Exercise walk-through

Oligopoly and Game Theory ▪ 4.5

eXercise

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**

Method — Oligopoly

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

Method — Collusion

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

Method — 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.

Practice 2.1 ▪ 2 marks

State two features of an oligopoly.

Solution 2.1

Worked steps

any two of: few firms, mutual interdependence, barriers to entry, differentiated or identical products **B1** **B1**.

Practice 2.2 ▪ 1 mark

Define a dominant strategy.

Solution 2.2

Method: Game theory

Worked steps

a choice that is best for a firm no matter what its rival does B1.

Practice 2.3 ▪ 2 marks

State why firms in a prisoner's dilemma may fail to cooperate.

Solution 2.3

Method: Game theory

Worked steps

each firm has an incentive to defect for a better individual payoff **B1**, so the cooperative outcome is not a stable equilibrium **B1**.

Exam-style 3.1 ▪ 1 mark

An oligopoly has

A one firm

B a few interdependent firms

C very many firms

D no firms

Solution 3.1

A one firm

B a few interdependent firms ✓

C very many firms

D no firms

Worked steps

B.

Exam-style 3.2 ▪ 1 mark

A successful cartel raises prices toward the

A competitive outcome

B monopoly outcome

C zero-price outcome

D marginal-cost outcome

Solution 3.2

Method: Collusion

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

Worked steps

B.

Exam-style 3.3 ▪ 1 mark

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.

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

(c) Name this type of game.

Solution 3.3

Method: Game theory

Worked steps

(a) a dominant strategy (charge the low price) **B1**. (b) the Nash equilibrium **B1**. (c) a prisoner's dilemma **B1**.