AP MICROECONOMICS • EXERCISE SHEET

5.1 Introduction to Factor Markets

Name: ____________ Class: ________ Date: __________ **Total: 9 marks**

KEY WORDS derived demand 派生需求 • factor market 要素市场 • marginal factor cost (mfc) 边际要素成本 • marginal revenue product (mrp) 边际收益产品

Objective

Build the skills to answer exam questions on **factor markets**.

You must be able to:

- explain that the demand for a **factor of production** is a **derived demand** 派生需求
- calculate the **marginal revenue product (MRP)** 边际收益产品
- calculate the **marginal factor cost (MFC)** 边际要素成本
- state the profit-maximizing hiring rule: employ a factor until $MRP = MFC$

1 Worked examples

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

Derived demand

A firm demands a factor (like labour) only because of the demand for the **good it helps produce**.

MRP and MFC

$MRP = MP \times$ price of the good — the extra revenue from one more unit of the factor. MFC is the extra cost of hiring one more unit (the wage, in a competitive factor market).

Hiring rule

Hire until $MRP = MFC$. The factor demand curve is the firm's **MRP** curve.

2 Practice

2.1 State what "derived demand" means for a factor of production. [1]

2.2 A worker's marginal product is 5 units, and each unit sells for $4. Find the worker's MRP. [2]

2.3 State the profit-maximizing hiring rule. [1]

3 Exam-style questions

3.1 The marginal revenue product of labour is [1]

- **A** marginal product × price
- **B** the wage
- **C** total revenue
- **D** marginal cost

3.2 A firm hires labour until [1]

- **A** $MRP > MFC$
- **B** $MRP = MFC$
- **C** $MRP < MFC$
- **D** the wage is zero

3.3 A worker adds 8 units of output, each selling for $5; the wage is $30.

(a) Find the worker's MRP. [1]

(b) State whether the firm should hire this worker. [1]

(c) Explain why. [1]

Solutions

2.1 the demand for it comes from the demand for the good it helps produce.

2.2 $MRP = MP \times P = 5 \times 4 = \$20$.

2.3 hire the factor until its marginal revenue product equals its marginal factor cost.

3.1 **A**.

3.2 **B**.

3.3 (a) $MRP = 8 \times 5 = \$40$. (b) yes, hire the worker. (c) the MRP ($40) exceeds the wage ($30), so the worker adds more revenue than cost.