Solutions

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

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

2.1

temperature; precipitation

2.2

tropical rainforest; high temperature all year, about 26–28 °C; high rainfall every month, so no dry season

2.3

air heated at the equator rises, cools and loses its moisture as rain; the dry air moves towards the poles and sinks at about 30°; sinking air warms and creates high pressure, so clouds and rain rarely form

3.1

(a) rainforest has high temperature, light and water all year, so photosynthesis is fast; in the desert, lack of water limits plant growth and cover

(b) low temperatures slow enzyme reactions and photosynthesis; the growing season is short and soils are frozen or poor in nutrients

3.2

(a) temperature falls with height; as the climate warms, each species' suitable temperature range is found higher up

(b) the area of land gets smaller towards the top, so populations shrink; they cannot move higher than the summit; species moving up from below compete with them

3.3

award up to [6]: the forest recycles much of its own rain through transpiration; deforestation and warming reduce this, so dry seasons get longer; drier forest burns more easily, and fire kills trees: positive feedback; past a threshold, savanna may become a new stable state that does not return to forest; but the size and timing of the threshold are uncertain, and protection and regrowth can slow the change; conclusion supported by the evidence, e.g. parts of the south-east already lose more carbon than they take in, so the risk is real