**14.02 Principles of Macroeconomics**
**Spring 1997**
**Solutions to Problem Set 4**

1. Uncertain. Duration also depends on the flows into unemployment from employment and non-participation. The higher the flow into unemployment and the lower the flow out of unemployment, the higher the average duration.

2. False. Unemployment rate of 6% implies that 6% of the labor force is unemployed at that particular point in time when the labor force survey was conducted. This figure tells us nothing about the amount of time for which individuals are unemployed.

3. False. The theory of efficiency wages states that wages are used to motivate workers i.e. to encourage them to exert effort. Therefore, higher wages will be paid to those workers who would otherwise shirk (exert little effort). These tend to be workers whose performance is difficult to monitor.

4. False. Reservation wages tend to be below the market wage predicted by efficiency wage theory. Some people who are prepared to work, are not offered a job. Thus, there is involuntary unemployment.

5. False. A low rate of unemployment reduces the incentive for workers to work hard. This is because it will be relatively easy for them to find a new job should they loose their current one. Therefore, without the threat of unemployment to motivate their workers, employers will be forced to pay higher wages.

6. Uncertain. This depends on the unions' objectives. If unions seek to boost wages, then the wages setting curve will move to the right and unemployment will rise. If, on the other hand, unions seek to maximize employment opportunities, then they will moderate wage demands and the wage setting curve will shift to the left in (W/P,U) space. This will result in a lower natural rate of unemployment.

7. False. The natural rate of unemployment is determined by the intersection of the price setting curve with the wage setting curve. This intersection will normally occur at positive U. If we think of the efficiency wage model as underlying the wage setting curve, then there will have to be unemployment in equilibrium in order to prevent workers from shirking.

8. False. A high level of structural change implies that there are large flows in the labor market to and from unemployment. Thus when an individual becomes unemployed, his chances of getting another job are relatively

high. This implies that he will fear unemployment less and will tend to push for higher wages. With all individuals doing this, the wage setting curve shifts up, and the natural rate of unemployment rises. Therefore the natural level of output will fall

9. True. If wage contracts are staggered, then wages cannot adjust to changes in the price level immediately. This implies that for a short period of time, firms could find themselves receiving a higher than expected price for their output, while paying the same wage. This will encourage them to hire more workers and produce more output than the natural rate. In the long run, the workers will force the wage rate to adjust to the price change, then firms will cut back production to the natural rate.

10. With $P^e < P$ output is above the natural rate. The reason is that firms face a lower real wage than the had expected. Therefore the can afford to hire more workers and produce more output. In the long run, workers will realize that real wages are lower than expected and will demand higher nominal wages in order to return $W/P$ to its desired level. In (W,N) space this translates into a shift up in the labor supply curve. The new equilibrium level of N will coincide with the natural rate of employment.