

Solutions

2.1 Pulmonary artery (to lungs, B1); pulmonary vein (from lungs, B1).

2.2 No nucleus – more room for haemoglobin to carry oxygen; biconcave shape – large surface area for fast oxygen uptake and release. [max 2 pairs]

2.3 The left ventricle pumps blood around the whole body, needing higher pressure, so a thicker muscular wall; the right only pumps to the nearby lungs.

3.1 Thick muscle layer withstands and maintains high pressure; elastic fibres stretch and recoil, smoothing the pulse; small lumen maintains pressure to push blood to the tissues.

3.2 Stents: mechanical opening – restores blood flow immediately, but surgery carries risks and does not stop new deposits forming. Statins: reduce blood cholesterol, slowing the build-up, but are a lifelong daily drug with side effects such as liver damage.

3.3 (a) The blockage restricts blood flow through the coronary arteries; during exercise heart muscle needs more oxygen; the narrowed supply cannot meet the demand, so the muscle aches from respiration without enough oxygen – chest pain. (b) Any one: bypass surgery / heart transplant / artificial heart.