AP MICROECONOMICS • EXERCISE SHEET

5.3 Profit-Maximizing Behavior in Perfectly Competitive Factor Markets

Name: _____ Class: _____ Date: _____ **Total: 8 marks**

Objective

Build the skills to answer exam questions on **profit-maximizing behaviour in perfectly competitive factor markets**.

You must be able to:

- describe a **perfectly competitive factor market** in which firms are **wage takers** 工资接受者
- relate the market wage to an individual firm's hiring decision
- determine the profit-maximizing quantity of labour where $MRP = W$
- apply the **cost-minimizing rule** 成本最小化法则

1 Worked examples

Study these first. Each one shows the method for a question type used later.

Wage taker

In a competitive factor market, each firm is too small to affect the wage, so it takes the market wage W as given (its MFC $= W$).

Hiring rule

Hire labour up to the point where $MRP = W$.

Cost-minimizing rule

Combine two inputs efficiently by equalizing the marginal product per dollar:

$$\frac{MP_L}{P_L} = \frac{MP_K}{P_K}.$$

2 Practice

2.1 State what a wage taker is. [1]

2.2 State the rule for how much labour a competitive firm hires. [1]

2.3 State the cost-minimizing rule for combining two inputs. [1]

3 Exam-style questions

3.1 In a competitive factor market, a firm is a [1]

- **A** wage maker
- **B** wage taker
- **C** price maker
- **D** monopsonist

3.2 A competitive firm hires labour up to where [1]

- **A** $MRP = W$
- **B** $MRP > W$
- **C** $MRP < W$
- **D** $W = 0$

3.3 The market wage is \$40. A firm's MRP for the 1st to 4th workers is \$70, \$55, \$40, \$25.

(a) State how many workers it hires. [1]

(b) Explain why it does not hire the 4th worker. [2]

4 Go further

- work through the **5.3 Profit-Maximizing Behaviour in Perfectly Competitive Factor Markets** lesson on the **Learn** page;

- read the **Factor Markets** section of the AP Microeconomics handout on the **Know** page.

Solutions

2.1 a firm too small to affect the wage, which it takes as given.

2.2 hire until the marginal revenue product equals the wage ($MRP = W$).

2.3 set $\frac{MP_L}{P_L} = \frac{MP_K}{P_K}$ (equal marginal product per dollar for each input).

3.1 B.

3.2 A.

3.3 (a) 3 workers. (b) the 4th worker's MRP ($25) is below the wage ($40), so hiring them would add more cost than revenue.