

## 2005 AP<sup>®</sup> MICROECONOMICS FREE-RESPONSE QUESTIONS

3. P & L is a profit-maximizing shirt-manufacturing firm. The firm can sell all the shirts it can produce to retailers at a price of \$20 each. P & L can hire all of the workers it wants at a market wage of \$120 per day per worker. The table below shows the firm's short-run production function.

Number of Workers	Number of Shirts per Day
0	0
1	10
2	25
3	45
4	60
5	72
6	80
7	85
8	82

- (a) In what kind of market structure does this firm sell its output? How can you tell?
- (b) In what kind of market structure does this firm hire its workers? How can you tell?
- (c) Calculate the marginal revenue product of the third worker. Show your work.
- (d) How many workers should the firm hire to maximize profit? Explain.

**END OF EXAM**

**AP<sup>®</sup> MICROECONOMICS**  
**2005 SCORING GUIDELINES**

**Question 3**

**8 points** (2 + 2 + 2 + 2)

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(a) 2 points:

- One point is earned for indicating perfect competition.
- One point is earned for a correct explanation: The price is constant, or the firm is a price taker in the product market.

(b) 2 points:

- One point is earned for indicating perfect competition.
- One point is earned for a correct explanation: The wage rate is constant, or the firm is a price taker in the labor market.

(c) 2 points:

- One point is earned for stating that MRP is \$400.
- One point is earned for showing the calculation:  $MRP = P \times MP$ , so  $MRP = 20 \times \$20 = \$400$

(d) 2 points:

- One point is earned for indicating six workers, or in between six and seven workers.
- One point is earned for a correct explanation:  $MRP > W$  for the sixth worker, but  $MRP < W$  for the seventh worker.