Solutions

Marking: **K** knowledge, **App** application to the case, **An** analysis (a developed chain of reasoning), **Ev** evaluation (a justified judgement); calculations earn **M1** for the method and **A1** for the answer.

Each answer shows the steps, then the **result**.

2.1

- $40 + 15$
- = \$**55**

2.2

- it is **non-excludable**: people who do not pay cannot be stopped from using the light (K)
- so people **free ride** and will not pay (An)
- a firm cannot make a profit, so it is not provided (An)

2.3

- smokers do not fully see the **harm** to their health / they are addicted (K)
- and they ignore the **external** costs to others, such as passive smoking and health care costs (An)

3.1

C

3.2

(a)

- $12 + 3$
- = \$**15 million**

(b)

- the factory considers only its **private** cost of \$12 m (K)
- it ignores the **external** cost of \$3 m to fishing families (App)
- so its costs look lower than the true social cost, and its price is too low (An)
- consumers buy, and the firm produces, more than the socially efficient amount (An)

(c) a developed chain, for example:

- waste kills fish, so catches fall (App)
- fishing families lose income, and may lose their jobs (An)
- they spend less in local shops, so other businesses lose too (An)
- polluted water may harm the health of people who use it, raising health care costs (An)
- the area may lose tourism and its natural environment (An)

(d) close: (An)

- ends the \$3 m of harm to fishing families and the damage to health and the river
- sends a strong signal to other polluters

keep open: (An)

- 400 jobs and the factory's output would be lost; workers' spending supports the area
- other ways cost less: a pollution tax, fines, rules to clean waste, or paying for filters

judgement: (Ev) for example, closure is too costly; the government should make the factory treat its waste or tax its pollution, because this keeps the jobs while making the firm pay the \$3 m external cost.

Level 3 (6–8): both sides analysed and a justified judgement. Level 2 (3–5): one side analysed or both explained. Level 1 (1–2): simple points.