AP MICROECONOMICS • EXERCISE SHEET

4.5 Oligopoly and Game Theory

Name: _____ Class: _____ Date: _____ **Total: 10 marks**

Objective

Build the skills to answer exam questions on **oligopoly and game theory**.

You must be able to:

- describe an **oligopoly** 寡头垄断 with few firms and **mutual interdependence** 相互依存
- explain how **collusion** 合谋 and a **cartel** 卡特尔 raise prices
- use a **payoff matrix** 收益矩阵 and identify a **dominant strategy** 占优策略 and a **Nash equilibrium** 纳什均衡
- explain the **prisoner's dilemma** 囚徒困境

1 Worked examples

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

■ Oligopoly

A **few** large firms that are **mutually interdependent** —each firm's best choice depends on what rivals do.

■ Collusion

If firms **collude** to form a **cartel**, they can restrict output and raise prices toward the **monopoly** outcome.

■ Game theory

A **dominant strategy** is best whatever the rival does. A **Nash equilibrium** is an outcome from which neither firm wants to deviate. In a **prisoner's dilemma**, both would gain by cooperating, but each has an incentive to defect —so cooperation often fails.

2 Practice

2.1 State two features of an oligopoly. [2]

2.2 Define a dominant strategy. [1]

2.3 State why firms in a prisoner's dilemma may fail to cooperate. [2]

3 Exam-style questions

3.1 An oligopoly has [1]

- **A** one firm
- **B** a few interdependent firms
- **C** very many firms
- **D** no firms

3.2 A successful cartel raises prices toward the [1]

- **A** competitive outcome
- **B** monopoly outcome
- **C** zero-price outcome
- **D** marginal-cost outcome

3.3 Two firms each choose "high price" or "low price". Each earns more by cutting its price whatever the other does.

(a) Name each firm's strategy. [1]

(b) Name the likely outcome (both charge a low price). [1]

(c) Name this type of game. [1]

4 Go further

- work through the **4.5 Oligopoly and Game Theory** lesson on the **Learn** page;
- read the **Imperfect Competition** section of the AP Microeconomics handout on the **Know** page.

Solutions

2.1 any two of: few firms, mutual interdependence, barriers to entry, differentiated or identical products.

2.2 a choice that is best for a firm no matter what its rival does.

2.3 each firm has an incentive to defect for a better individual payoff, so the cooperative outcome is not a stable equilibrium.

3.1 B.

3.2 B.

3.3 (a) a dominant strategy (charge the low price). (b) the Nash equilibrium. (c) a prisoner's dilemma.