correlated, and shirking negatively correlated, with the wage rate. Thus, though paying a worker more will add to costs, it will also add to revenue (due to the change in the worker's behavior). In many cases, maximizing profit will require paying workers more than their reservation wages.
6. *False.* If discouraged workers were counted as part of the unemployment pool, the unemployment rate would be higher, since the unemployment pool would increase. 
$$u = \frac{U'}{L'} = \frac{U + D}{L + D} > \frac{U}{L}$$
7. *False.* Non-unionized workers most likely have some bargaining power (as a result of bilateral bargaining arrangement). It is costly for employers to replace workers, since they have to spend time and effort to find qualified candidates. Additionally, employers incur training costs. This gives current employees some degree of bargaining power, which depends on the internal conditions in the economy and the amount of skill required for the job.

8. *False.* Higher minimum wages can only help increase unemployment. If minimum wage is binding (employers would have otherwise paid lower wages), employers would hire fewer workers than otherwise, which will increase the unemployment rate. If minimum wage is not binding, it has no effect on the unemployment rate. Minimum wage will usually be binding in the low skill labor market, in which most of the young people participate.
9. *False.* More generous unemployment benefits increase reservation wage by improving the outside option of workers and, therefore, increase unemployment. Workers require higher wages to induce them to work. Higher wages mean higher production costs, so that firms choose to higher fewer workers. Alternatively, you can think of WS curve shifting up (because  $z$  increases). Since PS curve remains unchanged, natural rate of unemployment increases.
10. Efficiency wage hypothesis is the only reason why high-tech firms pay more than McDonald's.  
*False.* High-tech firms pay more because they employ high-tech employees. The value added by high-tech employees is much higher than the value added by low skill workers. Alternatively, the demand for high-tech employees is high, while the supply of high-tech employees is low. The reverse is true for the low-skill jobs, like McDonald's. This leads to a higher wage in the primary labor market (high-tech jobs) as compared to the secondary labor market (McDonald's jobs).

## II. Unemployment Statistics

- (a) labor force participation rate  
 = labor force/population = (employed + unemployed)/population  
 = 130 million/260 million = .5
- (b) unemployment rate = unemployed/labor force  
 = 10 million/130 million = .077
- (c) nonemployment rate = (population – employment)/population  
 = (260 million – 120 million)/260 million = .538

## III. The Natural Rate of Unemployment

Suppose that the firm's markup over costs is 10%, and that the wage determination equation  $W = P(1-u)$ , where  $u$  is the unemployment rate.

- (a) The price-setting equation is  $\frac{W}{P} = \frac{1}{1+\mu}$ .

Rearranging gives  $P = (1+\mu)W$ . So in this case:  $P = 1.1W$  or  $\frac{W}{P} = .909$

- (b) Since both price-setting ( $\frac{W}{P} = .909$ ) and wage-determination ( $W = P(1-u)$ ) must be satisfied, we have  $.909 = 1 - u$ . So  $u = 1 - .909 = .091$
- (c) Price setting:  $P = (1 + \mu)W$ ; in this case:  $P = 1.2W$ .  $\frac{W}{P} = .833$   
 $.833 = 1 - u$ . So  $u = .167$ .

When firms set a higher markup over costs and labor is the only cost, the real wage must fall – as shown by the price-setting equation. We also know that a higher unemployment rate (more slack in the labor market) is a requirement for a lower real wage, as shown by the wage-determination relation. Together, these relations imply that a greater markup over costs will result in a rise in the natural rate of unemployment.

#### IV. IS-LM and AS-AD

- (a) An increase in government spending.  
 IS shifts rightward; AD shifts rightward; LM shifts upward (when price level rises).
- (b) An increase in the nominal money supply.  
 LM shifts downward; AD shifts rightward.
- (c) An increase in the price of oil.  
 AS shifts upward; LM shifts upward (when price level rises).
- (d) A decrease in consumer confidence  
 IS shifts leftward; AD shifts leftward; LM shifts downward (when price level falls)