Solutions

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

2.1

- cholesterol — controls fluidity / adds strength; carrier protein — carries specific molecules across; glycoprotein — cell recognition / receptor / antigen

2.2

- the hydrophilic heads are attracted to water on both sides while the hydrophobic tails are repelled by water; so the tails face inward and heads outward, forming two layers

3.1 B

- Glycoproteins (carbohydrate chains) are used for cell recognition

3.2 B

- The receptor's shape is complementary to that ligand only

3.3

(a)

- $\dfrac{7.0\text{ mm}}{1\,000\,000} = 7.0 \times 10^{-6}\text{ mm} = 7.0\text{ nm}$

(b)

- the hydrophobic tail region repels charged/polar molecules, so ions and large polar molecules cannot pass straight through

3.4

- a cell secretes a ligand; it is carried to and binds a complementary receptor on the target cell's membrane; binding triggers a specific response inside the target cell