Review Questions

Choose the letter that represents the **BEST** response.

The Employment Contract

1. Employment contracts for the majority of American workers take the form of
   a. formal documents precisely specifying in advance the obligations of each party.
   b. oral agreements that can be legally enforced when necessary.
   c. a broad set of informal understandings between each party.
   d. collective bargaining agreements made between an employer and a union.

2. An employment contract is considered to be self-enforcing if
   a. it is in each party's self-interest to see to it that the contract is not broken.
   b. it is implicit.
   c. it is incomplete.
   d. it is not legally enforceable by a third party.

3. A self-enforcing employment contract may be difficult to achieve because
   a. information in the labor market may be asymmetric.
   b. employment contracts are implicit.
   c. the terms of the employment contract are typically incomplete.
   d. all of the above.

4. The likelihood of one party cheating on an employment contract can be reduced by
   a. formal sanctions for breaking certain provisions of the contract.
   b. inducing the parties to signal their true characteristics and intentions before the contract is formed.
   c. more extensive and careful interviewing.
   d. both a and b.

5. A necessary condition for the design of a self-enforcing employment contract is that
   a. a surplus of workers exists.
   b. workers’ marginal revenue product at the firm must exceed their alternative offers.
   c. the surplus generated by the employment relationship be divided evenly.
   d. workers receive firm-specific training.

6. An employment practice designed to motivate workers to exert their best efforts is
   a. close supervision of workers.
   b. linking pay to an individual’s output.
   c. maintaining the perception that workers are being treated fairly.
   d. all of the above.

7. The tendency of workers to identify with their employing organization means that employment practices designed to foster group loyalty are likely to
   a. create a free-rider problem.
   b. intensify workers’ concern about their relative position in the firm.
   c. increase worker motivation.
   d. both a and b.
Productivity and the Basis of Pay

8. Employees typically prefer being paid on a time basis because
   a. the output a worker produces can vary for reasons beyond the worker’s control.
   b. workers prefer earnings certainty (i.e., they are risk averse).
   c. over 80% of U.S. workers are paid on a time basis.
   d. both a and b.

9. Empirical evidence suggests that workers receiving output-based pay earn more than workers in comparable jobs who are paid on the basis of time. This differential in pay occurs because
   a. workers attracted to firms using output-based pay are likely to have above-average motivation and ability.
   b. time-based pay creates a moral hazard problem.
   c. workers tend to be anxious about periods of lower-than-usual pay and so require a compensating differential to work under such conditions.
   d. all of the above.

10. Which of the following is not a problem usually associated with individual incentive-pay schemes?
    a. Wide variations in the firm’s profits
    b. Erosion of group loyalty
    c. Overemphasis on the measurable aspects of job performance
    d. Misuse of the equipment

11. Incentive pay based on the success of the group is more likely when
    a. workers are risk averse.
    b. output is produced by employees working interdependently in teams.
    c. the group is prone to the free-rider problem.
    d. all of the above.

12. A problem associated with basing the compensation of top managers partly on the value of the company’s shares of stock is that
    a. it creates an incentive for the managers to emphasize short-run successes.
    b. it may be difficult to attract top managers due to the variability in earnings associated with the plan.
    c. empirical studies suggest that such plans do not help the firm’s stock market performance.
    d. all of the above.

13. Merit-pay plans are more likely to be successful when
    a. workers are rated relative to one another.
    b. supervisors tend to rely on the middle rating categories and avoid the extremes.
    c. individual output is highly correlated with an individual’s effort.
    d. all of the above.
Productivity and the Level of Pay

14. Suppose the employment relationship results in a gap between the workers’ marginal product at the firm and their alternative wage offers (in real terms). When dividing that surplus, firms should keep in mind that
   a. the more of the surplus kept by the firm, the more likely it is that workers will quit.
   b. higher wages may actually increase the size of the surplus.
   c. the surplus should be divided evenly.
   d. both a and b.

15. Which of the following is not a reason why higher wages are thought to increase worker productivity?
   a. Higher wages mean that workers will be less concerned about undercutting rivals and impressing supervisors.
   b. Higher wages enlarge a firm’s applicant pool.
   c. Higher wages increase the penalty associated with shirking.

16. A firm can be said to pay workers an efficiency wage when
   a. the wage is above what workers can attain elsewhere.
   b. the wage has been raised above the market level to the point where further increases are unprofitable.
   c. there is no surplus associated with the employment relationship.
   d. the surplus from the employment relationship is divided in a way that favors the workers.

17. The likelihood of a firm using an efficiency wage strategy increases if
   a. the firm utilizes an internal labor market strategy for filling upper-level positions in the firm.
   b. supervision is very costly.
   c. individual output is easily measurable.
   d. both a and b.

Productivity and the Sequencing of Pay

In answering Questions 18 and 19, suppose that the marginal product of a typical worker varies over time according to the schedule in Table 11-2 where year 0 represents the current year. In order to motivate its workers to exert their best efforts, suppose the firm plans to sequence the pay in such a way that workers receive less than their marginal product early in their career, and then more than their marginal product toward the end of their career.

18. If the firm has decided to pay workers the real wage values shown in Table 11-2 for years 0, 1, and 3, what is the minimum the firm could pay workers in period 2 and still have the plan be acceptable to the workers? (Assume the real interest rate is 6%.)
   a. 17.8
   b. 20
   c. 21.48
   d. 22.47
Table 11-2

<table>
<thead>
<tr>
<th>Year</th>
<th>Marginal Product</th>
<th>Real Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>10</td>
<td>5</td>
</tr>
<tr>
<td>1</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>20</td>
<td>?</td>
</tr>
<tr>
<td>3</td>
<td>25</td>
<td>35</td>
</tr>
</tbody>
</table>

19. The pay scheme described in Table 11-2 is risky from the point of view of the firm because
   a. it is uncertain whether the productivity of workers will actually increase.
   b. workers may quit before the plan is completed.
   c. if the wages of older workers cannot be reduced, workers may try to stay with the firm past year 3.
   d. both a and b.

20. Suppose that a number of candidates are considered for a top position in the firm over a number of years. One is eventually selected and paid three times what the remaining candidates receive. Such a promotion tournament strategy can be undermined if
   a. the firm develops a reputation for treating the losers poorly.
   b. workers focus their efforts on undercutting one another.
   c. the firm is willing to tolerate employees widely perceived to be unprofitable.
   d. both a and b.

Problems

The Employment Contract

21. A firm can be thought of as a joint venture between owners and workers. Suppose that these two groups face a work environment with the incentives depicted in Table 11-3. Each entry in the table shows the level of utility attained by group members from following particular courses of action.

Table 11-3

<table>
<thead>
<tr>
<th>Owners/Workers</th>
<th>Cooperate</th>
<th>Shirk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperate</td>
<td>$U_w = 4$</td>
<td>$U_w = 2$</td>
</tr>
<tr>
<td></td>
<td>$U_o = 4$</td>
<td>$U_o = 5$</td>
</tr>
<tr>
<td>Shirk</td>
<td>$U_w = 5$</td>
<td>$U_w = 3$</td>
</tr>
<tr>
<td></td>
<td>$U_o = 2$</td>
<td>$U_o = 3$</td>
</tr>
</tbody>
</table>

21a. Assuming the workers do not know the strategy employed by the owners, what is the optimal strategy for the workers?

21b. Assuming the owners do not know the strategy employed by the workers, what is the optimal strategy for the owners?

21c. Is the employment contract between owners and workers self-enforcing?
21d. The information available to each party in this case is asymmetric, since each knows the strategy it intends to follow, but is not sure what the other will do. If each party could be sure of what the other was planning to do, would that change the outcome of the employment contract?

21e. Now suppose that the work environment changes and the two groups face the incentives depicted in Table 11-4. Carefully compare the entries in the two tables. What has happened to the payoffs associated with cooperation and shirking for each group? What could be the cause of this change?

Table 11-4

<table>
<thead>
<tr>
<th>Owners/Workers</th>
<th>Cooperate</th>
<th>Shirk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperate</td>
<td>$U_W = 6$</td>
<td>$U_W = 3$</td>
</tr>
<tr>
<td></td>
<td>$U_O = 6$</td>
<td>$U_O = 4$</td>
</tr>
<tr>
<td>Shirk</td>
<td>$U_W = 4$</td>
<td>$U_W = 1$</td>
</tr>
<tr>
<td></td>
<td>$U_O = 3$</td>
<td>$U_O = 1$</td>
</tr>
</tbody>
</table>

21f. Given the information in Table 11-4, is the employment contract self-enforcing?

The Basis of Pay

*22. Consider a firm that combines labor ($L$) and capital ($K$) to produce output ($Q$) according to the formula

$$Q = \sqrt{L} \sqrt{K}.$$ 

The firm has monopoly power in the output market and faces a demand curve given by the equation

$$P = 58 - Q,$$

where $P$ is the price of output. The firm faces perfect competition in the input market where the going price of labor ($W$) is $9 and the going price of capital ($C$) is $9. The profit-maximizing combination of labor and capital in the long run is

$$L^* = 20, K^* = 20 \Rightarrow Q^* = 20, P^* = 38.$$ 

In order to increase work incentives, suppose the firm institutes a profit-sharing pay plan under which the workers would receive a guaranteed wage ($W_g$) plus some fraction ($s$) of a measure of firm profits. The measure used by this firm is the “profit pool” ($\pi$) divided by the number of workers, where the profit pool is defined as

$$\pi = PQ - W_gL - CK.$$ 

This means that the compensation per worker ($Y$) under profit sharing will be given by the equation

$$Y = W_g + s \frac{PQ - W_gL - CK}{L}.$$ 

*22a. If the firm sets $W_g = $7, prove that the firm must set the profit-sharing parameter ($s$) equal to one-eleventh in order to make monetary compensation in the long run equivalent to what workers can earn elsewhere.
*22b. Even if the monetary compensation under profit sharing is the same as what workers can attain elsewhere, will most workers perceive profit sharing to be equivalent to a standard time-based wage? If not, what adjustment will the firm be forced to make?

*22c. The total expense for labor ($E_L$) incurred by this firm under profit sharing is given by the equation

$$E_L = (Y)(L) = W_g L + s(PQ - W_g L - CK).$$

The marginal expense of labor ($ME_L$) is

$$ME_L = W_g + s(MRP - W_g),$$

where $MRP_L$ is the marginal revenue product of labor. Recall from Chapter 3 that

$$MRP_L = (MR)(MP_L),$$

where, in this example,

$$MR = 58 - 2Q \quad \text{and} \quad MP_L = \frac{1}{2} \frac{K}{L}.$$

(For the reader with calculus training, the $ME_L$ is the first derivative of the $E_L$ expression.) Assuming the firm is at its long-run equilibrium values, find the marginal expense of labor facing the firm if $W_g = 7$ and $s = 1/11$.

*22d. Assuming the firm is at its long-run equilibrium values, compare the $MRP_L$ and $ME_L$ expressions. Does the firm have any incentive to increase its employment level?

*22e. Suppose the firm expands its employment from 20 to 21. Find the new output and price for this firm.

*22f. What is the size of the profit pool assuming the firm expands employment to 21?

*22g. Find the compensation per worker under profit sharing if the firm expands employment to 21. Would the firm be able to retain 21 workers?

*22h. Evaluate the effects of profit sharing on the stability of the employment relationship. Is the firm more likely to lay off workers? Are workers more likely to quit the firm?

### The Level of Pay

23. Consider a firm where the optimal output is 36 units per day. If the firm pays its workers a wage of $50 per day, each worker produces an output of 4 units. If it pays its workers a wage of $100 per day, each worker produces an output of 9.

23a. What is the profit-maximizing strategy for producing 36 units of output?

23b. Assuming the going wage rate for comparable workers is $50, can the firm be described as paying an efficiency wage?
The Sequencing of Pay

24. Consider a firm where the marginal product of the typical worker varies over time according to the schedule in Table 11-5 where year 0 represents the current year. In order to motivate its workers to exert their best efforts, suppose this firm plans to sequence the pay in such a way that workers receive less than their marginal product early in their career, and then more than their marginal product toward the end of their career.

Table 11-5

<table>
<thead>
<tr>
<th>Year</th>
<th>Marginal Product</th>
<th>Real Wage</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>6</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td>10</td>
<td>8</td>
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<td>3</td>
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<td>15</td>
</tr>
<tr>
<td>4</td>
<td>16</td>
<td>?</td>
</tr>
</tbody>
</table>

24a. If the firm has decided to pay workers the real wage values shown in Table 11-5 for years 0, 1, 2, and 3, what is the minimum the firm could pay workers in period 4 and still have the plan be acceptable to the workers? Assume the real interest rate is 6%.

24b. Why is such a pay scheme more likely to be found in firms using an internal labor market strategy?

24c. Explain how such a pay scheme is thought to bring about increases in worker productivity?

24d. Why is the prohibition of mandatory retirement policies thought to decrease the likelihood firms will employ such schemes?

Applications

The Basis of Pay

25. In a health maintenance organization (HMO), subscribers pay a fixed annual fee to the organization. In return, the member is entitled to comprehensive care through the organization’s network of physicians. Some HMOs contract with physicians who also have private practices (i.e., serve non-HMO patients as well). In such instances, patients go to the physician’s private office for care. Other HMOs maintain their own staff of physicians who are located at a few central locations. According to an article in The Wall Street Journal, January 25, 1993 (p. B1, B4), doctors employed by HMOs typically receive a flat fee (e.g., $10) for every HMO member they see. Such fees are easier to administer than other systems where doctors are compensated on the basis of the services actually performed. In order to improve the quality of care patients receive, some HMOs have been experimenting with individual incentive-pay plans.

25a. Why might the quality of care be a concern under a system where doctors are paid a flat fee for each patient served?

25b. Besides being easier to administer, why do you suppose organizations might use such a flat fee system instead of paying for each service rendered?

25c. What determines how low the fee can go? What role do doctor’s preferences toward risk play in the setting of the rate?