

# Answers to Option D test yourself questions

- 1 Volunteers were deprived of foods containing vitamin C but each given identical quantities of L-ascorbic acid so that there was no variation between them at the start of the experiment.
- 2 Essential nutrients are those that cannot be synthesised in the human body and must be taken in as part of the diet.
- 3 The appetite control centre is found in the hypothalamus at the base of the brain.
- 4 The acid conditions denature protein molecules so that peptide bonds are exposed for hydrolysis by protease enzymes. Provide optimum pH for protease enzymes. Acidic conditions also kill bacteria that may be present on ingested food.
- 5 Intestinal epithelial cells contain many mitochondria for absorption by active transport; they contain vesicles, which show that materials are taken in by pinocytosis; and they are linked by tight junctions so food passes through the cells to the blood capillaries.
- 6 Insoluble fibre adds bulk to feces and prevents constipation; soluble fibre lowers LDL (cholesterol) levels, helps to slow down digestion and helps intestinal muscles to contract.
- 7 Any three of: storage of iron and some vitamins; detoxification; bile production; regulation of blood sugar level; storage of glycogen.
- 8 Hemoglobin is separated into globin and heme. Globin is hydrolysed to amino acids, which are reused. Iron is removed from the heme group and stored, and the remaining part of the molecule is converted to bilirubin and becomes part of bile.
- 9 enter: hepatic artery and hepatic portal vein; leave: hepatic vein
- 10 genetic predisposition; age; sex; lifestyle choices – smoking, lack of exercise and obesity increase the risk
- 11 Atrial systole: atria contract to force blood into the ventricles.  
Ventricular systole: the ventricles contract, atrioventricular valves close, right ventricle forces blood into the pulmonary artery and left ventricle forces blood into the aorta.  
Diastole: chambers of the heart relax, semilunar valves close and heart begins to refill with blood from the veins.
- 12 Myogenic refers to the contraction of the heart muscle in the absence of a stimulus.
- 13 awareness of the importance of smoking and high blood pressure in causing CHD; also, better health care and education about the effects of exercise
- 14 steroids; proteins; tyrosine derivatives
- 15 a steroid  
b protein
- 16 Oxytocin stimulates the release of milk when a baby suckles.
- 17 Partial pressure is the proportion of the total pressure of a gas mixture that is due to one component of the mixture.
- 18 The affinity of hemoglobin for oxygen is reduced in the presence of carbon dioxide, so in respiring tissue where carbon dioxide partial pressures are higher, oxygen is released to supply the tissue.
- 19 Fetal hemoglobin has a higher affinity for oxygen than adult hemoglobin. It becomes saturated at a lower partial pressure of oxygen.