Solutions

Marking: **M1** a correct method, **A1** the correct answer, **B1** an independent mark.

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

2.1

any two: a supply of energy; recycling of nutrients; high biodiversity / genetic diversity; climate within suitable limits

2.2

DDT is not broken down or excreted, so it is stored in tissues; each consumer eats many organisms from the level below; so DDT builds up and is most concentrated at the top of the food chain: biomagnification

2.3

trees release much of the water vapour that forms rain, by transpiration; after clearing, less water is recycled, so rainfall falls; past a tipping point, the remaining trees cannot survive the drier conditions and grassland/savanna replaces them

2.4

primary succession starts on bare ground with no soil, e.g. new volcanic rock; secondary succession starts where soil is already present, e.g. after a fire; secondary succession is faster, because soil, seeds and nutrients remain

2.5

pioneer species such as lichens break down rock and start soil formation; deeper soil holds more water and nutrients, so larger plants can grow; biomass, biodiversity and food-web complexity increase until a climax community forms

3.1

(a) nitrates/phosphates cause rapid growth of algae (algal bloom); algae block light and plants below die; bacteria decompose the dead algae and plants, using up dissolved oxygen; fish die from lack of oxygen

(b) any two: use less fertilizer / apply only when crops need it; do not spread before heavy rain; leave a buffer strip of plants by the lake; use organic manure that releases nutrients slowly

3.2

(a) 40 thousand tonnes

(b) fish were caught faster than they could reproduce (overfishing); young fish were caught before they bred, so fewer new fish joined the stock

(c) quotas limit the number of fish caught; larger mesh lets young fish escape; so more fish survive to breed and the population grows

exercises.lol exercises.com.cn